

The Current Mediterranean Diet: Assessing Food Culture of Perrotis College Students



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The Current Mediterranean Diet: Assessing Food Culture of Perrotis College Students

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Agriculture • Environment • Life Sciences

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Abstract

We worked with Dr. Tryfon Adamidis in Thessaloniki, Greece to understand Perrotis College students' food culture and perceptions of the Mediterranean diet. We utilized a mixed method approach, including interviews, food diaries, free listing activities, and catalog studies, to collect data regarding students' food choices, perceptions, and social eating practices. We analyzed this data in order to develop promotional strategies that encouraged Perrotis College students' adherence to the Mediterranean diet.

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We would like to acknowledge several people for their guidance and constructive criticism throughout the duration of this project.

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Authorship and Contributions

Due to the collaborative nature of this project, it was difficult to reflect back upon the finished project and determine who was responsible for each respective section. Instead, we have decided to detail our collaborative process of drafting and editing. During the writing process, we broke each chapter into subsections, which we distributed amongst each of the project members evenly. Each member was responsible for their respective sections' necessary research and initial draft. Once we compiled all subsections into a chapter, the team edited the entirety of the chapter as a group. A member would read a sole paragraph at a time, and at the end of each paragraph, the team would discuss thoughts and opinions in order to improve content, structure, and grammar. We drafted, restructured, and edited each chapter of this project numerous times. This led to the undefined authorship of each section of this project.

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Executive Summary

International health organizations orient themselves around encouraging lifestyle changes that improve an individual's physical, emotional, and mental well-being (Healthy diet, 2018). In 1993, the Harvard School of Public Health partnered with the World Health Organization (WHO) to propose and advertise the "Mediterranean Diet Pyramid" (Harvard T.H. Chan School of Public Health, 2018). The "Mediterranean Diet Pyramid" visually represents the food choices and social eating practices of communities bordering the Mediterranean Sea in the 1960s (Sahyoun, 2016). Harvard and WHO publicize that adherence to this suggested lifestyle encourages physical, mental, and emotional well-being (Altomare et al., 2013). Researchers such as Karlen (2008) argue that younger generations in Greece have "abandoned the traditional diet for a Western diet" and are, therefore, not experiencing its health benefits as their ancestors did. The influence of the Western diet has disrupted the delicate balance of the "Mediterranean Diet Pyramid" as an increased prevalence of fried and sugary foods replaced the foundation of thoughtful food choices (Tzotzas, 2011). Previous research aiming to identify the factors that may be influencing Greek youth to develop a Westernized diet is limited. In order to better understand and address such factors, we studied the food choices, social eating practices, and perceptions of the Mediterranean diet of Perrotis College students in Thessaloniki, Greece.

Research Objectives

The goal of this project was to understand Perrotis College students' food culture and perceptions of the Mediterranean diet in order to identify opportunities for students to better adhere to the Mediterranean diet. In order to achieve this goal, we completed three objectives:

Gain Insight into Students' Food Culture and Perceptions of the Mediterranean Diet:

By cataloging 15 various local food establishments accessible to Perrotis College students, we analyzed the factors that influence students to frequent these establishments, such as cost, location, and types of food being available. We conducted 19 interviews with college undergraduate and graduate students in order to understand four main topics: food choices and influencing factors of these decisions, social eating practices, perceptions of their own diets and the Mediterranean diet, and opinions on the concept of a "nutrition transition" in Greece. We prompted 30 Perrotis College students to complete free listing activities in order to understand the perceptions of their self-reported diets and the Mediterranean diet. 15 students completed food diaries allowing us to understand their food choices and social eating behaviors over a longer time frame, thus enabling us to compare students' actual dietary habits to their perceived behaviors. Through an integrative analysis, we combined the data collected from the aforementioned methods to assess Perrotis College students' food culture as a whole.

Determine Opportunities for Improved Adherence to the Mediterranean Diet: In order to develop opportunities for positive change within students' dietary behaviors, we identified areas within students' diets that show low adherence to the Mediterranean diet. We did this by

comparing students' food choices, social eating practices, and perceptions of the Mediterranean diet to the actual contents of the Mediterranean diet. Once we analyzed our findings, we identified opportunities to encourage change in Perrotis College students' diets. These opportunities inspired possible suggestions for strategies that could promote students' adherence to the Mediterranean diet at Perrotis College.

Analyze Opportunities for Improvement: In order to obtain feedback on the proposed suggestions, we distributed a Google Survey to Perrotis College students. The feedback from 16 responses allowed us to draw conclusions on the types of strategies that the students would most likely engage with and dedicate time to if implemented.

Results and Analysis

Below, we present findings related to the food culture of participating Perrotis College students.

Students indicated an accurate knowledge of the Mediterranean diet contents.

Figure ES.1 shows four of the five most commonly associated words students listed describing the Mediterranean diet (i.e. olive oil, vegetables, fruits, and fish). These foods were also the most encouraged food items in the “Mediterranean Diet Pyramid.” However, students also associated the word “feta” with this diet. The “Mediterranean Diet Pyramid” recommends people to consume cheese on a weekly basis or every other day. Through discussion with a Greek food

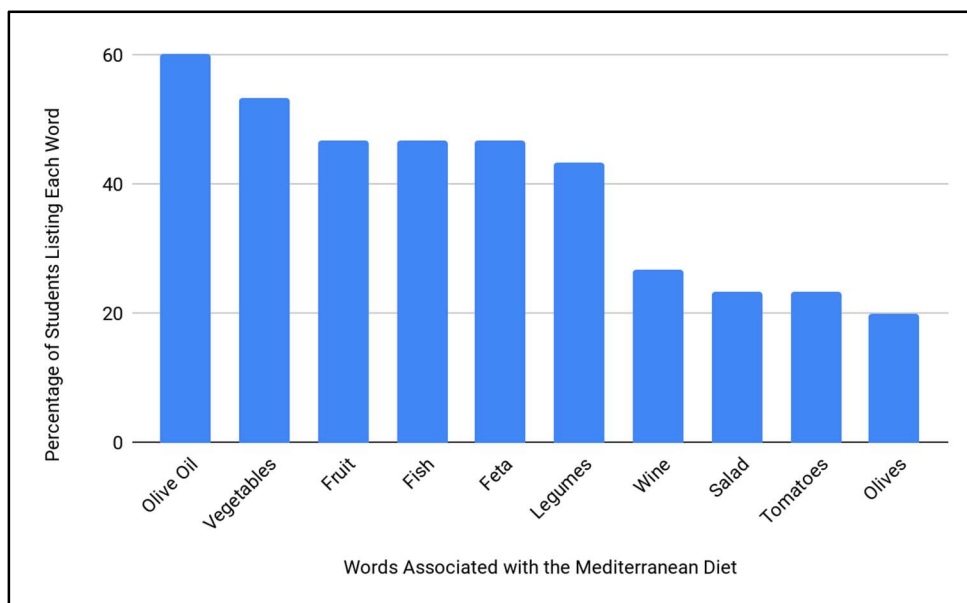


Figure ES.1: Perrotis College Students' Perceptions of the Mediterranean Diet (n=30)

scientist, we hypothesize this misconception may be because students associate feta cheese with traditional Greek dishes.

Some students showed awareness of the health benefits of the Mediterranean diet.

Within a majority of free listing activities and interviews, student participants explicitly noted that the Mediterranean diet is healthy and that their own diets are, comparatively, unhealthy. Students also listed positive words such as “complete” and “beneficial” in reference to the Mediterranean diet. However, there was variation in the amount of specific details pertaining to the diet’s health benefits that students could elaborate upon. This discrepancy could be due to the limited requirements for nutrition education courses in primary education programs.

Students lack adherence to the Mediterranean diet. Perrotis College students reported frequent consumption of foods not encouraged by the “Mediterranean Diet Pyramid” such as meat, sweets, and fast food. The pyramid recommends limiting the intake of these foods to once per month or less. However, Perrotis College students reported eating these foods multiple times per week, if not daily. This indicates that participants lack adherence to the Mediterranean diet.

Access to resources influences students’ food choices. Undergraduate student interviewees reported that, while at school, they believe their diet is less healthy than the Mediterranean diet. They attributed this to the limited food choices they have on campus due to their lack of kitchen access and limited free time. Interview subjects reported that once they graduate they will have the time and resources to make changes to their diet. Interviews with Perrotis College graduate students and university students from the Thessaloniki region confirmed younger students’ claim of the importance of access to resources.

Cost is a major influence on students’ food choices. Students reported that money influences where and what they eat when discussing lunch at the Perrotis College cafeteria. The tuition of a residential student includes the cost of lunch. Students named this as being the primary reason, and sometimes the only reason, why they would choose to eat at the college’s cafeteria. Student interviewees frequently stated that they would choose cheaper food options in order to save money when ordering out. Through cataloging, we were able to find that healthier options were on average, double the price.

Convenience is an important influence on students’ food choices. Students regularly choose to purchase ready-made food from easily accessible locations. They explained that where and what they eat depends upon what is nearby and what they can get quickly. Food delivery via the “eFood app” was frequently mentioned as a popular way to obtain food because of its accessibility to students. Additionally, the majority of locations cataloged, per student recommendation, were on campus, in walking distance to campus, or accessible via bus lines. Students also favored convenience while eating on campus and in their apartments or dorms. For

example, food diaries revealed all meals of residential students were either pre-prepared, from the cafeteria, or did not require cooking. Commuting students were more likely to cook. However, they still favored simple meals over traditional Greek meals that required more preparation time.

Students partake in an alternative food culture at school than they do at home.

Students emphasized that there is a large difference between the food they eat when at home and while at college. Participants described the meals they eat at home as well-rounded and following the Mediterranean diet. However, students believe these meals are not realistic in the college environment due to their limited access to the resources required. Participants further expressed the belief that the college cafeteria does not provide students with equivalent healthy and nutritious options as they would eat at home.

Students indicated that their peers heavily influence their food choices. Participants acknowledged that they were heavily influenced by their peers' behaviors. All interviewees mentioned that they rarely eat alone. Even when not eating at the cafeteria, participants mentioned choosing where to eat based upon preferences of the group they were with. This practice was shown to limit students' overall adherence to the Mediterranean diet because the group decisions made tended towards food such as fast food or food from the cafeteria that did not follow the "Mediterranean Diet Pyramid."

Conclusions and Suggestions

Below, we propose a variety of opportunities and strategies to encourage adherence to the Mediterranean diet and make suggestions for further research in this field.

Opportunities

Students' food choices may be positively influenced by supplying educational materials relaying the benefits of the Mediterranean diet. Students lacked a detailed understanding of how or why the Mediterranean diet could benefit them during their time at Perrotis College. Students also reported that they did not know how to make changes to their diet while at Perrotis College, and are waiting until after graduation to begin following the Mediterranean diet. This presents an opportunity for Perrotis College to expand students' existing knowledge on the benefits of the Mediterranean diet and ways to better incorporate the lifestyle into their current diet.

Perrotis College could support their students in making healthy food choices by amending their offerings at the cafeteria and other establishments on campus. The cafeteria offerings demonstrated an influence on the food choices of the students surveyed. Participants stated they felt pressured to eat there. However, students also indicated discontent with the

cafeteria's current offerings. Therefore, there is an opportunity for Perrotis College to provide students with the means to make better food choices by amending the food available on campus.

Perrotis College could inspire students to make food choices that better adhere to the Mediterranean diet by exposing them to it. The students surveyed demonstrated a perceived separation between the Mediterranean diet and their own. This lack of association indicates that participants were not actively thinking about the Mediterranean diet when making their food choices. Therefore, there is an opportunity for Perrotis College to inspire their students by demonstrating how to incorporate aspects of the Mediterranean diet into their current lifestyles.

Suggestions

We proposed five strategies intended to promote adherence to the Mediterranean diet to the Perrotis College community. We devised each strategy in order to address an opportunity for improvement within the students' diets. Within a Google Survey, we asked undergraduate students to rank each option based on their personal interest. Based on student feedback, we suggest Perrotis College consider interactive events such as the "Foodie Club," food night, and feedback surveys to promote the Mediterranean diet.

Chapter 1: Introduction

International organizations, such as the United Nations, have invested years of research and resources to ensure the health of communities globally (Healthy diet, 2018). An individual's well-being is a primary focus within these efforts because "healthy people are the foundation for healthy economies" (Good Health and Well-Being: Why it Matters). The diet of the individual has been the cornerstone of such health movements. The Food and Agricultural Organization of the United Nations (FAO) argues that a balanced diet "is our first defense against disease and our source of energy to live" (FAO, 2019). Diet encompasses more than the nutritional value of the foods an individual consumes; the English word "diet" derives from the Greek term "diaita" meaning "lifestyle" or "way of life" (Diet, 2019). Therefore, international recommendations orient themselves around encouraging lifestyle changes that improve an individual's physical, emotional, and mental well-being. This is particularly difficult because "many social and economic factors... interact in a complex manner to shape individual dietary patterns" (Healthy Diet, 2018).

In 1993, the Harvard School of Public Health partnered with the World Health Organization (WHO) to propose and advertise the "Mediterranean Diet Pyramid" (Harvard T.H. Chan School of Public Health, 2018). This food pyramid, as pictured in Figure 1, visually represents the food choices and social eating practices of communities bordering the Mediterranean Sea in the 1960s (Sahyoun, 2016). The "Mediterranean Diet Pyramid" is graphically represented by a triangle split into levels. The relative sizes of the levels correspond with how much the diet encourages the respective aspects. For instance, the aspects located on the base level are highly encouraged, whereas the aspects located at the top of the pyramid are less encouraged. In their 1993 publication, Harvard and WHO argue that adherence to this suggested lifestyle encourages physical, mental, and emotional well-being (Altomare et al., 2013). Roman (2008) reports that older generations' past adherence to the Mediterranean diet encouraged low rates of obesity and helped the elderly maintain longevity and exceptional quality of life. However, Karlen (2008) adds that younger generations in Greece have "abandoned the traditional diet for a Western diet" and are not experiencing its health benefits as their ancestors did. The Western diet disrupts the balance of the "Mediterranean Diet Pyramid" as the prevalence of fried and sugary foods replaces the foundation of thoughtful food choices (Tzotzas, 2011).

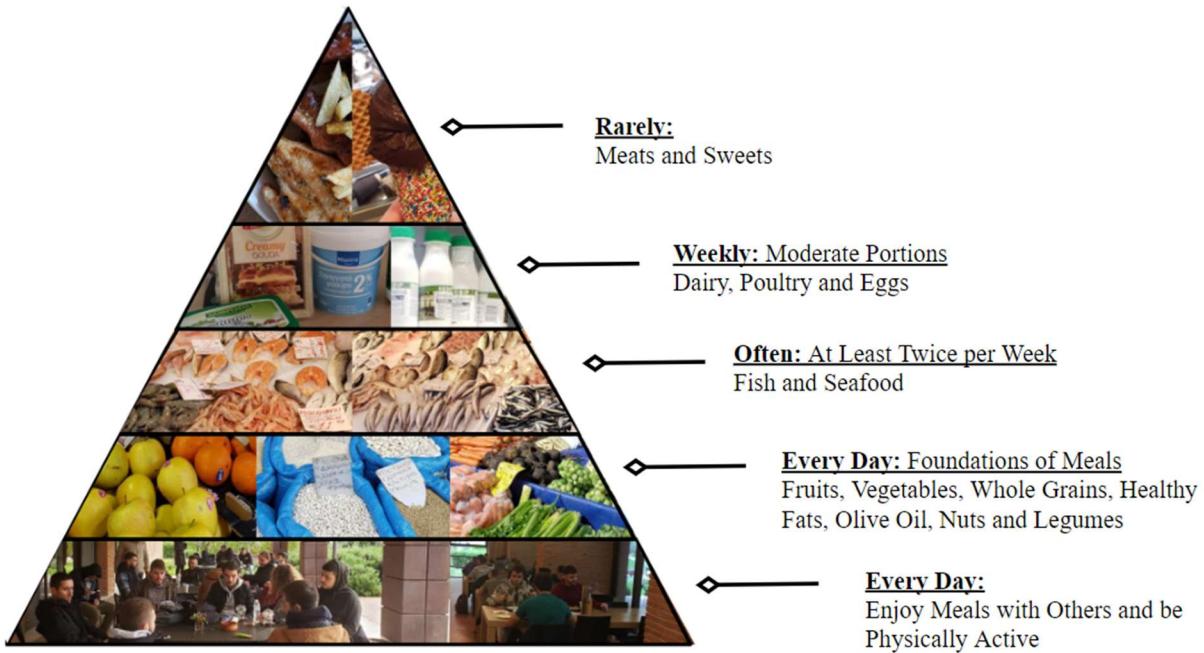


Figure 1: Mediterranean Diet Pyramid (Adapted from LifeVantage, 2016)

Health professionals have defined the recent overall change in Greek youths’ diets as a “nutrition transition” (Harvard T.H. Chan School of Public Health, 2018). A “nutrition transition” involves a series of changes in diet, physical activity, and health. This phenomenon typically occurs when poor countries become prosperous and vice versa. While the “nutrition transition” is a community wide phenomenon, it is derived from the food choices of the individual, which outside factors such as accessibility, exposure to nutritional information, social pressures, and cultural traditions, can influence. Previous research aiming to identify the factors that may be influencing Greek youth to develop a Westernized diet is limited. In order to better understand and address such factors, we studied the food choices, social eating practices, and perceptions of the Mediterranean diet of Perrotis College students in Thessaloniki, Greece. Perrotis College presented a convenient case study as the school’s small size and focus in agriculture and food study disciplines encouraged active participation from the students. Perrotis College currently does not have any information regarding its students’ food choices and social eating practices, nor their perceptions of the Mediterranean diet.

The goal of this project was to understand Perrotis College students’ food culture and perceptions of the Mediterranean diet in order to identify opportunities for students to better adhere to the Mediterranean diet. This project employed a mixed method approach including cataloging, interviews, free-listing activities, and food diaries, to investigate the food culture of Perrotis College students. Food culture entails both students’ actions, such as food choices and

social eating practices, as well as their perceptions of their own diets. We used the data to compare students' current diets and their perceptions of the Mediterranean diet. This analysis supported the identification of factors that influenced students' food choices and reduced their adherence to components of the "Mediterranean Diet Pyramid." We then developed several strategies to promote adherence to the Mediterranean diet at Perrotis College. These strategies utilize the identified factors to promote aspects of the Mediterranean diet that Perrotis College students' food consumption patterns indicated low adherence to. We hope Perrotis College will consider these suggestions to inspire adherence to the Mediterranean diet amongst its students.

Chapter 2: Background

In this chapter, we describe the characteristics of the Mediterranean diet and its health benefits. Following, we identify the recent dietary shift away from the Mediterranean diet amongst younger generations within Greece. Later, we describe the negative effects of low adherence to the Mediterranean diet and factors that could be influencing food choices within younger generations in Greece. We conclude this chapter with exemplifying case studies that demonstrate the process of developing opportunities for nutritional improvement.

2.1 The Mediterranean Diet: Past, Present, and Implications

In the twentieth century, the Mediterranean diet was well established; however, recently there has been a dietary shift that has gained international attention (Dewey, 2018). This shift is what public health experts call a “nutrition transition” (Macdiarmid, 2016). In this section, we evaluate the components of the Mediterranean diet, the results of the dietary shift, and the specific reasons for the shift in order to understand what the “nutrition transition” means in the context of Greece.

2.1.1 The Mediterranean Diet

The Mediterranean diet is an idealized version of the traditional food consumed by people regionally located around the Mediterranean Sea (Altomare, 2013). The 1993 WHO publication celebrated the Mediterranean diet for its health benefits (Harvard T.H. Chan School of Public Health, 2018). Since then, it has become popularized globally and the origins have been further muddled (Altomare, 2013). While the people in the Mediterranean region have actively used elements of this diet for centuries due to its accessibility, the diet specifically referenced in the WHO publication was originally established in Crete, Greece between 1940 and 1970 (Sahyoun, 2016). During this time, the Mediterranean region was recovering from the disastrous effects of World War II (Trichopoulou, 2001). Although poverty was a major issue at this time, the citizens of Crete were still able to live a healthy lifestyle (Miller, 2012). Miller (2012) explained, “In the ’50s and ’60s the people, they were poor, but they were healthy. They were eating very good foods — the olive oil, the olives, the green leafy vegetables that are our treasure. But they were enforced in a way because of their poverty to use these things.”

The nutritional value of this dietary plan was second to none and offered an extensive list of health benefits (Altomare et al., 2013). The diet encourages a high consumption of fruits, vegetables, and fish. Additionally, this diet includes large amounts of monounsaturated fats (mostly from olive oil), legumes, nuts, seeds, and whole grains (Dontas, Zerefos, Panagiotakos, Vlachou & Valis, 2007). In moderation, fish and seafood are also consumed (Liou, 2010). The Mediterranean diet is rich in Omega-3 fatty acids due to its encouragement of nuts, legumes, and fish. Omega rich fatty acids are not naturally produced within the human body and must enter the body through food consumption in order to reduce heart disease and obtain its inflammatory and

brain function enhancing properties (American Heart Association, 2017; National Institutes of Health, 2018). Additionally, Smith (2018) has shown that following this dietary pattern can prevent the symptoms of obesity, reduce the risk of Alzheimer's and Parkinson's disease, and increase overall longevity. Historically, Greeks who followed the Mediterranean diet had low rates of chronic disease and the highest life expectancy rates in the Western world (Harvard T.H. Chan School of Public Health, 2018).

2.1.2 The “Nutrition Transition”

Certified dietitians and nutritionists speculate that economic growth and urbanization have altered Greek citizens' diets (Paravantes, 2012). This shift in dietary habits, called the “nutrition transition,” is a common occurrence when poor countries become prosperous and vice versa (Iversen, n.d.). The “nutrition transition” phenomenon consists of a series of changes in diet, physical activity, and health. Greece underwent rapid socioeconomic development during the late 1970s when it joined the European Union and experienced a Western type modernization (Hadjimichalis, 1987). As a result, there was a rapid dietary change from the Mediterranean diet to a more Westernized version, characterized by a large consumption of sweets, junk food, and sugary drinks (Tzotzas, 2011). Although Greeks continue to consume high levels of olive oil, fruits, and vegetables, the rise of processed foods has negated the benefits of the traditional diet. Dr. Joao Breda, head of WHO's European office, claimed that, “There is no Mediterranean diet anymore. Those who are close to the Mediterranean diet are the Swedish kids. The Mediterranean diet is gone and we need to recover it” (Boseley, 2018). As processed food and fast food have become more accessible, the traditional diet, established by the people of Crete, is becoming less prevalent among the Greeks (Papadaki and Evangelia, 2015).

The “nutrition transition” has influenced Greek citizens to make unhealthy choices that have lasting implications. In addition to consuming unhealthy amounts of salt, sugar, and fat, younger generations are not getting the necessary physical activity needed to balance out their unhealthy choices (Brehm, 2014). These unhealthy habits lead to chronic health problems, such as cardiovascular disease and high blood sugar, that can follow into adulthood (WHO, 2018). Heart disease has now become the leading cause of death in adults, and obesity has become a major health issue with type 2 diabetes affecting 10% of the population in Greece (Paravantes, 2012). The introduction of Western culture in Greece's time of economic prosperity allowed for the “nutrition transition” to quickly reinvent the Greek way of life with lasting implications.

2.2 Negative Effects of Low Adherence to the Mediterranean Diet

Low adherence to the Mediterranean diet can negatively affect physical, mental, and emotional well-being. In this section, we present an overview of existing research on the possible effects of low adherence to the Mediterranean diet, particularly amongst younger generations.

2.2.1 Physical Effects: Obesity

Low adherence to the Mediterranean diet can affect a person physically by contributing to weight gain. A person with abnormal or excessive fat accumulation that presents a risk to their health is obese (James, 2004). WHO (2016) reported that, globally, 650 million people fell under the medical criteria of this definition. Body mass index (BMI) is the universal measure for body fat that relates height and weight (Centers for Disease Control and Prevention, 2017). Most physicians consider any adult with a BMI greater than 30 to be obese (Mitchell, Catenacci, Wyatt, & Hill, 2011). In a meta-analysis of the relationship between adherence to the Mediterranean diet and obesity, 13 out of the 21 studies reported that adherence to the Mediterranean diet results in weight loss or reduced probability of becoming overweight or obese (Buckland, Bach, & Serra-Majem, 2008).

The prevalence of obesity in younger generations is growing at rates comparable to adults (Hales, Carroll, Fryar, & Ogden, 2017). In 2016, WHO found that 20.6% of children aged 12-19 years old, around the world, were obese. This epidemic has become Europe's biggest health problem and has become particularly prevalent in the Mediterranean region, including Greece (Wang and Lim, 2012). In 2012, Miller explained that obesity in nine-year-old Greek children had reached 40%. This statistic is a profound development because, for decades, people celebrated the diet of the Mediterranean region for its ability to contribute to a healthy lifestyle (Brill, 2009). Obesity within youth is particularly concerning as the lifestyle habits that individuals develop at a young age will shape their future tendencies (Rochman, 2011). These children and young adults are establishing unhealthy routines that will follow them into adulthood and expand not only their waistlines but their risk for weight-related diseases (Sahoo, Sahoo, Choudhury, Sofi, Kumar, & Bhadoria, 2015).

The negative effects of obesity can be debilitating. Obese individuals are more likely to express physical symptoms of heart disease, strokes, type 2 diabetes, and an inability to cope with sudden physical activity (Kopelman, 2007). Although physical measures define obesity, it can have profound effects on mental and emotional well-being as well. For example, Must (1999) claims that obese people, particularly women, are more prone to low confidence, and low self-esteem than their normal-weight peers and are subsequently "twice as likely to experience downward social and economic mobility." Obesity is a growing epidemic across the world that is limiting the quality of life for individuals in developed countries (Wang and Lim, 2012).

2.2.2 Mental and Emotional Effects: Depression

The most common form of depression, major depressive disorder, is generally characterized by feelings of sadness and disinterest in activities an individual once enjoyed (Parekh, 2017). According to the Anxiety and Depression Association of America (ADAA) (2018), 322 million worldwide live with depression. The negative effects of depression can hinder one's ability to carry out daily functions. An individual may experience several emotional

and mental symptoms such as chronic stress, anxiety, and low self-esteem (ADAA, 2018). Additionally, mental symptoms of depression can result in physical effects. For instance, Parekh (2017) lists the effects of depression as changes in appetite and weight.

Several studies indicate that diet can affect an individual's mental and emotional health including their vulnerability to depression (Selhub, 2015). The National Health Service (2018) reported those who adhere to the Mediterranean diet are 33% less likely to develop depression. Scientific analysis of the effects of the diet's main features supports this claim. The basis of the Mediterranean diet, as pictured in Figure 1, includes large consumptions of whole grains, fruits, and vegetables. In a study conducted on Canadian immigrants, those who consumed large amounts of these types of foods experienced less vulnerability to mood and anxiety disorders (Emerson & Carbert, 2018). Selhub (2015) explains how probiotic rich diets, such as the Mediterranean diet, allow the body to release higher levels of serotonin. In the human body, serotonin boosts mental outlook and relieves the body of anxiety and stress (Selhub, 2015). Therefore, the Mediterranean diet has the potential to prevent the chemical imbalances that associate with depression.

Younger generations are not adhering to the Mediterranean diet and are more vulnerable to negative mental effects, such as depression. Magklara (2015) states, "Although adolescents are often considered as a healthy population, they appear to be particularly vulnerable to depressive disorders." WHO describes that mental disorders are most commonly recognized amongst youth, and 70% of diagnoses occur in those under the age of 25 (Kutcher & Venn, 2008). At the start of adolescence, about 4-5% of younger generations are diagnosed with symptoms of depression (Magklara et al., 2015). By the end of adolescence, nearly 20% of the youth population experiences these symptoms (Magklara et al., 2015). Depression debilitates young generations globally; however, following a nutrient rich diet, such as the Mediterranean diet, can boost emotional and mental well-being.

2.3 Factors that Influence Food Culture in Greece

Food culture is composed of an individual's' food choices, social eating practices, and perceptions. In this section, we explain the external environmental influences of economics and convenience, family and gender roles, and nutrition education and advertisements on Greek food culture.

2.3.1 Economy and Convenience

Economic change is a contributing factor to the "nutrition transition" (Miller, 2012). Greece is currently suffering from a 19% unemployment rate and is facing a government debt of 178.6% of its gross domestic product (Eurostat, 2018). The pronounced shift in the financial state has altered what people are choosing to eat. Instead of components found in the "Mediterranean Diet Pyramid," people of Greece have been gravitating towards healthier,

processed options (Miller, 2012). Papathanasiou (2015) found that this is because Greeks believe the unhealthy options are cheaper than the fresh options that they used more commonly in the past. Since the beginning of the global recession in 2008, the percentage of households in Greece with children that are unable to afford chicken or fish has more than doubled (Kleanthous, et al., 2015).

The price of nutritious foods has subsequently increased, thus worsening the problem (Kleanthous, et al., 2015). Food price inflation during economic hardship is a common economic phenomenon, and the Greeks have been no exception. Parker-Pope (2017) studied a similar inflation pattern in depth in the United States. This study analyzed the cost of food at 370 different supermarkets and discovered that food options with little nutritional value cost \$1.76 per 1,000 calories while nutritious foods cost \$18.16 per 1,000 calories. These price patterns have become prevalent in Greece in recent years. Kleanthous (2015) related the price of food to the recession by stating, “Food price increases have been associated with reductions in the number of meals [Greeks eat] and [they are] consuming cheap food.” In order to survive on smaller paychecks, Greeks’ new diets have become calorically dense and low in nutritional value. Therefore, Greek consumers are gravitating towards the cheaper, less healthy options because they can feel fuller without spending as much (Karlen, 2008). Papathanasiou (2015) found evidence strongly suggesting that there is a valid cause and effect relationship between the “nutrition transition” and economic struggle.

In addition to price, the proximity of available foods must be considered when understanding people’s food choices. During an in-person interview in January 2019, a health professional reported that “proximity and availability” are the most important factors to consider when talking about influences of people’s food choices. Gebremariam (2017) further supports this claim by stating, “Availability and accessibility of foods are among the correlates most consistently associated with dietary behaviors among youth.” A study conducted by Privitera and Zuraikat (2014) analyzed the influence of proximity on food intake. The study used both apples and popcorn with two different participant pools. In the first pool, the researchers placed an apple within an arm's reach of each participant and the popcorn was placed 2 meters away. In the second pool, the researchers placed popcorn within an arm’s reach of each participant and the apple was placed 2 meters away. Even though participants rated popcorn as “more liked” than apples, the food that researchers placed closest to the participants was consumed most in both experimental groups. This study supports the idea that the food choices people make can be directly related to the food they can easily access.

2.3.2 Family and Gender Roles

As the economic climate in Greece has shifted, cultural and social norms have flexed, further encouraging the adoption of the “nutrition transition.” Family is an integral part of Greek dietary habits and the economic disparity of the economic crisis of 2008 has placed a strain on

these relationships (Harlan, 2018). Societal expectations have become less structured allowing for the disbandment of healthy habits (Shorto, 2012). The examination of how family dynamics have changed in recent years contributes to an understanding of how the “nutrition transition” may have influenced food culture.

The Greek way of life has depended upon a strong relationship between food and family (Jones, 2008). The typical Greek family followed a traditional model shaped by social customs rooted in the Greek Orthodox religion (Demos, 2009). Vlondaki (1980) described the classic family structure as dependent upon the principle of patriarchy reflected in traditional gender roles. The father acts as the sole breadwinner for the family while the mother cares for the children (Vlondaki, 1980). Women took on the status of a second-class citizen and were predominantly responsible for housework, which included meal preparation (Dedotsi, 2014).

However, during the recent economic shift, the Greek family structure and traditional gender roles began to change. Since the 1980s, increased employment in the tertiary sector, additional educational opportunities, and the improvement of public child and elderly care services have encouraged women’s participation in the workforce (Kambouri, 2013). The well-established expectations of the women’s “housewife” lifestyle were beginning to disappear as their labor presence escalated (Shorto, 2012). As the societal culture in Greece has begun to adapt and change with the economic circumstance, so has the prevalence of family meals. In multiple records, Greek individuals recall memories of home that are firmly rooted in the “odours familiar and much loved that comprise the collective gastronomic conscience of Greece” (Arouh, 2012). However, as the financial crisis and integration of women into the workforce has taken hold of Greece, people are straying away from the common traditions of food preparation. Citizens view cooking homemade meals as a “luxury” (Verivaki, 2012). Convenient and cost-effective alternatives have taken hold of the majority of households. Families are gravitating towards take-out pizza instead of classic home-made cuisine (Arouh, 2012). The inclination towards Western foods does not fit within the expectations previously set forth by the traditional Greek ways. As a consequence, Greek individuals are reducing their adherence to the Mediterranean diet as a whole (Papadaki and Evangelia, 2015).

2.3.3 Nutritional Education and Advertisements

Young people acquire information about nutrition in two ways: formal education and advertising media (Tarabashkino, Quester, & Crouch, 2016). Tarabashkino, Quester, & Crouch (2016) reported a positive correlation between nutritional knowledge and the nutritional intake of younger generations. Their studies showed that those who receive formal education in nutrition are more likely to have better judgement on the nutritional value of various foods. However, younger generations’ understanding of nutrition is susceptible to manipulation by daily interactions with advertising media (Ferguson, Munoz, & Medrano, 2012).

Advertising media targeted towards young people encourages them to make less nutritious food choices (Ferguson, Munoz, & Medrano, 2012). In 2005, 178.5 million euros were allotted to advertising food through television, magazine, and newspaper marketing in Greece (Batrinou & Kenellou, 2009). Batrinou and Kenellou (2009) state that advertising companies utilized 70% of this budget to market dairy products and sugary substances. Their study discovered that advertising companies dedicated a majority of the dairy product advertising for adults to yogurt, a product praised for its probiotic properties. However, the television stations targeting younger generations advertised dairy products with higher amounts of sugar, such as chocolate milk, children's yogurts, and ice cream. Nearly 27% of all advertisements endorse foods high in sugar and red meat (Batrinou & Kenellou, 2009). This is nine times larger than the "Mediterranean Diet Pyramid" recommends. In addition, foods that the "Mediterranean Diet Pyramid" encourages, such as whole grains, fruits, and vegetables, only received 9% of all media advertising. Batrinou and Kenellou (2009) demonstrated that advertisements have a large impact on young people's diets because children actively choose food options that are regularly advertised in media compared to food options that are not. According to Lioutas & Tzimitra-Kalogianni (2014), "Children who have little understanding of the persuasive intent of advertising rate advertised foods as healthier and more nutritious. The frequency of unhealthy food consumption is influenced by the entertaining dimension of advertising and the level of the motivational arousal after children's exposure to food advertisements."

Children are susceptible to influencing advertising strategies due to children's "defenseless" nature against the utilization of marketing language (Ferguson, Munoz, & Medrano, 2012). However, the prevalence of nutrition education courses in the Greek school system is currently limited (Tarabashkino, Quester, & Crouch, 2016). Schools do not expose students to material regarding the intentions of food advertising and how to create their own judgements on the nutritional value of foods. According to an email interview conducted with a physical education instructor in Thessaloniki, Greece in March 2019, "The Ministry of Education in Greece does not officially include any type of nutrition courses in the k-12 educational curriculum. Only very recently has there been a health course introduction in some of the high school classes..." Younger generations in Greece are not receiving the formal nutrition education that would allow them to evaluate food products. Therefore, advertising influences students' food choices and can encourage them to stray away from the Mediterranean diet.

2.4 Identifying and Utilizing Opportunities for Nutritional Improvement

Through a discussion of the "nutrition transition" and the factors that influence food culture, we highlighted the need for dietary health reform in Greece. In this section, we analyze past initiatives in order to understand effective methods for identifying and utilizing opportunities for nutritional improvement.

2.4.1 Improving Accessibility: A Case Study

A health professional reported in an in-person interview in January 2019 that most health improvement plans are rooted in improving a community's accessibility to nutritious foods. In their own community food program, the health professional attempted to incorporate a farmer's market program into a local community so that healthy foods would be available for purchase at a reduced cost. This program initially failed because it was solely based upon the considerations of only one opportunity, accessibility. It neglected the importance of evaluating the community's culture before attempting to implement a solution. The health professional and her company used similar strategies that had been successful amongst Caucasian populations. However, the community was comprised of a large Latino demographic. The advertisements chosen were not well perceived amongst the Latino community, as the program came off as being costly. This health representative noticed that Latino individuals often engaged more with the farmer's market when the stand was packing up. This was because as the produce was being loaded into the back of a van for transport, it reminded the Latinos of fish being sold from the back of a truck, a motif this community associated with a good deal. This cultural awareness inspired the health professional to try a different approach that catered to the intended audience. The program altered its main campaign message to convey that fresh produce was cheaper.

The community food program identified an opportunity to improve the nutritional content of families' meals by assuming that the main obstacle for food insecurity was price and proximity. A study conducted by Drewnowski, Aggarwal, Hurvitz, Monsivais & Moudon (2012) supports this claim and draws the conclusion that increasing physical and economic access to healthy foods encourages people to make healthier food choices. However, in order to effectively implement an initiative, health reformers must also consider cross-cultural factors. In this instance, the health professional had to also consider the existing perceptions the community had towards local food marketing. Therefore, once the health professional developed a marketing scheme addressing all three influential factors, they were able to produce opportunities for nutritional improvement.

2.4.2 Addressing Misconceptions: A Case Study

Chef Jamie Oliver's recent efforts created an opportunity to address misconceptions and increase healthy food consumption. In conjunction with Tesco supermarkets, Oliver had identified that British consumers were making unhealthy choices because they thought that healthy foods were considerably more expensive than processed, fast foods. This is a common misconception that he saw as an opportunity to improve the community's behavior. Jamie Oliver's campaign addressed this misconception by demonstrating that a healthy grocery cart can cost 12% less than an unhealthy one (Askew, 2018). His campaign expanded his initiative to address additional limitations that influenced food choices. In 2018, Askew found that 70% of people want to make healthy lifestyle decisions but need practical advice that provides them with inspiration to make the change. Oliver proceeded with his campaign by creating simple recipes

containing Tesco products for consumers that were cost effective and healthy. Oliver demonstrated that cheap, healthy meals are easily reproducible, thereby giving the consumers the inspiration and means to make positive changes in their dietary behaviors.

Oliver created a strategy for nutritional improvement by identifying the audience's needs and providing the audience with the necessary tools and skills for positive behavioral change. He isolated the problem at hand and created a single message that he believed could impose positive change. Oliver made sure to keep the message simple, inspiring, and obtainable—three factors that engaged this audience. This case study exemplifies the use of understanding the audience's needs in order to develop an opportunity that inspires the audience to make a change.

Chapter 3: Methods

The goal of this project was to understand Perrotis College students' food culture and perceptions of the Mediterranean diet in order to identify opportunities for students to better adhere to the Mediterranean diet. We identified research objectives that enabled us to investigate Perrotis College students' food culture and recommend beneficial characteristics of the Mediterranean diet. In this chapter, we elaborate upon the methods used to achieve the following research objectives:

1. Gain insight into students' food choices, social eating practices, and perceptions of the Mediterranean diet at Perrotis College
2. Determine opportunities for students to improve their dietary behaviors based upon the food choices and social eating practices we identified as the factors that could associate with poor adherence to the Mediterranean diet at Perrotis College
3. Gather feedback from the Perrotis College community in order to suggest strategies for improved adherence to the Mediterranean diet

3.1 Objective 1: Gain Insight into Students' Food Culture and Perceptions of the Mediterranean Diet

Our first objective was to gain insight into students' food choices, social eating practices, and perceptions of the Mediterranean diet at Perrotis College. We sought to compare the Mediterranean diet to the habits and perceptions of Perrotis College students. The following research questions addressed this objective:

1. How do Perrotis College students view their own diet? The Mediterranean diet?
2. How do students' self-reported diets compare with the Mediterranean diet?
3. What food sources do Perrotis College students have access to?
4. Why have Perrotis College students adopted the dietary habits they practice?

These research questions aided us in determining the components of the Mediterranean diet students have low adherence to. In this section, we describe several methods used in order to answer these research questions.

3.1.1 Assessing Food Availability for Perrotis College Students

By cataloging various local establishments accessible to Perrotis College students, we analyzed the factors that influence students to frequent these establishments, such as cost, location, and types of food available. Perrotis College students recommended the places we visited: open-air markets, grocery stores, coffee shops, tavernas, and local restaurants. Additionally, we analyzed food options available on the Perrotis College campus, including the cafeteria, campus store, and vending machine. We cataloged 15 recommended food establishments to understand the factors students discussed in interviews, such as those that encourage or dissuade the students from visiting a nearby location.

From the information gathered at each location, we composed a chart detailing the characteristics of each establishment. Additionally, we provided a written description of each cataloged location, as provided in Appendix A. This technique allowed for an analysis of the different locations where Perrotis College students are able to purchase food.

This method had limitations. Our analysis depended upon our ability to investigate the foods available at each establishment, including their ingredients and price. However, our team does not speak the native language and are unfamiliar with the traditional dishes. This limitation made directly comparing the food options available at each establishment difficult.

3.1.2 Conducting Interviews with College Students

We conducted 19 interviews with college students in order to understand four main topics: food choices and influencing factors of these decisions, social eating practices, perceptions of their own diets and the Mediterranean diet, and opinions on the “nutrition transition” in Greece. The interview questions focused on the four main themes previously discussed, which can be found in Appendix B.

We conducted interviews with three populations: Perrotis College undergraduate students, Perrotis College graduate students, and college students from the Thessaloniki area. We obtained Perrotis College interviewees through establishing relationships. We interacted with Perrotis College students in the residential housing complex and classrooms. We contacted all Perrotis College interviewees via Facebook, a common method of communication. In these interactions, the purpose of the study was explicitly explained to the participant, and dates and times were established for each individual interview. The process of conducting an interview followed the informed consent protocols detailed in Appendix C and Appendix C.1. Interviews with students within the Thessaloniki region occurred informally at coffee shops and restaurants.

We analyzed these student interviews through coding (Bulled and Hersh, 2017). Our analysis of the interviews began by separating the main points of each interview into a chart labeled with our four main topics, as seen in Appendix D. Creating this chart allowed us to distinguish the different ideas and topics discussed with each interviewee. In analyzing all of the interviews collectively, we identified prevalent themes or ideas that were readily brought up within each topic area. We omitted any outliers, or topics mentioned infrequently, from the data. This process allowed us to develop a representative understanding of participants’ behaviors and thoughts regarding their diets.

Although this method allowed us to obtain data regarding food choices, social eating practices, and perceptions of the Mediterranean diet, it posed some challenges and limitations. While conducting the interviews, it was evident there was a language barrier between the investigators and the participants. In some situations, the process required a translator, which

made the interview longer and less straightforward. This may have altered participant responses, and we may have lost the implicit meanings in translation. Additionally, in situations where participants did not allow us to record the interviews, we were more likely to miss important themes and quotes for data analysis.

3.1.3 Differentiating Students' Perceptions of Their Own Diets and the Mediterranean Diet

Free listing is a structured method used to collect impressions and perceptions (Bulled and Hersh, 2017). We used free listing activities to understand Perrotis College students' perceptions of their self-reported diets and the Mediterranean diet. We asked thirty willing participants to create free lists regarding two ideas: words/phrases associated with their diet, and words/phrases associated with the Mediterranean diet. In order to do this, a pair of investigators approached small groups of Perrotis College students sitting in public spaces. If the students agreed to participate, we followed informed consent protocols, as detailed in Appendix C.

In order to analyze the lists, we used Anthropac, a free listing analysis software, to calculate frequency. First, we used the text formatting software, Notepad, to enter each participant and their respective responses verbatim. Once we entered each participant's data into the software, we copied it into Anthropac. We analyzed the data by "items," which sorted the data as a whole rather than comparing each respondent to the rest of the group. The analysis indicated how often a specific word appeared within the data set. Once we analyzed the data for both topics, we compiled the data into bar graphs that allowed us to easily compare the two sets of data.

A limitation of this method was the possibility of participant bias. At the beginning of the study, we stated the intentions and goals of our investigation. This may have suggested to students that we were looking for themes to which they may have changed their responses to match. Therefore, the accuracy of students' representation of their own diet could be questionable because we were unsure if the student truthfully reported their exact diet.

3.1.4 Understanding Students' Actual Food Consumption Choices

Food diaries can be beneficial for understanding students' food choices and social eating behaviors over a longer time frame (Kafatos, 2000). In order to counter the limitations discussed in Chapter 3.1.3, we used food diaries in an attempt to assess students' actual dietary habits. In this process, we asked students to document who they ate with, what they ate, where they ate, when they ate, and if there was a reason why they ate (hungry, social purpose, celebration, etc.) over a course of three days. Asking students to document who they ate with, where they ate, and when they ate gave us indications of typical Perrotis College students' social eating practices. We additionally asked students to detail why they ate in order to provide us with insight on whether or not they were eating for physical purposes (i.e. hunger), social purposes (i.e. celebrations), or mental coping mechanisms (i.e. stress eating caused by studying for an exam).

This question assessed whether or not the meals detailed by each participant accurately represented their typical diets. We asked participants from two Perrotis College courses to complete this task. Dr. Tryfon Adamidis introduced us to each class where we then followed informed consent protocols, as detailed in Appendix C, to carry out the data collection method.

We analyzed food diaries using two techniques. First, we used Anthropac, the same software used to analyze free lists detailed in Chapter 3.1.3, which allowed us to evaluate which foods were most frequently consumed by students and construct bar graphs representing the data. Following this technique, we analyzed each food diary using a Mediterranean diet adherence criteria list, as shown in Appendix E. The 13-item criteria list, adapted from similar studies, measured and assessed participants' adherence to the Mediterranean diet (Martínez-González, 2012; Trichopoulou, Costacou, Bamia, & Trichopoulos, 2003). The scale ranged from 0-13 points, and we filed each participant's food diary into one of three categories of adherence to the Mediterranean diet. Low adherence corresponded to a score less than or equal to 5 points; moderate adherence corresponded to a score in the range of 6 to 9 points; high adherence corresponded to a score greater than 9 points.

The largest challenge with this method was encouraging students to completely and honestly fill out the diaries. There was no explicit benefit for the students to complete the food diaries and therefore, some were reluctant to participate. Also, some students who did choose to participate had forgotten they were keeping a food diary, limiting our data pool to fifteen completed diaries. Students may have also omitted or changed their responses in order to better match what they perceived as a healthy diet. This limitation could have skewed our data sets. Of the data collected, we faced additional challenges in understanding some of the meals the participants were eating when students were vague in their descriptions.

3.1.5 Integrative Analysis

We combined the aforementioned methods through an integrative analysis in order to understand the food culture of Perrotis College students. The previous methods contributed to our understanding of students' food choices, social eating practices, and perceptions of their diet and the Mediterranean diet. We created two visual diagrams in order to collectively analyze the data to identify key findings.

The first integrative analysis tool was a "Food Accessibility Map." This map, as pictured in Appendix F, incorporated results from interviews and free lists as it compared the cataloged locations that students regularly frequent (Sakai, 2008). It assessed each establishment for the attributes that students claim to have influenced their food choices, such as cost, accessibility, and types of foods available. The map was made in reference to the public bus line, from Thermi through downtown Thessaloniki, in order to show the accessibility of food to Perrotis College students specifically. We identified each location with a photo and symbols to represent factors

of interest. For example, we included relative prices by a measure of euro signs (€). We designated meals with an average cost between 0-5€ with one €, meals between 5-10€ with two €, and meals greater than 10€ with three €. This technique allowed for a comparison of the different places Perrotis College students are receiving their food.

The second integrative analysis tool was a web diagram. Adapted from a tree diagram, this tool allowed us to connect the findings of each method to draw conclusions on overarching themes to direct our findings (Burch, 2011). As pictured in Appendix G, the center of this diagram contains the main theme of the investigation, “Perrotis College Students’ Food Culture.” We visually separated this topic into the three components of food culture: food choices, social eating practices, and perceptions. We then visually represented the results obtained from the aforementioned investigations as branches stemming off of the main concepts. We analyzed the web diagram by the insertion of arrows that connected multiple branches in order to show their relationship. We sought to identify areas in common between students’ self-reported behaviors and their perceptions. Additionally, we used the arrows to show similarities between the Mediterranean diet and students’ own diets. The web diagram allowed us to visually analyze other methods’ results in order to identify major themes and findings.

3.2 Objective 2: Determine Opportunities for Improved Adherence to the Mediterranean Diet

Our second objective was to determine opportunities for students to improve their dietary behaviors. We based these opportunities upon the Perrotis College students’ food choices, social eating practices, and perceptions we identified as factors that could associate with poor adherence to the Mediterranean diet. In order to fulfill this objective, we first asked several questions to direct our strategy suggestions. These research questions include:

1. What specific changes in students’ diets should be encouraged?
2. What factors may limit or impede positive change in students’ diets?
3. What opportunities for improved nutrition can a proposed strategy take advantage of?

These research questions allowed us to identify opportunities for change within students’ diets, which then directed the suggestion of several strategies that targeted students’ low adherence to the Mediterranean diet and methods for improving their adherence.

In order to develop strategies that would inspire positive change within students’ dietary behaviors, we first identified areas within their diets that showed low adherence to the Mediterranean diet. We accomplished this by examining the integrative analysis diagrams. Within these analyses, we compared students’ food choices, social eating practices, and perceptions of the Mediterranean diet to the actual contents of the Mediterranean diet. This comparison allowed us to recognize areas where Perrotis College students could improve upon their adherence to the Mediterranean diet by analyzing the factors influencing their current food choices. We then met with a marketing professional on campus in order to ascertain the

strategies used successfully in the past at Perrotis College for alternative promotions. This discussion directed our development of a pool of suggestions for inspiring change within the students' diets.

The validity of the suggestion pool was dependent upon the views of the marketing professional we met with. The pool was limited as it was only influenced by a singular person. Therefore, the marketing professional's opinions and perceptions had the potential to bias our resulting understanding of strategies that may be successful at Perrotis College.

3.3 Objective 3: Analyze Opportunities for Improvement

Our final objective was to gather feedback from the Perrotis College community in order to suggest strategies for improved adherence to the Mediterranean diet. In order to accomplish this objective, we gathered data regarding the students' responses to different types of strategies. Within this objective, we addressed the following research questions:

1. Would students prefer interactive events or informational media?
2. What strategies will the Perrotis College community most likely participate in?
3. What factors encourage participation in planned events at Perrotis College?

These research questions allowed us to obtain feedback on the proposed strategies. In this section, we describe our method of surveying that contributed to the optimization of the suggestions.

In order to obtain feedback on the effectiveness of the proposed strategies, we created a Google Survey that we distributed to all Perrotis College students. The survey began with a short introduction following informed consent protocols, detailed in Appendix C. Next, we offered five promotional strategies relating to the Mediterranean diet and asked the participants to rank them from least likely to participate to most likely to participate. Following the rankings, we asked students to list factors that helped them decide which opportunity they would like to participate in the most. The survey concluded by asking the participants how many euros they would be willing to spend on an event that promotes the Mediterranean diet. Following the completion of the survey, we analyzed participant responses, using the charts provided by the Google Survey application, in order to assess which strategies students would partake in if implemented at Perrotis College.

The effectiveness of this method depended upon students' honesty when completing the survey. Due to the nature of the survey, we had no way of discerning how accurately students' responses reflected their opinions or if they would actually partake in the strategies if implemented by Perrotis College. Additionally, due to our small data pool of 16 completed surveys, the responses may not have been representative of the Perrotis College community. Therefore, these limitations inhibited the validity of the final suggestions.

Chapter 4: Results and Analysis

In this chapter, we begin by presenting the perceptions of the Mediterranean diet among the Perrotis College students who participated in this study. We then address aspects of the Mediterranean diet that these students did not adhere to. Following this, we assess factors that are currently influencing the students' food choices. We used these findings as a basis for envisioning opportunities for Perrotis College to encourage aspects of the Mediterranean diet.

4.1 Students' Knowledge of the Mediterranean Diet

Study participants exhibited an accurate understanding of the Mediterranean diet, as well as some of its health benefits. In this section, we share findings from free listing activities and interviews to characterize student perceptions.

Students indicated an accurate knowledge of the Mediterranean diet contents. As depicted in Figure 2, the most commonly associated words students listed describing the Mediterranean diet were olive oil (60%), vegetables (53%), fruit (47%), fish (47%), and feta cheese (47%).

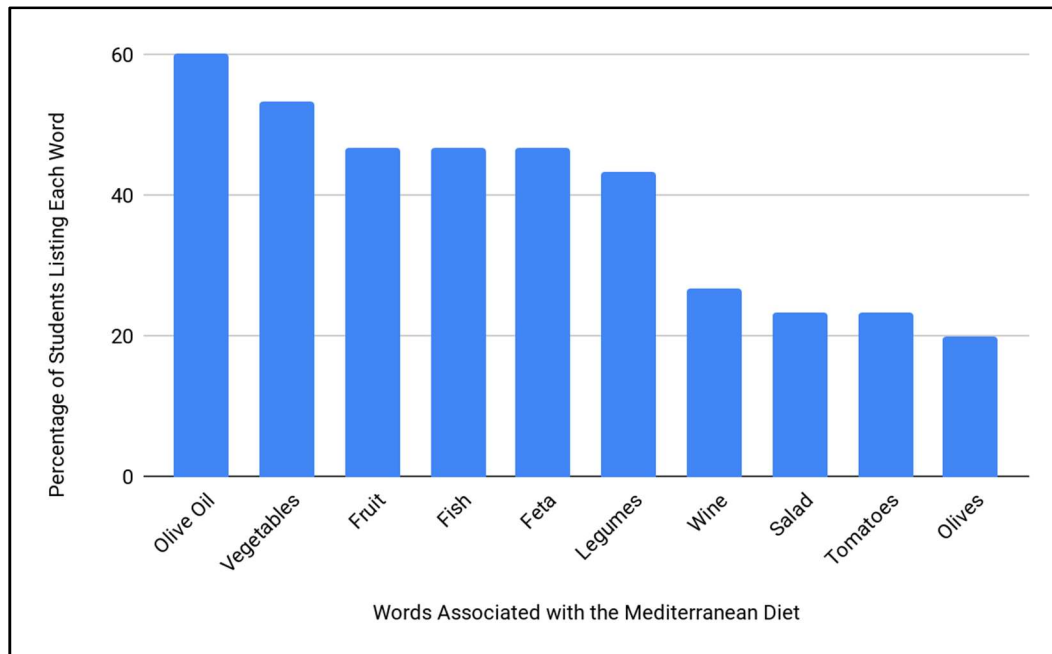


Figure 2: Perrotis College Students' Perceptions of the Mediterranean Diet (n=30)
For example, in 60% of the free lists, students associated the word "olive oil" with the Mediterranean diet.

According to the “Mediterranean Diet Pyramid,” as shown in Figure 1, people should consume olive oil, vegetables, and fruit daily, while people should consume fish two to three times per week (LifeVantage, 2016). Therefore, the top four words students associated with the Mediterranean diet are amongst those that the “Mediterranean Diet Pyramid” encourages. However, students also associated the word “feta” with this diet. The “Mediterranean Diet Pyramid” encourages people to consume cheese, at most, every other day. Through discussion with a food science professor, we hypothesize this misconception may be because students associate feta cheese with traditional Greek dishes in which it is a memorable ingredient; such as Greek salad, spanakopita, and tirokafteri.

Some students showed awareness of the health benefits of the Mediterranean diet. Within free listing activities and interviews, student participants explicitly noted that the Mediterranean diet is healthy and that their own diets are, comparatively, unhealthy. Students listed positive words such as “complete” and “beneficial” in reference to the Mediterranean diet. This suggests that students understand that the Mediterranean diet is a healthy diet. However, there was variation in the amount of specific details pertaining to the diet’s health benefits that students could elaborate upon. Some students expressed an in-depth knowledge of more specific benefits. For example, in an in-person interview, two Perrotis College students discussed that they consider the Mediterranean diet to be very healthy and should be followed by those experiencing heart problems. They further explained that the Mediterranean diet “[consists of] a lot of unsaturated fats, which in contrast with saturated fats that are found in animal products, reduce heart disease...unsaturated and polyunsaturated fats don’t have the cholesterol [that] blocks the veins and causes heart disease.” However, other free lists and interviews were vague and limited in their mentions of specific benefits. A physical education instructor at the college suggested that this discrepancy is most likely due to the limited requirements for nutrition education courses in primary education programs. These responses suggest that students are aware that the Mediterranean diet offers health benefits but lack an in-depth understanding of how or why.

4.2 Students’ Adherence to the Mediterranean Diet

Despite understanding the characteristics of the Mediterranean diet, student participants lacked adherence to the diet. According to the food diaries, on average, students scored a 33% adherence to the Mediterranean diet using the Mediterranean diet adherence scale found in Appendix E. Below, we share findings from free listing activities, food diaries, and interviews that demonstrate areas in the students’ diets that have led to this low adherence.

Students reported a higher consumption of meat than recommended by the Mediterranean diet. Meat consumption is specifically indicative of low adherence to the Mediterranean diet, as shown by the adherence scale found in Appendix E. Most of the restaurants cataloged primarily sold meat, indicating that it is easily accessible to Perrotis

College students. Also, as depicted in Figure 3, “meat” was the most commonly-listed word with 63% of students listing this word to describe their self-reported diets in the free listing activities. Additionally, 11 out of the 15 food diary participants consumed meat at least two times per three days. Figure 4 illustrates that 18% of all the meals students ate collectively in three days included meat. This directly contradicts the “Mediterranean Diet Pyramid,” which recommends that people consume red meat only three to four times per month (LifeVantage, 2016).

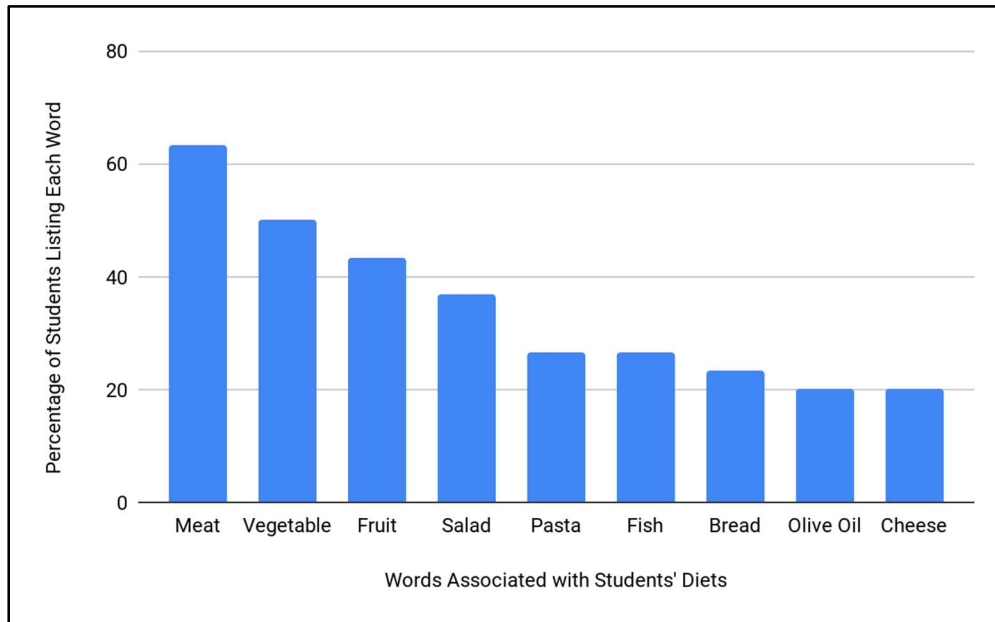


Figure 3: Perrotis College Students’ Perceptions of Their Own Diets (n=30)
 For example, in 63% of the free lists, students associated the word “meat” with their diets.

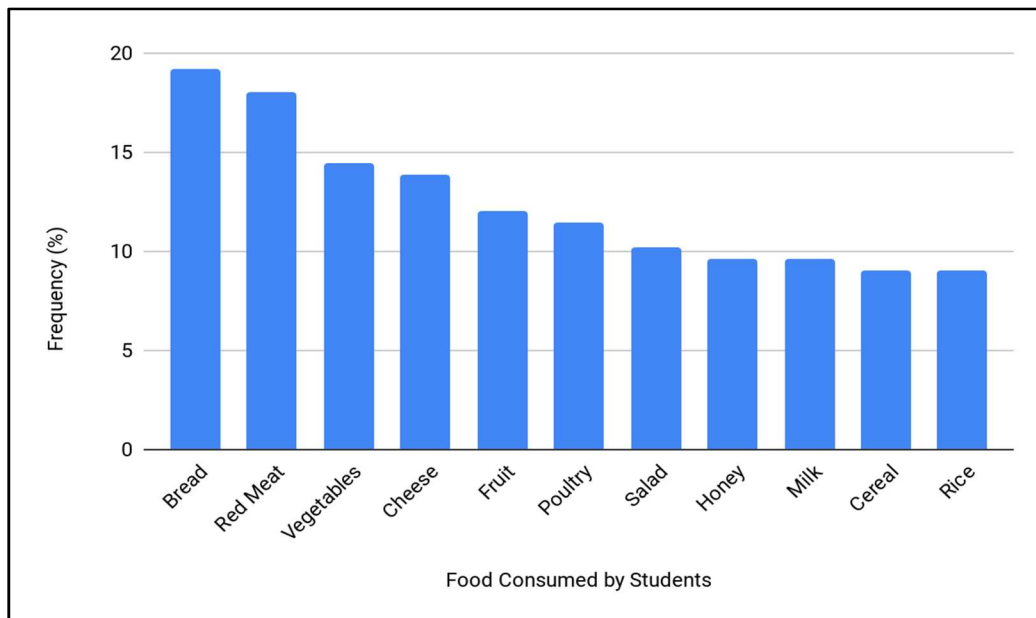


Figure 4: Relative Percentage of Food Types Consumed Over 3 Day Period (n=15)
 For example, 19% of all student meals included bread.

Fast food is a significant element of students' diets. Nearly all student descriptions of their own diet included gyros, souvlaki, pizza, and other typical fast food items. Over 73% of interview participants mentioned that they order from fast food restaurants on a weekly basis. Whole grains and a plant-based profile define the Mediterranean diet. However, students described the fast food they consumed as processed, meat-oriented, and fried in oils heavier than olive oil. Therefore, Perrotis College students' regular consumption of fast food correlates with low adherence to the Mediterranean diet.

Students reported frequent consumption of pastries and sweets. Interviews with students indicated that they frequently consumed pastries, such as spanakopita and bougatsa, and sweets, such as chocolate, sodas, and candy. However, these items are not a part of the Mediterranean diet due to their low nutritional value and high sugar content, as conveyed in the adherence scale shown in Appendix E, which encourages a low consumption of pastries and commercial sweets. In an in-person interview, one student emphasized the large consumption of sweets on campus, “[Perrotis College has] a very nice bakery...Every day, at least once, [students buy some sort of pastry or sweet].” This trend is also supported by the results of the integrative analysis of the “Food Accessibility Map”. The map demonstrated that sweets are easily accessible at all of the locations that students frequent, particularly on and near the Perrotis College campus. These findings indicate that sweets are a large component of Perrotis College students' food culture.

4.3 Factors that Influence Daily Food Choices

Cost, convenience, social factors, cafeteria offerings, and available resources appear to influence students' food choices. In this section, we share findings from catalog entries, interviews, free listing activities, food diaries, and integrative analysis diagrams in order to characterize these influential factors.

Cost is a major influence on students' food choices. Students reported that money influenced where and what they ate. This factor became visually clear in the integrative analysis of the “Food Accessibility Map,” as shown in Appendix F. The locations of the establishments students frequent, as referenced in interviews and food diaries, varied widely in style and offerings. However, all had a price range less than 10€, indicating that they were relatively inexpensive. This indicates that price is a priority to students when choosing where, with whom, and what they consume. This trend is further demonstrated through the integrative analysis of the web diagram, as shown in Appendix G. The relationships between the results, as represented by arrows, are primarily relating to phrases that reference money or cost. For example, as previously mentioned, a common food choice of students is fast food. Students exhibited this trend through interviews and food diaries when students mentioned ordering food using the eFood app and going out to eat with their friends. In both cases, students deemed fast food to be the least expensive option which therefore enticed them to choose it. Additionally, through cataloging, we

found a salad to be over two times as expensive as a gyro. The combinations of these integrative analyses indicate that money is a motivating factor that influences what students decide to eat.

Convenience is an important influence on students' diets. Interview responses indicated that students regularly choose to purchase ready-made food from easily accessible locations. Students explained that where and what they eat depends upon what is nearby and what they can get quickly. Food delivery via the eFood app was frequently mentioned as a popular choice because most of it will take less than an hour to arrive at the front gate of Perrotis College, an easily accessible point for students. The integrative analysis of the “Food Accessibility Map,” as shown in Appendix G, also visually shows this trend in preference. The majority of locations students reported going to most often were either on campus or in walking distance to campus. The locations farther away from campus were still easily accessible via the 66 and 10 bus lines. This indicates that students consider their ability to access different locations as important influencing factors to their food choices.

Students also reported the influence of convenience when discussing the types of meals they consume when they do not eat out. Residential students were most heavily influenced by the difficulty of cooking for themselves. The dorms do not allow for cooking tools, such as hot plates or microwaves. Students explained in interviews that not having access to a kitchen prevented them from preparing home-cooked meals. Food diaries reflected this as all meals of residential students were either pre-prepared, from the cafeteria, or did not require cooking. Commuting students had more freedom to cook; however, convenience still strongly influenced what they ate at home. They explained that they did not have the time to prepare well-balanced meals that were common in their homes growing up. They prioritized the amount of time the meal would take to prepare over its quality or nutritional value. One interview subject reported that on days when she spent more time away from her room, she would depend on chocolate for additional energy instead of full well-rounded meals. Another interview subject explained that she was aware she was not eating a well-balanced meal when choosing to eat only protein and grains, but these foods are the easiest for her to prepare. Convenience motivated these decisions and hence influenced their food choices.

Students eat differently at school than they do at home. In interviews, students emphasized that there is a large difference between the food they eat when at home and while at college. At home, mothers prepared nutritious and home cooked meals. Participants described these meals as well-rounded and following the “Mediterranean Diet Pyramid.” One student claimed that “[The Mediterranean diet] was something that I followed since I was a kid.” However, students explained that these meals require hours to prepare. Also, the traditional recipes are only available in proportions fit for serving an entire family. Therefore, students reported that even if they had the resources and tools to create the meals from home; they would not because it does not fit into their current lifestyle. Participants further discussed that they

believe that the college environment does not provide students with equivalent nutritious options as they would eat at home. According to an in-person interview with a Student Life Services official from Perrotis College, despite being located on a farm, Perrotis College students do not have regular access to the produce grown at the American Farm School. Student interviews suggested that this is different from their home environment, where they felt they had more access to fresh, locally grown produce at a reduced cost on a regular basis. When asked about the utilization of open-air markets for fresh produce in surrounding areas, such as Thessaloniki and Thermi, students reported reluctance at the distance they would have to travel to get there. They acknowledged that these were options; however, as one student reported, “If I find myself accidentally at an open-air market I will [buy groceries there], I prefer it, but it’s not on my program, so... I go to grocery stores.” These interview responses illustrate that students demonstrate a higher adherence to the Mediterranean diet at home than what they currently exhibit.

Students indicated that their peers heavily influence their food choices. Participants acknowledged that they were heavily influenced by their friends’ behaviors. All interviewees mentioned that they rarely eat alone. One Perrotis College student reported, “I prefer [to eat] alone, but here [it] is something you cannot avoid... At lunchtime,... I cannot find the time to eat alone.” Even when not eating at the cafeteria, participants mentioned choosing where to eat based upon preferences of the group they were with. As previously mentioned, students regularly utilize the eFood app. This tool encourages large groups of people to eat together as each location has a minimum amount the user must spend for the food delivery. Therefore, students will order together which will directly influence the type of food they buy as it becomes a group decision. This behavior applies to going out to restaurants as well. One student explained that if a majority of their friends wanted to go out to a fast food restaurant, but they were in the mood for something healthier, they would still go and eat with the large group. Peer influence is a significant factor that plays a role when students are deciding what they eat. This behavior corresponds to the Mediterranean diet social eating practices they were raised on. As previously mentioned, at home, students eat large meals with their families in accordance with the base level of the “Mediterranean Diet Pyramid”, as shown in Figure 1. While these social eating habits encourage adherence to the Mediterranean diet at home, at school it may inhibit adherence.

The cafeteria’s offerings limit students’ ability to adhere to the Mediterranean diet. Using the adherence scale found in Appendix 5, we analyzed the lunch options provided by the Perrotis College cafeteria. Over a course of three days, the Perrotis College cafeteria’s offerings received a 23% Mediterranean diet adherence score. Despite the cafeteria food having low adherence to the Mediterranean diet, students still consumed cafeteria lunches because it is the only meal offered to them as part of their residential tuition. Students named this as being the primary reason, and sometimes the only reason, why they would choose to eat there daily. Many

students claimed that the Perrotis College cafeteria's offerings focused on quantity over quality in the food served. One second-year student explained, "lunch is a problem... it's too oil based... but I will eat it...because... I believe I paid I will eat it." Students echoed the belief that they should consume the cafeteria lunch because it is already paid for through their tuition, across all interviews of residential students. These interviews indicated that the foods offered by the cafeteria influence their adherence to the Mediterranean diet. Students implied that they will eat whatever the cafeteria serves, even if they do not think it is beneficial to their health.

Access to resources influences students' food choices. Undergraduate student interviewees reported that they believe their diet is less healthy than the Mediterranean diet while at school. They attributed this to the limited food choices they have on campus because they lack access to a kitchen and have limited free time. Interview subjects reported that once they graduate, they will have the time and resources to make changes to their diet. One third-year student stated, "When I leave [Perrotis College] I believe I will follow a more healthier diet... I'm going to follow some of the foods from the Mediterranean diet." Interviews with Perrotis College graduate students, and university students from the Thessaloniki region confirmed younger students' claims. We conducted five interviews with university students from the Thessaloniki region, all of which involved students that were fourth year or older. These interview subjects reported that they had all individually changed their diet after their third year of college. One interviewee specifically mentioned that when she turned 22, she decided to begin dieting. She began preparing her meals at the beginning of the week and stopped eating meat, going out for fast food, and eating dessert regularly. These changes improved her adherence to the Mediterranean diet. She attributed this ability to make a change to her acquisition of resources, such as money from a part-time job she was able to obtain, a larger apartment with a full kitchen, and freedom in choosing the times of her classes. Perrotis College graduate students echoed this belief in interviews. One interview subject described how having access to a car on campus helped her improve her diet. She stated, "This year I've got a car with me so it makes things easier because other than that the past three-four years [I was] quite limited because supermarkets are far and [I had to] spend a few hours to organize the whole thing of going shopping and then coming back. So [residential Perrotis College students] ... are pretty limited." These testimonials illustrate the influence of resources on students' diets. Limited resources inhibit the encouragement of healthier diets for young individuals as it takes time to acquire opportunities to improve their diet.

4.4 Limitations to the Findings

Our study may not be representative of the Perrotis College student population as a whole. We gathered the study population through convenience sampling. We chose all participants based on accessibility and willingness to participate. The majority of our participants were students who chose to sit outside of the cafeteria during their breaks and at lunch because they were easy to approach. However, this potentially over-represented students who are

residents at the college because the commuter students tended not to stay on campus during their breaks or eat lunch at the cafeteria. Also, in order to acquire more data, we often asked individuals within big groups to participate. This has the potential to over-represent some social sub-groups of Perrotis College students. Our results could have become skewed because individuals within a social group are likely to have a similar food culture. Additionally, there was an overlap in the data because, for convenience, the same individuals who participated in interviews also completed free lists or food diaries. This led to a smaller population size than preferred. Finally, we administered food diaries to our sponsor's first year food science class and the second-year students' statistics class. Thus, this convenience sample did not represent third year students and had a limited representation of students who did not major in food science.

Demographic factors likely influenced the findings of this study. Our studies did not ask any identifying information about its participants. Students were never asked about their age (knowing that they were over 18), location of home, family, personal income, or any other specific information about their lifestyle that could possibly identify them or make them uncomfortable. However, these details could influence their food choices and adherence to the Mediterranean diet. For example, as demonstrated through the eFood app, healthier food is generally more expensive in Greece. Therefore, students who are more financially stable may be more likely to follow a true Mediterranean diet. Additionally, the location of a students' home would most likely influence the food that they became familiar with as they grew up. This may have influenced their preferences and food choices into adulthood. However, this information was all deemed too invasive to ask of participants during the study. Additionally, there is no information to support any correlation between specific students' demographics and adherence to the Mediterranean diet. The following strategies suggested to Perrotis College could be limited in their effectiveness because we based them on a sample of students that may not be representative of the entire Perrotis College community.

Chapter 5: Conclusions and Suggestions

The goal of this project was to understand Perrotis College students' food culture and perceptions of the Mediterranean diet in order to identify opportunities for students to better adhere to the Mediterranean diet. We collaborated with a variety of undergraduate students at Perrotis College in order to seek an understanding of the Perrotis College students' food culture and their perceptions of the Mediterranean diet. In this chapter, we present a summary of the food culture of Perrotis College students, propose a variety of opportunities and strategies to encourage adherence to the Mediterranean diet, and make suggestions for further research in this field.

5.1 Perceptions and Motivations of Perrotis College Students' Food Choices

In this section, we describe students' perceptions and motivations that have been shown to influence their food choices.

Students explained that they perceived their diet to be unhealthy. Students did not express great pride in their self-reported diet. Many reports included words with negative connotations such as "unhealthy" or "oily." This directly juxtaposed the phrases given in reference to the Mediterranean diet, such as "complete" or "beneficial." When pressed further, students demonstrated a unified belief that they could improve their diets and that the Mediterranean diet was a better alternative. However, there was discrepancy in students' understanding of specific benefits to the Mediterranean diet and ways they could incorporate aspects into their current lifestyle. Additionally, while some participants reported a desire to better adhere to the Mediterranean diet, students were not actively attempting to do so. They demonstrated awareness of the possibility of change but indicated social and practical pressures limited their ability to actualize such change.

Cost and convenience are the primary factors that influence Perrotis College students' food choices. Participants reported that they make food related decisions based upon conscious considerations of price and proximity. For example, residential students explained that, despite not preferring the food served, they would eat lunch at the cafeteria daily because their tuition includes this expense and it is easily accessible. Participants also reported that, when eating or ordering out, they tended to frequent establishments that are easy to get to and provide food quickly. Price further influences students' food choices as they reported that at most establishments, they consciously choose less expensive options. Price and proximity are factors that Perrotis College students actively consider when making food choices. However, this presents a challenge as the subsequent food choices resulting from such considerations tend to contribute to students' low adherence to the Mediterranean diet.

Social dynamics also influence Perrotis College students' food choices. Participants reported that their life while attending Perrotis College is different from that at home. Students noted the largest difference was that they have to provide for themselves, and can no longer depend on their families for meals. However, students indicated that they retain a sense of the importance of familial traditions and social eating practices detailed in the Mediterranean diet. Students demonstrate this appreciation for the traditional “diaita” through mimicking the social eating practices of home while at Perrotis College by eating in large groups with their peers. However, this practice was shown to limit students' overall adherence to the Mediterranean diet because group decisions tended towards food, such as fast food, that did not follow the “Mediterranean Diet Pyramid.” Therefore, students' motivations for food related behaviors attribute to their lack of adherence to the Mediterranean diet.

5.2 Opportunities to Positively Influence Students' Food Choices

In this section, we describe opportunities that Perrotis College could utilize to inspire and empower students to make alternative food choices that better adhere to the Mediterranean diet.

Students' food choices may be positively influenced by supplying educational materials relaying the benefits of the Mediterranean diet. As previously stated, students reported an understanding of the Mediterranean diet contents. They also practiced aspects of the “Mediterranean Diet Pyramid,” such as social eating practices and consuming fresh produce. However, participants lacked a detailed understanding of how or why the diet could benefit them during their current status as a Perrotis College undergraduate. Students also frequently reported that they did not know how to make changes to their diet while at Perrotis College. Some suggested that they were waiting until after graduation to begin following the Mediterranean diet. This suggests an opportunity for Perrotis College to expand students' existing knowledge on the benefits of the Mediterranean diet and ways to better incorporate the lifestyle into their current diet.

Perrotis College could support its students in making healthy food choices by providing more healthy options at the cafeteria and other establishments on campus. The cafeteria offerings demonstrated a significant influence on the food choices of the students surveyed. Participants stated they felt pressured to eat there due to a variety of factors, including economic and social reasons, and had become dependent on it. However, students frequently indicated discontent with the cafeteria's current offerings. Participants also felt as though they were unable to make the healthy choices they otherwise would due to the limitations of the cafeteria food. This was found to be a reasonable assessment as the cafeteria scored lower on its evaluation of its adherence to the Mediterranean diet than the average student surveyed, suggesting that the cafeteria is negatively influencing students' adherence. Therefore, there is an opportunity for Perrotis College to provide students with the means to make better food choices by offering more healthy options on campus.

Perrotis College could inspire its students to make food choices that better adhere to the Mediterranean diet by exposing them to aspects from the diet. The students surveyed demonstrated a perceived separation between the Mediterranean diet and their own. Participants demonstrated a positive and accurate perception of the Mediterranean diet. However, they did not necessarily associate it with their own unless prompted to do so in interviews. This lack of association indicates that participants were not actively thinking about the Mediterranean diet when making their food choices. Additionally, as previously stated, students reported that following the Mediterranean diet is difficult in their current lifestyle as a student. Therefore, there is an opportunity for Perrotis College to inspire their students by demonstrating how to incorporate aspects of the Mediterranean diet into the students' lifestyles.

5.3 Suggestions

We begin this section by describing the pool of suggestions we proposed to the Perrotis College community. We then narrow our focus to strategies that students highly engaged in—food night, “Foodie Club”, and feedback surveys. We describe each suggestion with an analysis of the appeals, goals, and limitations.

We proposed five strategies intended to promote adherence to the Mediterranean diet to the Perrotis College community. These strategies included: joining a Mediterranean diet “Foodie Club,” attending Mediterranean diet food nights, filling out feedback surveys regarding the food options available in Perrotis College’s cafeteria and vending machine, following a Mediterranean diet social media page, and reading an informational flyer on the announcement boards. Based on student feedback, we suggest Perrotis College consider interactive events such as the “Foodie Club,” food night, and feedback surveys to promote the Mediterranean diet.

A Mediterranean diet food night would communicate to students that it is feasible and beneficial to incorporate features of the Mediterranean diet into their own lives. We suggest that the Student Council sponsors this event to expose students to components of the Mediterranean diet. In this event, students would rotate through stations where they could learn about the diet’s health benefits and experience different ingredients characterized by the “Mediterranean Diet Pyramid.” We suggest these stations include simple recipes that students can reproduce in the dormitories without kitchen appliances. We recommend nutritional facts accompany the recipes so that students can gain a better understanding of the health benefits. The goal of implementing this event is to demonstrate that following the Mediterranean diet is attainable and desirable. This event would show students that it is feasible to incorporate features of the Mediterranean diet into their own lives.

The limitations of this recommendation are that it would require significant preparation and dedication of resources. We recommend the Student Council to sponsor this event as they

hold most social events. However, according to a Perrotis College Student Life Official, the Student Council has to fund their own events, which they have done in the past with T-shirt and sweatshirt sales. There is the potential for collaboration between the Student Council and Student Services, which could provide additional monetary support. Perrotis College would need further assessment of the cost and organizational requirements of these events before feasibility could be realistically determined.

A “Foodie Club” would expose students to alternatives to their current food choices.

This new club would be inspired by the original Perrotis College “Foodie Club,” which disbanded in 2018 due to lack of kitchen access. The original club involved preparing and sharing popular Mediterranean dishes. However, due to the limitations experienced by the previous club, the new “Foodie Club” would encompass off-campus expeditions to local food establishments that offer fresh ingredients and meals encouraged by the Mediterranean diet. We suggest the club advisor find locations that offer the healthier components of the Mediterranean diet in areas near where students are currently frequenting, as shown by the clusters of markers on the map in Appendix G. The goal of implementing this club would be to demonstrate to students that they are able to incorporate aspects of the Mediterranean diet into their current lifestyles. This club would demonstrate that the Mediterranean diet is just as accessible as the fast food options students are currently motivated to consume because of the consideration of convenience.

According to a Student Life Services Official, Student Services provides funding for extracurricular activities, such as this proposed “Foodie Club.” Students would have to express interest at the beginning of the semester and Student Services would then budget accordingly. Each club receives approximately 300€ per semester. This funding could potentially support some aspects of the proposed “Foodie Club;” however, the rest would have to be subsidized by students. This monetary constraint may be a limitation as students reported in the “Opportunities Feedback” survey that they were only willing to spend, on average, 5-8€. Perrotis College would require further analysis to completely assess the feasibility of a revised “Foodie Club.” However, this club addresses the opportunities identified as it provides information for students to make more informed choices when choosing what to eat and where to acquire their food.

Feedback surveys would allow for Perrotis College students to provide input and contribute ideas to the school cafeteria menu. Most student interviews suggested a dislike of the cafeteria’s offerings. Students believed that the selection was out of their control but still felt compelled to eat at the cafeteria because their residential tuition includes this expense. However, according to Student Council representatives, the Student Council of Perrotis College currently provides input to the cafeteria service providers on what food items are served for lunch. The cafeteria managers respond by trying to accommodate their suggestions in accordance with government requirements. In order for this process to encompass a larger percentage of the

student body population, we propose creating an anonymous suggestion box. We suggest locating this box within the cafeteria so that it is easily accessible to students when they eat lunch or purchase items from the vending machine. We propose providing designated feedback surveys for students to fill out. These surveys would have students rate the food options that were available in the week. It would also ask for options students would like the cafeteria to continue or discontinue offering as well as suggestions for general improvements. We propose that the Student Council representatives collect and analyze these survey responses to inform the input they currently provide to the cafeteria staff.

Potential challenges included not knowing the extent to which suggestions could be feasibly considered by the cafeteria or Student Services. Perrotis College would need further assessment prior to the implementation of this recommendation to understand such challenges. It is our intention for this suggestion to encourage students to feel empowered to make the choices they feel are currently not available to them. Ultimately, this recommendation could provide students with the means to influence food choices at Perrotis College that may improve their adherence to the Mediterranean diet.

5.4 Future Investigations

This report describes opportunities to improve Perrotis College students' adherence to the Mediterranean diet based on their food culture and perceptions regarding the Mediterranean diet. Moving forward, we hope that the suggestions we have detailed in Chapter 5.3 will inspire Perrotis College students to better adhere to the Mediterranean diet. Throughout our studies, several new research questions arose and further research could address these questions. These research questions include:

1. What are Perrotis College students' food cultures at home?
2. Which strategies could Perrotis College successfully implement?
3. If Perrotis College implements any strategies, to what extent do they improve adherence to the Mediterranean diet?

Through such future studies, Perrotis College could gain further insight into the influence of the college environment on students' food culture and implement strategies to increase students' adherence to the Mediterranean diet. It is our hope that this study and future efforts can contribute to Perrotis College's mission to "promote the well-being of individuals, families, and communities" (Perrotis College, 2017). By improving students' adherence to the Mediterranean diet, Perrotis College will encourage its students to embrace healthy lifestyles, thus, supporting their mental, physical, and emotional well-being.

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Appendix A: Cataloging Studies

A. AB Market

Location description	Across from 66 bus stop in Thermi
Time of day	Thursday (4/4/19) 20:30 - 21:00
Type of food being sold	Produce - fruits and vegetables, some imported, varies in freshness Bread- fresh and pre-packaged Fish and Meat- available frozen or fresh Deli- freshly sliced or pre-packaged cheese and meat Snacks- chips, candy, soda, breadsticks, crackers, granola Canned and Prepackaged Goods- jams, nut butters, Nutella, canned fruit and vegetables Dairy-large selection of milk, yogurt, butter Alcohol-wide selection of wines and beers Toiletries- paper goods, sanitation products
Seating/atmosphere	Small indoor grocery store Two floors Fluorescent lighting and no seating
Number of patrons	20
Cost (€)	Yogurt- large tub 2.00-3.00, single serving-0.80 Prepackaged croissants- 0.50-1.00 Packaged toast/crackers- 2.50-4.50 Salad mixes- 1.50 Avocado-3.95 Mushrooms-0.90-1.50 Milk-2.00 Cheese slices-2.00 Ham-1.00-2.00 Spoon dessert-4.50
Additional comments	Small grocery store, only two cashiers Mix of younger and older people Sales advertised Mostly ingredients to bring home and prepare meals with, or eat as snacks

On Thursday (4/4/2019) from 20:30 to 21:00, our group cataloged the AB Market. Located in the center of Thermi, the AB market is 15 minutes away from Perrotis College via the 66 bus and is located directly across from a bus stop. The customers were a variety of ages, including Perrotis College students. On the main floor, the market offered a variety of fresh, pre-packaged, and frozen foods. The second floor stocked cleaning products, hygiene products, and paper goods. The store advertised several deals which changed over the course of the month. There was no seating or prepared food, which implies that patrons purchase foods for later preparation at home. Overall, the AB Market offered a close and reasonably inexpensive location for students to purchase foods to bring home and eat as snacks or use as ingredients in larger meals.

B. eFood App

Location description	App on phone
Time of day	Anytime, includes holidays, weekends/mornings/nights
Type of food being sold	Large variety-gyros, pizza, greek salad, pasta, burgers, coffee, Chinese food, souvlaki, burgers, brunch-pancakes, crepes
Seating/atmosphere	Delivers directly to school Pick up at college front gate Students can pay with cash or credit Take out containers
Number of patrons	Requires a minimum order cost, which typically requires at least a small group of people to order
Cost (€)	Range from 2.50 - 10.00 Roma Pizza - Pepperoni Pizza - 7.40 Gyro Tehnima - Round pork in Sandwich - 2.60 The Burger Bar Black Angus - Cheeseburger 4.80 GRN - Countryside salad - 4.90 Subito - Crepe Africa - 3.50 Mongo Pylaia - Fried rice 4.60
Additional comments	Not as good quality as when sitting down in restaurants-pancakes crunchy, gyros and fries soggy Takes a long time to be delivered - 25 min-1 hour Order is sometimes wrong Convenient Popular way of purchasing food

	36 Restaurants
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Delivery is a popular choice among Perrotis College students for lunch and dinner. The most regularly used method is a smartphone application called “eFood.” Within this app, students first select the location where the food will be delivered to. They then choose between from 36 options of local restaurants, most of which are located nearby in Thermi. Once they select a restaurant, they choose between 20-30 entree options, all of which they can personalize to their preference. The majority of food types available are fast food options, such as pizza, gyros, crepes, and burgers. However, with further searching, students can find traditional Greek salads and healthier Asian options as well. There is a minimum cost students must reach before the order can be placed. Because of the low food costs, the app encourages students to purchase more food in order to reach the minimum threshold. Thus, a larger group is required for ordering. The students then place their order and within an hour the food is delivered to the front gate of the school. Here students can pay their meals in cash, or credit depending on the restaurant, with no tip or delivery fee included. The app is available at times when most other options are not, such as early in the day or on holidays.

C. Perrotis College Cafeteria

Location Description	Perrotis College Residence Hall Cafeteria
Time of Day	14:00-15:00, 3/18/2019
Type of Food Being Sold	Oven roasted chicken, oven roasted potatoes, salad, feta, pudding, bread, fish fillet with cocktail sauce, rice, veggie spaghetti salad, fruit salad, lentil and chickpea soup, olives, pickles, bananas, cabbage rice, pastitsio, nut pie, spinach rice with eggs, apples, meatballs, potatoes oqraten, chicken nuggets, clementines, pork, celery, risotto, chocolate pie, kritharoto, peas, cheese salad, meatloaf, kouskous, beef, moussaka, greek salad, vanilla pudding
Seating/Atmosphere	Music, tables seat between 6-8, about 8 tables occupied, around 20 tables in cafeteria total
Number of Patrons	50-60
Cost (€)	6
Additional comments	College students only have this meal built into their lunch program

Lunch is served daily at Perrotis College from 14:00-15:00 in the college cafeteria. On the day our group cataloged the cafeteria (3/18/2019), the following items were available to the

students: salad bar (including tomatoes, cucumber, feta, grape leaves, olives, tzatziki sauce, and honey mustard), bread (options of white and wheat), pastichio, potatoes, pastries, drinks (carbonated lemonade, sprite, fanta, or coke), and chocolate pudding. The lunches provided each week differ from day to day; however, similar meals are provided each week. Lunch is the only meal built into the college students' tuition. Therefore, it is the most utilized meal on campus. A wave of 50-60 students came into the cafeteria at 14:00. When the students entered, they got into a line and first encountered the salad bar. Following the salad bar, they proceeded towards the hot meal section of the lunch line. Once the students finished gathering their meals, they sat down in groups of roughly six people. Although some people sat in smaller groups of two, it was mainly observed that students ate their meals in a larger group. The students finished their meals and left the cafeteria in about 30 minutes.

D. Miltos

Location description	Walking distance (less than 0.5 mile) from American Farm School (AFS), off side of road
Time of day	16:00-17:00, 3/19/2019
Type of food being sold	Bakery - pastries, cake, chocolate, sweets Gelato - many flavors, cup or cone Take away food - sandwiches, pastries, microwave meals, juice, chocolate milk, milk, water, salads, vegetarian sandwiches Coffee
Seating/atmosphere	Outdoor seating, small indoor seating area with view of window Perrotis College students mainly buy food and leave Groups of two or three sit and drink coffee Brightly lit Patrons in hurry to order and leave Not able to accommodate large groups
Number of patrons	10-30
Cost (€)	Prices not explicitly listed anywhere Gelato - 1.50 - 2.00 Salads - 4.90 Freddo Espresso- 1.40 Vegan Sandwich-2.60
Additional comments	Primarily a bakery/cafe Perrotis College students will walk there in groups at lunchtime to

	get food to bring back
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Miltos is a bakery within walking distance from Perrotis College that students will sometimes go to between 11:00-14:00. Our group visited this establishment on Tuesday (3/19/2019) between 16:00-17:00. This bakery offers a selection of takeaway meals, such as salads and sandwiches, which can be purchased at the counter. Patrons can eat their meals in small groups (two to four people) outside or they can take their meals elsewhere to eat them. The selection of food is limited to the same types of sandwiches and salads each day; however, the quantity of which is limited to how much the bakery chooses to make each day. The meals are fresh and traditionally healthy with an emphasis on fresh vegetables and bakery made bread. Miltos is a reasonably convenient and high quality lunch spot for Perrotis College students. Our group noticed that the baristas and cashiers struggled to accommodate groups larger than five patrons at one time, indicating that this establishment was targeted more towards individuals. Most patrons who utilized the indoor and outdoor seating stayed for between 30 minutes to one hour.

E. Grocery Store

Location Description	Sklavenitis Hypermarket
Time of Day	19:00 - 20:30 (3/14/2019)
Type of Food Being Sold	All typical groceries found in a supermarket but some with Greek influence
Seating/Atmosphere	Large indoor grocery store Some cafes on outskirts of building Minimal seating for large parties
Number of Patrons	Hundreds
Cost (€)	Breakfast Bars- 2.00 Olive Oil- 5.00-10.00 Canned Tomatoes- 1.00 Pre-packaged Meat- 2.00 Lettuce- 0.88/kg Broccoli- 1.70/kg Green Peppers- 2.90/kg Oranges- 1.10/kg Lemons- 0.82/kg Loaf of Bread- 0.65-2.00

	3 Pack of Yogurt- 2.85 1 kg of frozen shrimp- 7.90
Additional comments	Very organized layout Large section of fresh produce Pre-packaged/fresh meat/fish Large selection of cheese and dairy products (milk, yogurt) One aisle of frozen food

On Wednesday (3/13/19) from 19:00 - 20:30, our group took a trip to the local grocery store; Sklavenitis Hypermarket. The taxi ride to the market was €5.50. Upon entering the main part of the grocery store, we noticed a grouping of small cafes and shops. These shops sold a variety of items, ranging from phone chargers to premade sandwiches. The main shopping area of the building was beyond the cafes and shops. The grocery store primarily sold fresh, refrigerated, and pre-packaged food. Most of the pre-packaged products were influenced by Greek and Mediterranean flavor. A substantial portion of the store was dedicated to dairy products, such as cheese, yogurt, and milk. The store also provided a large variety of fresh produce. The store only contained one aisle of frozen food. This observation contradicted our prior research which stated that frozen food was starting to gain prevalence in Greek supermarkets.

F. Palaion Archon

Location Description	Bit Bazaar, Thessaloniki
Time of Day	20:00-22:00,4/5/2019
Type of Food Being Sold	Meat-chicken, souvlaki, meatballs, sausage, Tzatziki and Pita Greek Salad Bread French Fries Fried Zucchini Dessert- profiteroles Wine and Beer
Seating/Atmosphere	Long tables for big parties Outdoor seating posed as inside seating with heaters Bar seating
Number of Patrons	20-40

Cost (€)	Tzatziki-3.00 Zucchini balls-5.00 Manouri cheese pane-5.50 Traditional Greek salad-5.50 Anchovies-6.00 Mussels-6.50 Mixed grill-6.50 (per person)
Additional comments	Taverna style- one plate of food brought for whole table to share, Multiple courses Expected to be there for hours, sit down Younger crowd-loud, no children More formal than take-out restaurants, but still casual

Our group visited Palaion Archon, a taverna located in the region called Bit Bazaar on Friday (4/5/2019). This is a taverna style restaurant that Perrotis College students frequent on Fridays and Saturdays before spending the night out in Thessaloniki. Groups are seated in the colorful and loud open air atmosphere by a host. The traditional courses are as follows: first bread/pita with tzatziki and a feta dipping sauce, then a Greek salad, followed by fried zucchini with tzatziki, the next and main course is an assortment of meat (including souvlaki, meatballs, chicken, sausage) and french fries, and finally a dessert of profiteroles. The meal is typically accompanied by wine or other alcoholic beverages. Each person at the table is given a plate at the beginning of the meal and they are responsible for portioning out their own servings of each course. The typical patron is a young adult; our group did not observe any elderly or children eating at this establishment. We noted that most patrons spent between two to four hours seated in the restaurant. This restaurant grew busier the later it became. However, there was an abundance of seating, geared towards parties of four or more.

G. Local Market

Location description	Ochsenkopf, Walking distance from AFS (across the street), off side of road
Time of day	17:00, 3/19/2019
Type of food being sold	German Groceries- German cereal, juices, jams, Nutella, pickles, sauerkraut, canned vegetables, olive oil, sauces, water, beer, gummy candy, chocolate Meat-sausage, cold cuts, prepared meat, deli cheese Submarine Sandwiches-turkey, ham, salami, vegetable fixings Homemade granola bars

Seating/atmosphere	Grab food and leave Small outdoor seating (picnic bench and two small patio tables)
Number of patrons	0, 2 store owners
Cost (€)	Homemade granola bar-1.20 Cereal- 5.99 Submarine sandwiches-2.00-3.00
Additional comments	Primarily a market and deli Sold mostly German food

Ochsenkopf is a German Market located across from the AFS bus stop. While, on occasion, our group has observed Perrotis College students purchasing food from this establishment, at the time of our visit, 17:00 on Tuesday (3/19/2019), there were no patrons present. The store is mostly a small market specializing in German branded foods. Some of the most prevalent items were fruit juices, German cereals, candy, and beer and soft drinks. These items were comparatively expensive to equivalent items found in the grocery store. Ochsenkopf also functions as a deli. The store offered a large selection of raw and deli meat, and freshly made submarine sandwiches. However, people purchasing food here likely eat it elsewhere. The seating is limited with only a picnic table and a few patio chairs on the front porch.

H. I Love Cafe

Location description	Walking distance from Perrotis College (less than .5 mile) Off side of road Have to cross two lanes of traffic
Time of day	8:00, 3/20/2019
Type of food being sold	Bakery - pastries, bougatsa, spanakopita Take away food - sandwiches, pastries, juice, chocolate milk, milk, water, salads, vegetarian sandwiches Coffee-freddo espresso, cappuccinos
Seating/atmosphere	Outdoor seating, small indoor seating area with view of window (one or 2 chairs), not obvious/easy to spot Grab food and leave - what Perrotis College students mostly do Groups of two or three at most sit and drink coffee Brightly lit, nestled in Shell Gas station Patrons in hurry to order and leave Not able to accommodate large groups

Number of patrons	2
Cost (€)	Oranges -2.00 spanakopita-1.80 Freddo Espresso- 1.60 Submarine Sandwich-2.40 Free sesame ring with coffee Juices and water- 0.50 to 1.80
Additional comments	Primarily a bakery/cafe Perrotis students will walk there in groups or alone in mornings to get coffee/food to bring back

I Love Cafe is a gas station cafe located across the highway from the main gate of Perrotis College. Our group visited this cafe on 3/20/2019 at 8:00. It is located near the cash registers of Shell gas station and is a 10 minute walk from the Perrotis College campus. Students mainly grab a coffee or breakfast pastry from this establishment in the morning and bring it back to campus to eat. The coffee is made fresh to order while the pastries look as though they had been sitting out for a while. I Love Cafe also sells juices and waters in conjunction with Shell gas station. There was limited seating inside and some small groupings of patio furniture scattered about the property. This cafe is mostly intended for customers to purchase their breakfast and leave. I Love Cafe also has a daily deal in which a customer can get a free sesame ring with the purchase of a coffee.

I. Lordon

Location Description	Sit down restaurant in Themi
Time of Day	19:00-20:30, (3/20/2019)
Type of Food Being Sold	Meat Based Entrees- (Souvlaki, rice, coleslaw, fries) (Pork, fries, tomato, onion) Salads Burgers-wide selection, different meats and toppings French Fries Wine and Beer
Seating/Atmosphere	A large amount of indoor and outdoor seating Long tables for big parties, smaller tables for smaller parties, Heaters and awning to make outside seating feel like indoor seating

	Nature theme (woods, leaves, neutral colors)
Number of Patrons	20-30
Cost (€)	Salad-5.40-6.90 Burgers-2.50-5.50 Pita sandwiches-5.00-7.00 Meat based entrees-7.50-11.00
Additional comments	Sit down restaurant Family friendly, mix of ages present Younger crowd-loud, no children More formal than take-out restaurants but still casual Take out available Expected to be there for a while Extensive menu- ranging from sandwiches to full meals

Lordon is a sit-down restaurant in Thermi that is frequented by Perrotis College students. Our group visited this establishment on 3/20/2019 from 19:00 to 20:30. It is a 15 minute bus ride away from the school by the 66 bus, and a short walk away from the bus stop. It is on the corner of a street lined with restaurants; however, it is one of the largest restaurants on that strip and is able to accommodate larger amounts of people. This restaurant has indoor and outdoor seating that can accommodate an average of 4-10 people. This is a family-friendly restaurant that serves a large variety of meals that appeal mostly to individuals who enjoy meat. Their main attraction is the pages of burgers they offer at reasonable prices (mostly 5€ or less). They also offer some salads at a higher price (5.40-6.90 €). More formal entrees with large serving sizes are available for an even higher cost. All of Landor’s main course meals are oriented around the type of meat being served and the sides are mainly simple carbohydrates such as coleslaw or potato. While these are more expensive than the nearby restaurants selling fast-food, the price is reasonable for the amount of food that is given.

J. Campus Store

Location description	Located on campus, in front of AFS cafeteria
Time of day	13:30, 3/21/2019
Type of food being sold	Dairy Products-yogurt, buffalo milk, cheese, buffalo milk ice cream, butter Wine Teas and spices

	Pomegranate juice Eggs Olive oil Jams Dry pasta Stuffed grape leaves Herbs
Seating/atmosphere	Expected to buy ingredients and prepare at home No seating
Number of patrons	0, 2 student workers, (30-40 patrons per day)
Cost (€)	Buffalo Chocolate milk -2.00 Eggs- 2.25 Red pepper flakes-1.90 Dairy products- 1.90-3.50 wine - 6.70
Additional comments	All products made local (most on campus) Buffalo milk products

The campus store is located on the AFS campus and sells predominantly AFS products. The store is run by Perrotis College students studying business and marketing. Our group visited this store on 3/21/2019 at 13:30. At this time, we were the only customers in the store. However, the student workers informed us that the store sees approximately 30-40 patrons per day. Students frequent the campus store to buy fresh and local ingredients such as cheese, butter, eggs, pasta, and spices. The campus store had some ready-to-eat items available as well, such as yogurt, ice cream, juice, grape leaves, and milk. Their variety of goods was limited; however, they did have products that would be difficult to find in a typical grocery store, such as buffalo milk products. There was no seating available and it is expected that customers would purchase their food and leave. All items were of high quality. However, the products were, as a whole, significantly more expensive than those found in grocery stores.

K. F Zone

Location Description	Perrotis College Residence Hall Cafeteria
Time of Day	11:00, 3/22/2019
Type of Food Being Sold	Drinks-cappuccino, freddo espresso, nes cafe, coca cola, lemonade, orange juice, water, milk shakes

	Pastries- bougatsa, cheese pie, koulouri, donut, Candy- gum, chocolate bars Fruit- oranges and apples Ice cream-sundaes Meals- sandwiches, hot dog, chips
Seating/Atmosphere	Empty cafeteria, 8 tables, seating in lobby, outdoor seating,
Number of Patrons	1-2
Cost (€)	Cappuccino - 2.00 Freddo Espresso- 1.80 Soda- 0.90 Donut - 1.00 Bougatsa- 1.40 Signature milkshakes- 4.00-4.50 Ice cream sundae- 3.50 Hot dog- 2.00 Submarine sandwich-1.60
Additional comments	Plenty of seating but most people order and leave If students sit anywhere it is at the outdoor tables Open from 9:00 to 13:00 One cashier

The F zone is open from 9:00-13:00 daily in Perrotis College cafeteria. It is located at the cafeteria lunch line and cash register. The F zone is a mix between a cafe and a small market. A small assortment of large pastries, sandwiches, cold drinks, and candy are offered. Patrons approach the counter and ask for the items they want to purchase, which the cashier hands to them in portable packaging. The cashier is also responsible for brewing coffees and making more complicated dishes, such as milkshakes and hot dogs. Ice cream sundaes are also available upon request. A large pastry costs 1.50 € and a coffee costs between 1.50-2.00 €. The F zone is located in close proximity to cafeteria tables and a small seating area in the lobby. However, patrons rarely use these tables and instead take their food elsewhere to eat it. In nice weather, students have been observed sitting at the outdoor tables eating their purchases in small groups of two to four people. This establishment is almost exclusively utilized by Perrotis College students, mostly in the morning hours.

L.Vending Machine

Location description	Located on campus, in front of Perrotis College cafeteria
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Time of day	13:00, 3/22/2019
Type of food being sold	Pastries-croissants, mini croissants, sandwiches Crackers Chocolate bars Drinks-water, soda, energy drinks, lemonade
Seating/atmosphere	Seating available in lobby or outside cafeteria
Number of patrons	0, 4 student purchases in a 1 hour time span
Cost (€)	Submarine sandwich- 1.60 Large/Mini croissants-1.00 Water -0.40 Energy drink-1.00 Chocolate bars-0.60-1.10
Additional comments	All pre-packaged products with expiration dates 2 months away

The vending machine is available 24 hours to Perrotis College students. It is located directly outside of the Perrotis College cafeteria. All items are intended to be taken elsewhere to be eaten. There is no designated seating for the vending machine. Approximately 40% of the food options are drinks; including water, soda, and energy drinks. 30% of the options are chocolate bars or candy. The remaining options are bread products, such as croissants, sandwiches, and crackers. The vending machine provides mostly snacks or small meals, indicating that it is intended to supplement students main meals.

M. ενοχέζ

Location description	Apellou, Thessaloniki
Time of day	18:00-20:00
Type of food being sold	Frappes, cappuccinos, coffee, etc. Small plates of food- club sandwiches, tortillas, ice cream waffles, and other sweets.
Seating/atmosphere	Eclectic, looked like it used to be someone's home Indoor and outdoor seating available Two floors available for indoor seating
Number of patrons	15-40

Cost (€)	Coffees - 3.40 Sweets - 3.50 Sandwiches - 3.50 for 3 ingredients minimum and then an Additional 0.50 for each ingredient you add
Additional comments	Did not see anyone ordering anything besides coffees. Most people stayed for over 1.5 hours

The café, titled ενοχές, is located on Apellou Street in Thessaloniki. We walked in at 18:00, and were some of the first people there. The café was designed like an old home. There were many different rooms of various sizes and colors with mismatched seating arrangements. There was also a bar in the cafe, but there were no patrons sitting at it. The outdoor seating was available, which is heavily utilized when it becomes warm out and/or sunny. Coffee drinks were served with pre-packaged biscuit bites. We noticed that all of the other customers at the café did not order food, only coffee. The majority of people in the café were in their twenties and in a group ranging from two to four people. When we left at 20:00, the café was much busier than when we arrived.

N. Ouzeri Agora

Location description	Thessaloniki, back alley off of Egnatia Corridor
Time of day	20:00-22:30, 3/27/2019
Type of food being sold	Small plates to share family style Appetizers-cheese, small fish, fried zucchini, eggplant, zucchini balls, split peas, stuffed grape leaves Salads-lentil salad, Greek salad, tzatziki, cappadocian salad, whitefish roe, boiled wild greens Meat- meatballs, grilled lamb chop, beef liver, chicken Fish-grilled or fried octopus, squid, cuttlefish, shellfish, tope, sardine, picarel, cod, risotto, muscles
Seating/atmosphere	Indoor and outdoor seating Tables seat small groups of 2-6 people Expected to stay for hours Bar with seating Bright lighting
Number of patrons	0 at 20:00, 20+ at 22:30
Cost (€)	Cheese-5.00

	Anchovies-5.00 Shrimps in a pan-10.00 Zucchini balls- 4.50 Split peas-4.00 Fried zucchini-4.50 Stuffed grape leaves-4.50 Greek fried potatoes-3.00 Lentil salad-6.00 Greek salad-7.00 Whitefish roe-4.50 Boiled wild greens-4.50 Meatballs-6.50 Chicken fillet-6.50 Grilled lamb chops-8.50
Additional comments	Fish on display to show freshness Open from noon to midnight Most popular on weekends and late at night

Ouzeri Agora is a traditional Greek taverna located in a side street off of the Egnatia Corridor in the middle of Thessaloniki. Our group visited this establishment at 3/27/2019 from 20:00-22:30. When we first arrived, there were no other patrons. However, by the time our group had finished our meal, people started to arrive for dinner. Most people were middle-aged or older. We were informed that most of the patrons were local Thessaloniki residents and this restaurant did not cater as much to tourists. There was a bar at which patrons could be seated. However, most of the seating was indoor and outdoor tables, typically seating between four to six patrons. Food was served in a classic taverna style in which the table would purchase many appetizers, salads, and entrees, which were small in size and meant to be shared “family-style.” The majority of the menu was appetizers and fish. There were less common traditional meals available such as boiled wild greens, lentil salad, and whitefish roe. The fish was showcased on the side in a cooler. However, most of it was served fried, such as fried anchovies or red mullet. There was also a large selection of shellfish dishes. There was a limited selection of meat available and it was typically more expensive than the fish. At the end of the meal, a traditional dessert plate was presented to the table to share. It included three separate types of desserts; two of which were milk based desserts and the third was a baked fruit.

O.Kapani Market

Location description	Storefronts/vendor tables lining back alleyway Off of Aristotle Square
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	Close to fast food restaurants
Time of day	Friday (3/29/19) 10:45 - 11:30
Type of food being sold	<p>Fish - anchovies, squid, octopus, mackerels, cod(not as common), muscles, prawns</p> <p>Meat - sausage, lamb, lamb heads, cow tongues, stomach, liver, whole carcass, eggs</p> <p>Fresh produce (only that in season) - strawberries, greens(dandelions, poppy), bitter oranges, celery roots, beets, radishes, carrots, onions, potatoes, avocados, tomatoes, mushrooms, lemons, apples</p> <p>Imported produce- bananas, pineapples, melons</p> <p>Baked goods-baklava, sweets, halva, greek delights,</p> <p>Teas - dried leaves</p> <p>Flowers</p> <p>Olives</p> <p>Herbs - oregano, thyme, dill</p>
Seating/atmosphere	Open air market - large amount of vendors selling varying products
Number of patrons	Hundreds
Cost (€)	<p>Large majority of produce, meat, and seafood stands priced per kilogram</p> <p>Bitter oranges and apples - 1-2 per kg</p> <p>Carrots, zucchini, eggplant-1-2</p> <p>Tea- 2</p> <p>Fish-5-14</p> <p>sausage -3</p> <p>Olives-4-7</p> <p>Halva-6-9</p> <p>Eggs-0.15</p> <p>Muscles-4</p> <p>tongues-2</p>

Additional comments	Eggs at most 3 days old Meat hanging to be sold Won't sell anything not in season Vendors start packing up when the crowds start to die down- this is when prices drop Homemade products have no nutritional facts Vendors are mainly fish and meat Mix of stores and tables Loud, vendors engage with crowd Near restaurants but only prepared food in market are baked goods
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On Friday (3/29/2019) from 10:45 to 11:30, Dr. Tryfon Adamadis gave our group a tour of the Kapani open air market. The visitation required a 9€ taxi ride from Perrotis College. However, it would also be accessible via the public bus lines. This market is open seven days a week. The market is a defined section of alleyways lined with stores located off of Aristotle Square. The customers are typically middle-aged or older individuals; however, it was only mildly crowded at the time of our visit. The market was divided into sections selling different types of products. A large portion of the market was dedicated to selling freshly caught seafood such as squid, octopus, and mackerel. There were also shellfish such as muscles and prawns. The other significant portion of the market was fresh meat. Skinned carcasses were hung, advertising the freshness of the meat. Some of the most prevalent products were lamb heads, cow heads, and chicken. Some vendors were selling locally grown fruits and vegetables. The produce was all in season and similar in quality and price. The remainder of the market was including specialty stores such as those specializing in legumes, olives, tea, flowers, souvenirs, and baked goods. Our sponsor informed us that this market caters primarily to the local residents and has special permission from governmental agencies to hang the meat which is otherwise prohibit it. Overall, the Kapani Market offered fresh ingredients that were expected to be brought home and cooked with.

Appendix B: Interview Question Pool

The following questions were presented to each interviewee. We asked each participant the “Main Question” from each category. The bulleted questions within each section are possible questions we could have asked the participants throughout the duration of the interview; however, these questions were not necessarily asked to each participant.

Theme	Questions
Food Choices	<p>Main Question: What do you eat on a typical day at Perrotis College?</p> <ul style="list-style-type: none"> ● How much meat do you eat? ● How often do you have dairy? ● Was there any particular reason why you chose this [food]? ● If there was a different offering of food, would you have selected something else? ● Do you often eat the same thing every day? ● What fruits/vegetables do you eat? ● What is your favorite food and why? ● How often do you eat at home? ● How often do you eat out? ● What types of places do you when you want to eat out? ● Do you exercise? If so, how often? ● Do you eat fruit and vegetables every day? If so, how much each day? ● Do you typically bring your own food or eat at the school during the school day?
Social Eating Practices	<p>Main Question: Do you eat meals with others? If so, who?</p> <ul style="list-style-type: none"> ● How many times have you eaten today? ● Where are you sitting to eat your meal? ● Would you have gone someone else to eat if it was more convenient? ● Have you had any pressing school work recently? ● Where do you eat your meals? (at school, at home, in the kitchen, in your room, etc.) ● Do you ever cook for yourself or plan out what you want to eat? ● Do you ever skip a meal? If so, how often and which meal(s)? ● What is typically your biggest meal of the day?

	<ul style="list-style-type: none"> ● Do you usually eat breakfast? If so, what do you normally have?
Perceptions	<p>Main Question: Do you follow the Mediterranean diet?</p> <ul style="list-style-type: none"> ● Is the Mediterranean diet healthy? ● What is the most Mediterranean food? ● What is the Greekest food? ● Where is your family home located? ● Did you grow up in Greece? ● Have you lived in any other countries? If so, how were the meals you ate there different from the meals you eat here? ● How often do your classes inform you about food and nutrition? ● Is healthy nutrition important to you? ● Are you happy with the way you eat?
“Nutrition Transition”	<p>Main Question: Has your food selection shifted at all in recent years? If so, how?</p> <ul style="list-style-type: none"> ● Has there been any shift in the food selection offered in the cafeteria? ● How much do you typically spend on meals at the American Farm School/Perrotis College? ● If so, is there anything that you can attribute to the cause of this shift? ● How often do your classes inform you about food and nutrition?

Appendix C: Informed Consent Protocols

At each study, the participant, investigator(s), and translator (if preferred by the participant) were present. We began each study by introducing ourselves and the goal of the project of which this data was being collected. We proceeded to hand the participant the consent form of which we read aloud. If the participant was non-English speaking, we had the consent form provided for them in Greek, along with a translator to help us document responses. After the participant provided their consent, we provided them with the required materials to complete the study. They had the opportunity to review the materials prior to starting and when they were ready to begin, we began the study. Each study concluded with us stating that it was over, and the participant was explicitly notified that they had 24 hours to contact the investigator for their information to be withdrawn from the data collection. When this occurrence arose, all data collected was immediately destroyed.

Appendix C.1: Additional Interview Consent Materials

In the consent form, we asked the participant for their permission to record audio, if necessary, for the purposes of not missing any details of the study. If they agreed to us recording audio, we set up a recording device on a password locked phone. If the participant did not grant permission, two investigators took written, detailed notes for later analysis.

Appendix D: Coded Interviews

Perrotis College Undergraduate Interviews

Subject	Food choices	Social Behavior	Perceptions	“Nutrition Transition”
1	<ul style="list-style-type: none"> -Cafeteria food selection is determined by Student Council -Lunch is personally the biggest meal of day -When ordering out it is usually gyros or pizza -When at home, prefers to eat fish as a substitute for meat 	<ul style="list-style-type: none"> -Eats in groups -Other students are not used to living with many people 	<ul style="list-style-type: none"> -Believes to follow Mediterranean diet (i.e. eats salad and tries to not eat meat) -It is more difficult to not eat meat at school -Greece is trying to follow the Mediterranean diet -Was not educated about Mediterranean diet in school -Home cooked meals are better quality than those cooked in bulk (i.e. school lunches) 	<ul style="list-style-type: none"> -Coffee stores opened in response to financial crisis. They were the easiest type of shop for people to open at the time -Cafes started selling brunch/food -People are trying to eat less Westernized foods and more Mediterranean foods -Students eat less nutritious food because they are used to their mother’s cooking back home and do not like how it is different here -Students do not have the equipment to cook for themselves

<p>2</p>	<ul style="list-style-type: none"> -Food choices changed when arriving at college (became unhealthy) -Eats mostly dairy products -Eats lunch in cafeteria everyday -Orders either gyros or pizza on weekend -Eats a lot of meat -Likes to work out, so focuses on protein content and carbohydrates 	<ul style="list-style-type: none"> -Typically eats with friends for lunch and in dorm room for dinner -Likes the delivery aspect of foods around campus -Eats healthier during the week, and not so healthy on the weekends 	<ul style="list-style-type: none"> -Believes to follows the Mediterranean diet some days, but not all -Followed the Mediterranean diet since being a kid -Not educated about food selection (might recall one lesson about nutrition in a high school class) -Likes food from home much more than food from school -Cost does affect what kind of food is being bought, but proximity does not because there is so much available -People have access to healthy food and what they eat is a matter of choice 	<ul style="list-style-type: none"> -Got food from local markets when he was a kid and ate mostly at home -Food at home was much healthier than the food offered at school -A lot of bad oil in the food offered at and around school -Thinks the “nutrition transition” is true and is attributed to “globalization” as factors from other cultures in food are becoming more prevalent
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3	<ul style="list-style-type: none"> -Breakfast: cereals, fruits, peanut butter/Nutella -Lunch: whatever cafeteria serves -Dinner: salad 	<ul style="list-style-type: none"> -Prefers to eat alone, but cannot at school; however, tries to eat alone for breakfast and dinner -Will not order out while at school to be healthier -Will only eat out if already out -Will eat cafeteria food because already paid for it 	<ul style="list-style-type: none"> -First year students eat out a lot because transitioning into college -Cafeteria food is less healthy because it is made in bigger quantities with oil so that it lasts longer 	<ul style="list-style-type: none"> -Mediterranean diet includes fruits and vegetables, local foods, olive, olive oil, fish , salads, “village salad” -Convenience is a big factor -Meat is a big part of diet
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<p>4&5</p>	<ul style="list-style-type: none"> -Fruits are a main component of diets -Lunch: whatever the cafeteria serves, salad -Snacks: always freddo espressos from Milto's and options from the vending machine (i.e. chocolate and energy drinks) -Dinner: orders out around 19:00-20:00 on the eFood app (i.e. pizza, chicken, or gyros) -Will go to city center or Themi by bus or car 	<ul style="list-style-type: none"> -Will only eat in groups (usually four to five people) -Dinner is a social time -Takes a long time to decide where to order from -Cannot cook in Perrotis College dorms, but even if cooking were allowed they do not want to cook nor do they know how cook -Choose to order out because it's easier 	<ul style="list-style-type: none"> -Mediterranean diet is very healthy, and should be eaten by people with heart concerns -Corn syrup is bad -Mediterranean diet includes vegetables, fruits, olive oil, rarely meat -Traditional meals, such as pastichio, moussaka, and tzatziki, are healthy -Believes they do not follow the Mediterranean diet -Students could eat healthy if they wanted to 	<ul style="list-style-type: none"> -Nutrition only taught to Food Science students -Dinner was included in tuition last year in first semester, but is not included anymore
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6	<ul style="list-style-type: none"> -Food choices have changed significantly since going to Perrotis College -Consumes milk with cereal, nuts, and fruit -Eats a lot of red meat (i.e. gyros and souvlaki) -Food at cafeteria is not healthy, but people eat it because it is readily available 	<ul style="list-style-type: none"> -Eats both in groups and alone, depending on who is around -Will order out because it is convenient (uses eFood app) 	<ul style="list-style-type: none"> -Eats much healthier at home -Most people follow the Mediterranean diet, but they will occasionally buy fast food -Has had a few classes regarding food and Mediterranean Diet -What people ultimately choose to eat ends up being a choice 	<ul style="list-style-type: none"> -Does not really see this happening as a whole, understands that people eat less healthier in college because it is just more difficult to get nutritious meals with variety
7	<ul style="list-style-type: none"> -Diet has changed since coming to Perrotis College -Food is healthier in Greece -Eats salad, feta, olive oil, meat four times a week -Lunch food is unhealthy (quantity over quality) -Price does not affect food choices -It is a choice that students don't eat more healthy 	<ul style="list-style-type: none"> -Eats with other people -Eats lunch in the cafeteria every day and makes own dinner and breakfast (light) 	<ul style="list-style-type: none"> -Does not follow Mediterranean diet -Believes no one at Perrotis College follows the Mediterranean diet -Not educated on nutrition or the Mediterranean diet in school 	<ul style="list-style-type: none"> -Students are eating more fast food and unhealthy foods -Students typically eat unhealthy the first week and then unhealthy during exam week (stress/time)

8	<ul style="list-style-type: none"> -Not a residential student -Diet is different since coming to Perrotis College -Consumes meat, carbohydrates, oatmeal, sandwiches from German market, chicken with rice, salad, meatballs, pasta -Preference to not consume cow's milk 	<ul style="list-style-type: none"> -Constantly eats with roommate -Will go out to eat when sick of cooking, social gatherings, or birthdays -Will eat the food roommate cooks (i.e. pastichio, moussaka) 	<ul style="list-style-type: none"> -People eat baked goods every day at Perrotis College because the school has a nice bakery -Following the Mediterranean Diet is complicated (i.e. preparing meals are time-consuming and too big) -Wants to like to cook in order to prepare more nutritious meals 	<ul style="list-style-type: none"> -Caused by economic crisis -Easy to eat sweets -People in dorms don't like the food here so they don't eat it at school -People aren't obese -People are bored of following the same diet
9	<ul style="list-style-type: none"> -Diet changed since coming to Perrotis College -Food at school is unhealthier than at home -Eats meat three to four times per week -Students would eat healthier if they cooked for themselves -Location does not matter but cost does and prefers cheaper food because does not have a lot of money -Uses eFood app 	<ul style="list-style-type: none"> -Eats in the cafeteria every day for lunch, always with others 	<ul style="list-style-type: none"> -Does not follow Mediterranean diet because the quality of products here are different -Believes no one at school follows the Mediterranean diet, but people back home do -Took nutrition classes and learned what healthy foods to eat 	<ul style="list-style-type: none"> -Diet changed when moved from home -Students eating more fast food and unhealthy foods

10	<ul style="list-style-type: none"> -Eats meat, salad , rice milk, cereals, fruits, vegetables -Eats pizza sometimes -Eats whatever cafeteria serves -Doesn't want to eat at the cafeteria, but doesn't want to spend money to order 	<ul style="list-style-type: none"> -Will always eats with friends and family -Will go out with others -Willing to spend between 5 to 10 euros 	<ul style="list-style-type: none"> -Thinks she follows Mediterranean diet -Defines Mediterranean diet as healthy 	<ul style="list-style-type: none"> -Believes children are less healthy now than they were in the past
11	<ul style="list-style-type: none"> -Does not eat breakfast -Lunch: Greek cuisine, cooked by family (ie. stuffed squash) -Dinner: leftovers for lunch -When ordering out: gyros, sandwiches 	<ul style="list-style-type: none"> -Chooses where to order out based on how close it is -Likes to eat alone -Parents broke up- now eats less healthy because won't cook for just two people 	<ul style="list-style-type: none"> -Believes students are not supported to follow nutritious meals -Believes she mostly follow Mediterranean diet 	<ul style="list-style-type: none"> -Believes younger people are eating a more westernized diet
12	<ul style="list-style-type: none"> -Light lunch -Will order out once per week -Favorite food: pastichio 	<ul style="list-style-type: none"> -Will choose where to order out based on location, at home-will choose something in town - If out: will choose whatever they want to eat -Spends a majority of time on campus so does not have time to go home and prepare meals 	<ul style="list-style-type: none"> -Would like to eat more fruits and vegetables, feels like can't because out of the house "24/7" -Believes personal food selection changed once in college 	<ul style="list-style-type: none"> -Only presentation on nutrition was in college, at the beginning of year -Thinks students are uneducated on what the Mediterranean diet is

<p>13</p>	<p>-Goes to city for coffee/food daily -Eats breakfast at home -Favorite food: Tostitos, souvlaki</p>	<p>-Will not eat at the cafeteria if has a big break at noon -Will choose low budget foods -If food is expensive, not worth it for the money can find it better somewhere else</p>	<p>-Cost is a big influence on his choices -Does not like the cafeteria food and will avoid it whenever possible</p>	<p>-Tries to be healthy -Goes to the gym</p>
<p>14</p>	<p>Breakfast: milk, croissant, smoking Lunch: cafeteria every day Dinner: order out, pizza souvlaki Favorite food: meat, soda</p>	<p>-Orders delivery, eFood app -Will choose food based upon what is available -Eats in groups</p>	<p>-Now being able to cook here limits students choices -Feels limited by what's available</p>	<p>-Believes people eat fast food</p>

Perrotis College Graduate Student Interviews

Subject	Food choices	Social Behavior	Perceptions	“Nutrition Transition”
1	<ul style="list-style-type: none"> -Will eat bread, fruits, vegetables, meat three times per week, yogurt, almonds green salad, olives, carrots, potatoes, pasta, toast -50/50 split on whether she goes out to eat or stays in -Will choose if going out: souvlaki, gyros, pizza one time per month -Main “cooking” inside dorms consists of boiling foods -Prior to college food was healthier because her mother cooked - Undergrad years: ate mainly cafeteria food (quality is improving) full meals - Current diet: smaller portions (salads, chocolate) 	<ul style="list-style-type: none"> -Mainly eats alone -Feels limited in her choices by time (how fast she can get food)- due to the amount of time spent in lab -Not limited by distance because she has a car, but the first three to four years was limited in where she could get groceries 	<ul style="list-style-type: none"> -Believes she somewhat follows Mediterranean diet -Believes students could follow Mediterranean diet if they tried -Believes whatever students consume ultimately comes down to their choice -Believes own diet will continue to improve once she is done with studies 	<ul style="list-style-type: none"> -Thinks students are limited by what can be cooked in rooms because cooking isn’t allowed -The nutrition transition is not a thing -There are no nutrition courses provided before college

2	<ul style="list-style-type: none"> -Whole grains, fruits, vegetables, legumes -Tries to avoid meat -Will eat milk and eggs -Does not have a meal plan so will not eat at the cafeteria 	<ul style="list-style-type: none"> -Gets food from home because family lives on a farm -Eats alone sometimes -Eats out on dates 	<ul style="list-style-type: none"> -Had to change diet to healthier one because of medical issues -Started new diet around 21/22 years old 	<ul style="list-style-type: none"> -Believes younger generation is unhealthy and are following worse diets here
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College Students From the Thessaloniki Region Interviews

Subject	Food choices	Social Behavior	Perceptions	Nutrition Transition
1	<ul style="list-style-type: none"> -Is actively dieting -Eats prepared meals, salad with couscous, chicken -On weekends will eat fast food (i.e. pizza, crepes) -Will choose fast food by how long it will take to get 	<ul style="list-style-type: none"> -Will go out with others, enjoys eating out with others -Does not vary the places she eats out at -Becomes a “regular” 	<ul style="list-style-type: none"> -Believes that in the first few years of college, students eat less healthy -Believes students eat out more because they are living without their parents -Believes that when most people are 21-22 they choose to diet/eat healthier 	<ul style="list-style-type: none"> -Believes young people are trying to be healthier and exercise more

2	<ul style="list-style-type: none"> -Follows the “keto” diet -Will eat fish vegetables, yogurt, goat milk, olive oil -Won’t drink cow milk -Tries to limit sugar -When eating out, will choose meals with avocado and/or quinoa 	<ul style="list-style-type: none"> -Will go out in group to eat - Chooses where to eat out based upon healthy choices available 	<ul style="list-style-type: none"> -Believes she no longer follows Mediterranean diet -Believes sugary desserts/pastries are a part of the Mediterranean diet 	<ul style="list-style-type: none"> -Thinks students are working on building good food habits
3 & 4	<ul style="list-style-type: none"> -Will regularly eat eggs, tomatoes, cheese, bread, chicken, beans lentils -Does not eat seafood because its expensive -Chooses where to go out based upon how fast and easy 	<ul style="list-style-type: none"> -Will go out to eat before going out to bars -Will go out for souvlaki and gyros -Tavernas are for special occasions 	<ul style="list-style-type: none"> -Do not think they follow Mediterranean diet -Believes college students are used to home cooking - Referenced “diaita;” food as lifestyle 	<ul style="list-style-type: none"> -Thinks more people are becoming vegan/vegetarian -Believes more people are eating vegetables
5	<ul style="list-style-type: none"> -Eats less bread and sugar than at beginning of college -Eats meat, salads, pasta -When going out, prefers fast food (i.e.burgers, pizza) 	<ul style="list-style-type: none"> -Goes out to eat three days a week, with friends -Not a “regular” at places, tries to eat at different places 	<ul style="list-style-type: none"> -Does not believe to follow the Mediterranean diet 	<ul style="list-style-type: none"> -Believes in this day and age, people are more careful about what they eat -Believes people are trying to eat healthier










Appendix E: Adapted 13-Item Criteria for Mediterranean Diet Adherence

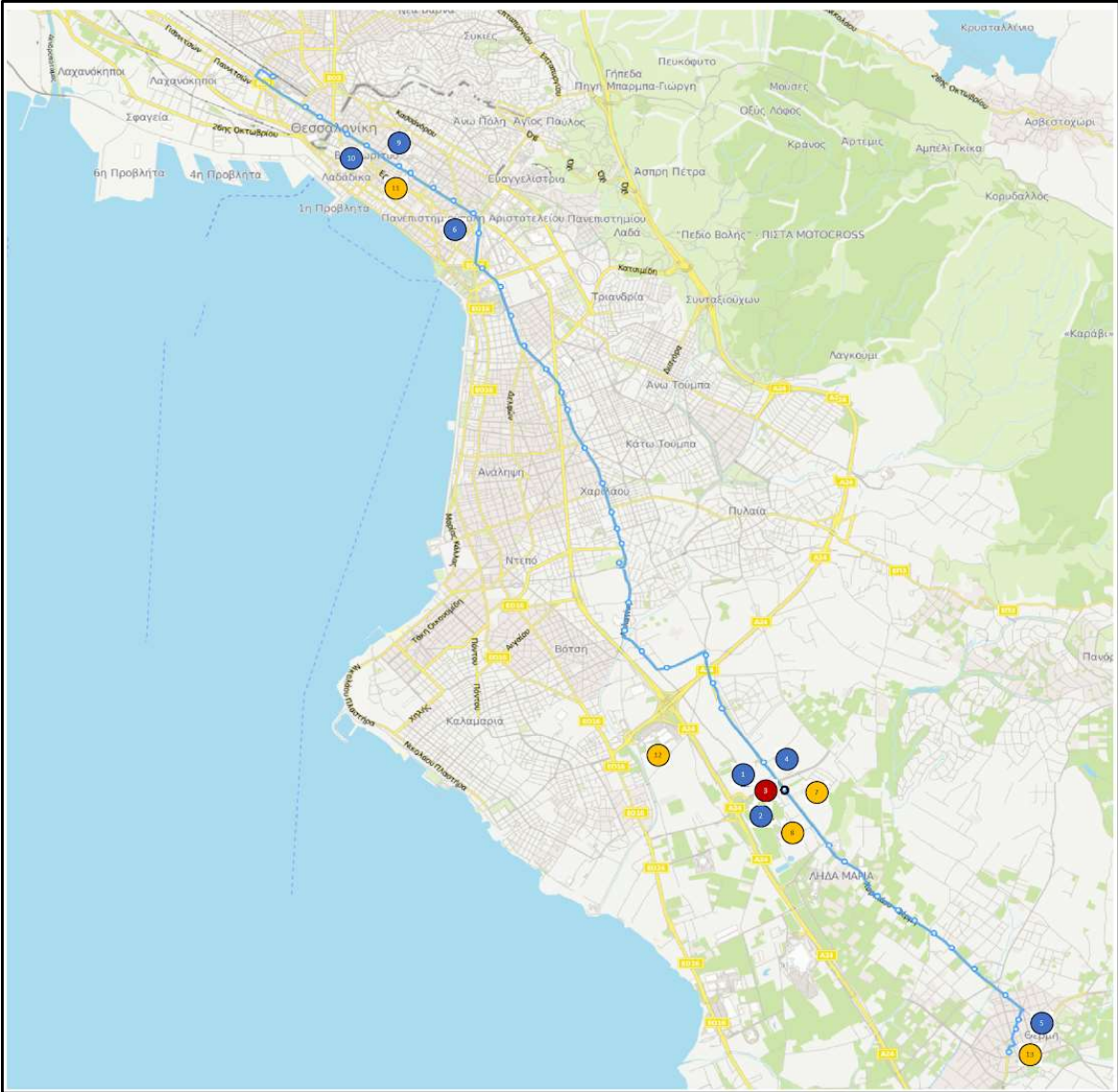
The following set of criteria was used to evaluate students' food diaries for their Mediterranean diet adherence levels:

Criteria:	Criteria for 1 Point:
Explicitly mentioned the consumption of olive oil?	Yes
Mentioned vegetables at least 6 times per 3 days? (3 times per 3 days if consumed raw or in a salad)?	Yes
Consumed fruit at least 6 times per 3 days (including natural fruit juices)	Yes
Eaten red meat less than or equal to 1 per 3 days?	Yes
Explicitly stated eating butter, margarine, or cream less than or equal to 1 per 3 days?	Yes
Consumed sweet or carbonated beverages less than or equal to 1 per 3 days?	Yes
Consumed at least 3 glasses of wine per 3 days?	Yes
Consumed legumes at least 2 times per 3 days?	Yes
Consumed fish at least 1 time per 3 days?	Yes
Consumed pastries or commercial sweets less than or equal to 1 time per 3 days (cakes, cookies)?	Yes
Consumed nuts 1 or more times per 3 days?	Yes
Consumed poultry more than red meat?	Yes
Consumed yogurt, milk, or cheese less than 4 times per 3 days?	Yes

Appendix F: Food Accessibility Map

The following integrative analysis was used to compare the different places Perrotis College students receive their food from and identify trends in students' preferences that contribute to food choices of Perrotis College students. This appendix includes the respective legends, map, and location descriptions used for this analysis.

Location Description Key		Map Key		
Average Cost			American Farm School	
€	0-5.00		Location of interest	
€ €	5.00-10		Bus line	
€ € €	>10		Bus stops	
Distance			Roads	
Method and time required			Major Highways	
Location		Restaurant	Grocery	Other
Address and/or point of reference				
Types of Food Available				
Most popular food items available				



Cafe



I Love Cafe
€


5 min walk

Shell Gas Station
Marinos Antipa 60, Pilea

- Coffee
- Breakfast Pastries
- Sandwiches
- Juice/Water/oranges

1

Cafeteria



Cafeteria
€€

No transportation required

Perrotis College Cafeteria

- Salad/Vegetables
- Pasta/grains
- Chicken/meatballs
- Bread

2

Cafe/Market



F Zone
€


No transportation required

Perrotis College Cafeteria

- Breakfast Pastries
- Coffee/juice/soda
- Chocolate bars/jam
- Milkshakes/Ice cream

3

Vending Machines



Vending Machines
€


No transportation required

Akli Pasoutis Student Residence Hall

- Water/soda/energy drinks
- Crisps
- Chocolate bars

3

Application



Efood App
€

No transportation required

AFS Front Gate

- Most Restaurants in Thessaloniki
- Gyros/Souvlaki/Pizza
- Greek Salads
- Crepes

3

Cafe/Patisserie



Miltos
€€

10 min Walk

St. Kazantzidi 37, Pilea

- Baked goods/Gelato
- Sandwiches/wraps
- Salads
- Coffee

4

Restaurant



Landor
€€

15 Bus 1 min Walk

Thessaloniki

- Burger/sandwiches
- Meat based Entrees
- Salads
- Wine/beer

5

Cafe



ενοχός
€

40 min Bus, 5 min walk

Apellou Square, Thessaloniki

- Coffee
- Tortillas
- Sandwiches
- Alcohol/juice/water

6

Local Grocery/Deli



Ochsenkopf
€€


2 min Walk

Across the street from AFS

- Submarine Sandwiches
- Deli meat and sausages
- German Groceries (candy, cereals, etc.)

7

Specialty Market



The Campus Store
€€


No transportation required

Located on campus

- Buffalo milk/milk-yoghurt
- Wine/pomegranate juice
- Pasta/Olive oil/spices
- Jam

8

Taverna



Bit Bazar
€€€

40 min Bus - 10 min Walk

Tosita 7, Thessaloniki

- Taverna Style
- Tzatziki and pita
- Fried Zucchini Chips
- Chicken and fries

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Traditional Taverna



Ouzo-i Agora
€€

40 min Bus 20 min Walk

Off of Egeiaia Corridor
Kypodouion, Thessaloniki

- Taverna Style
- Boiled wild greens/salads
- Appetizers/cheese/dips
- Fish/shellfish/meat

10

Open Air Market



Kapani Market
€

40 min Bus, 20 min Walk

Off of Aristotelous Square
Thessaloniki

- Fish/shellfish/raw meat
- Olives/grains/eggs
- Produce/teas/herbs
- Baked goods/breads

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Grocery Store



Sklaventis Hypermarket
€


24 min Bus

Macedonia Shopping Center

- Meat/Dairy/Produce/Fish
- Olive oil/castorings
- Goumas/Clips/Pasta/Bread
- Jam/Honey/Dips

12

Grocery Store



All Market
€

15 min Bus

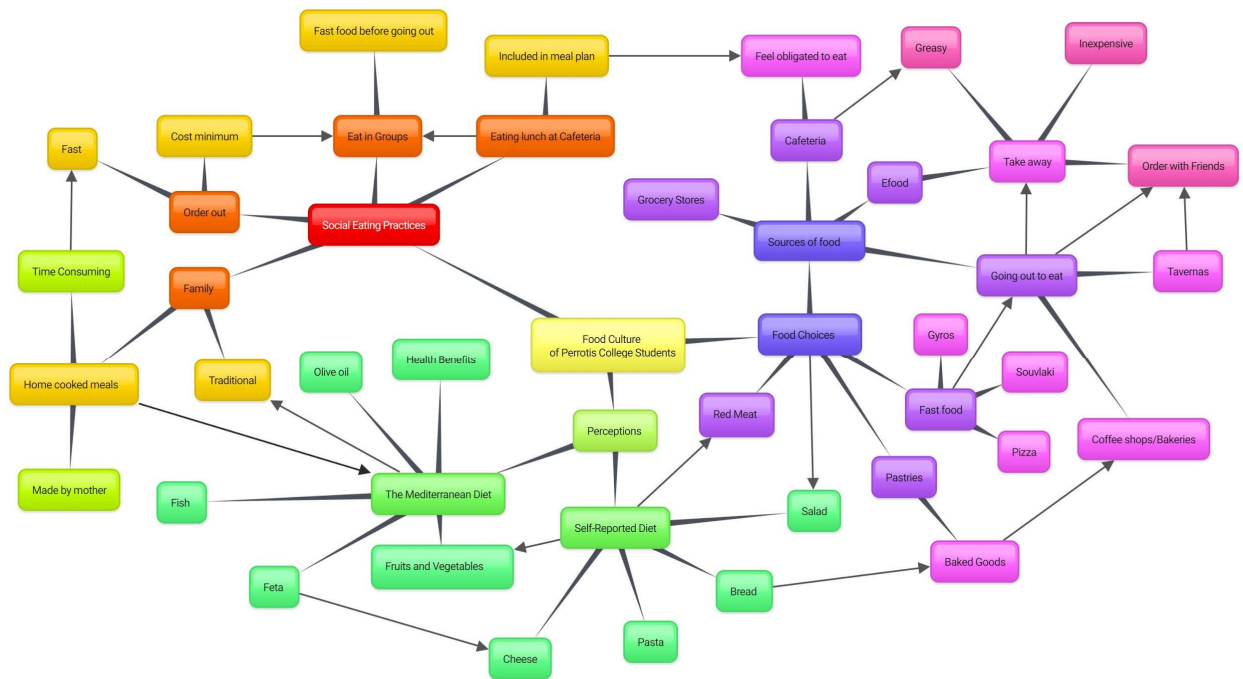
Thessaloniki

- Meat/Fish/Deli
- Bread/Clips-Candy/Gramola
- Milk/Yogurt/Butter
- Wine/Soda

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Appendix G: Web Diagram

The following integrative analysis diagram was constructed to draw conclusions on overall themes to direct our findings.



created with www.bubbl.us