

Going Greek:

A Look into Food Trends, Greek Yogurt, and Socioeconomic Class in the United States

by

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An honors thesis submitted in partial fulfillment

of the requirements for the degree of

Bachelor of Science

Undergraduate College

Leonard N. Stern School of Business

New York University

May 2016

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Acknowledgements

To Dean Menon – Thank you for your continued guidance this past year. Thank you for sharing your knowledge with me as I asked never-ending questions about everything from marketing to food to social impact. You made this process all the more enjoyable and rewarding.

To Professor Marti Subrahmanyam – Thank you for giving me and every other student in the honors program the opportunity and resources to pursue our individual interests regardless of

To Professor Vishal Singh – Thank you for always finding the time to meet with me and point me in a clearer direction for my research (and for answering all of my emails).

To my thesis class – Thank you for always finding a way to stay positive and supporting one another. I've learned so much from this class and I'm glad to have met every one of you.

To my friends and family – Thank you for always believing in me even when I didn't believe in myself. These past four years would not have been possible without your continued support and guidance.

Abstract

This study aims to extract key differences in healthy food trends across socioeconomic groups within the United States. Using Nielsen data on Greek yogurt spend, we look for relationships between spend and various socioeconomic factors. The data provides annual regular and Greek yogurt spend for 125,777 households from 2004-2013. The data also gives household demographics including income, education, race, age, children, and marital status. The study finds three main conclusions. First, income and Greek yogurt spend have a positive relationship. Second, household education and Greek yogurt spend are also positively correlated. Lastly, coastal states are early adopters of Greek yogurt and have higher spend compared to non-coastal states. These findings imply that food companies can target lower socioeconomic groups by increasing knowledge and availability of healthy food.

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Introduction

Within the past couple of years, the food industry has seen the rise and fall of trends like the Paleo Diet, superfoods, and gluten-free. Each trend has a cult-like following of health-conscious consumers that are convinced of a food item's proposed benefits. In 2013, there was a sixfold increase in the number of articles written about kale.¹ The Paleo Diet spiked interests in 2014 with recommendations for consumers to cut out processed foods, dairy, and legumes.² A common thread among all healthy food trends is that they are traditionally marketed towards individuals of higher socioeconomic status. Food companies like Whole Foods target individuals with more disposable income and a higher willingness to pay a premium for their health.

The issue that arises with this current system is the disproportionately high obesity rates of lower socioeconomic groups. Healthy food companies rarely target this demographic because individuals are more price sensitive. Healthy foods also do not have the ability to compete on price with large fast food chains that offer calorie-dense meals. A greasy burger and fries will leave a person feeling fuller and more satiated than a salad. In order to address this issue, this study looks at Greek yogurt as a case study for healthy food trends and how Greek yogurt consumption differs across socioeconomic groups. First, understanding the rise of healthy food trends requires a historical analysis of "health" in the US.

¹ Dan Stone, "What the Kale? The Story (&data) behind Kale's Meteoric Rise," Musings of a Tech Geek. March 3, 2013, Accessed May 11, 2016, <http://www.danstone.me/what-the-kale-the-story-data-behind->

² Janet Helm, "8 Positive Outcomes of the Paleo Trend," US News, October 29, 2014, Accessed May 11, 2016, <http://health.usnews.com/health-news/blogs/eat-run/2014/10/29/8-positive-outcomes-of-the-paleo-trend>.

Literature Review

The Emergence of Modern Foodways

Following the Industrial Revolution, the food industry in the United States began to be characterized by abundance and variety. Advancements in agricultural techniques, coupled with urbanization, resulted in an increased and prolonged food supply. Families were no longer bound to seasonal diets as preservation techniques allowed them to store foods throughout the year. Issues of famine became more of a memory as agriculture became more commercialized. Modern foodways were largely shaped by an industrial revolution, agricultural revolution, and the discovery of vitamins in the 1900s. The effects of these changes were felt not just within the food industry but also in American's views on health and diet.

More people had the freedom to move to urban cities following industrialization due to decreasing needs for farm labor. Inventions such as the plow vastly increased farm productivity and shifted the landscape from subsistence farms to commercial agriculture. Railroads and new transportation systems supported the migration toward urban cities as well. Foods could now be shipped to urban areas at cheaper costs both on land and water. In New York, the Erie Canal's opening in 1825 reduced transportation costs to just 10% of previous rates.³ Advancements in food preservation also contributed to shaping modern food habits. The commercialization of ice and development of refrigerated railcars significantly improved access to perishable foods such as meat and dairy. Cities began to emerge as processing centers for various food industries (i.e. Chicago for meat

³ "Erie Canalway: History & Culture." U.S. National Park Service. Accessed April 27, 2016. <https://www.nps.gov/erie/learn/historyculture/index.htm>.

production) and large food conglomerates consolidated as a result of industrialization.⁴

Elaine McIntosh describes this period as the beginning of an “era of abundance.”⁵ This era of abundance was more representative of modern food culture. With this foundation, the following century left Americans with the affordability to choose what they cooked and ate.

However, for a culture characterized by abundance and choice, the Americans’ understanding of health has been highly structured since the early twentieth century. The discovery of vitamins in 1912 set in motion a movement towards a more nutrient-focused view on what constituted a healthy diet. Ideas on what made a “balanced diet” depended on scientists’ understanding of how essential nutrients interact with the human body. Calcium and vitamin A deficiencies were at the center of discussion in the early 1920s.⁶ Americans were encouraged to drink milk and eat green vegetables in order to obtain optimal health. In the late 1920s came new research on the importance of vitamin C. In the early 1930s, vitamin G commanded attention and a few years later came a revival of the importance of vitamin B.⁷ The popularity of certain foods came and went with their corresponding vitamin.

Scientists were not the only ones guiding the conversation around health. Food companies saw the opportunity to market their products based on various – often over exaggerated – health claims. Without the knowledge of vitamins’ full effects, companies were free to purport everything from fighting tooth decay to curing constipation.

⁴ Cindy R. Lobel, "Food in 19th-Century American Cities," *Oxford Research Encyclopedia, American History*, Accessed April 2016, <http://americanhistory.oxfordre.com/view/10.1093/acrefore/9780199329175.001.0001/acrefore-9780199329175-e-281?print=pdf>.

⁵ Elaine N. McIntosh, *American Food Habits in Historical Perspective* (Westport, CT: Praeger, 1995), 93.

⁶ Harvey A. Levenstein, *Paradox of Plenty: A Social History of Eating in Modern America* (New York: Oxford University Press, 1993), 13.

⁷ *Ibid.*, 14.

Standard Brands, the second largest packaged food company after General Foods, spent a majority of its marketing dollars in the 1930s on such efforts. The company put forward its Fleischmann brand's compressed yeast cakes as an ideal source of vitamin B, able to "clear up pimples, boils, and acne, increase energy levels, and cure poor digestion."⁸ This obsession with the benefits of vitamins, what Levenstein refers to as "vitamin-mania," reflected a larger shift of America's understanding of health from quality to quantity.

Ensuring a Healthy American Front Line

By 1940, scientists had discovered all essential nutrients.⁹ Experts could now measure how much of each vitamin or how many calories a food contained. This quantification of "health" allowed for legislation and the creation of national dietary guidelines in the wake of World War II.

Following the Great Depression, President Franklin D. Roosevelt ordered an analysis on the health of the nation. America needed strong men on its front line, which started with sound nutrition at home. The government established the Food and Nutrition Board (FNB) to develop the first Recommended Dietary Allowances (RDAs).¹⁰ The RDAs served as a set of guidelines recommending levels of nutrients deemed healthy for males and females. These guidelines marked a critical point in creating a nationally accepted idea of health. Americans could now place their individual diet on a spectrum of healthy to unhealthy in relation to what was published in nutrition journals. Jessica Mudry summarizes this creation of RDAs in her book, *Measured Meals*:

⁸ Levenstein, 14.

⁹ McIntosh, 117.

¹⁰ Jessica J. Mudry, *Measured Meals: Nutrition in America* (Albany: SUNY Press, 2009), 62.

The RDAs helped to further the epistemological shift that quantified quality, and they helped the proliferation of a secondary discourse of quantification by encouraging comparison between people and the chart...The Recommended Daily Allowance created a fictionalized numeric ideal of a healthy public.¹¹

The USDA created the first visualization of recommended food intake in 1943. The “Basic Seven Food Groups” consisted of 1) leafy, green, and yellow vegetables, 2) citrus fruit, tomatoes, raw cabbage, 3) potatoes and other vegetables and fruit, 4) milk, cheese, ice cream, 5) meat, poultry, fish, eggs, dried peas, beans, 6) bread, flour, cereals, and 7) butter and fortified margarine.¹²

Figure 1. Basic Seven Food Groups (1943)



The seven groups were put together on a wheel with recommended serving sizes for each category. What wasn't part of the guide were suggestions on food preparation or meal planning. Instead, Americans were encouraged to follow visual cues when choosing from

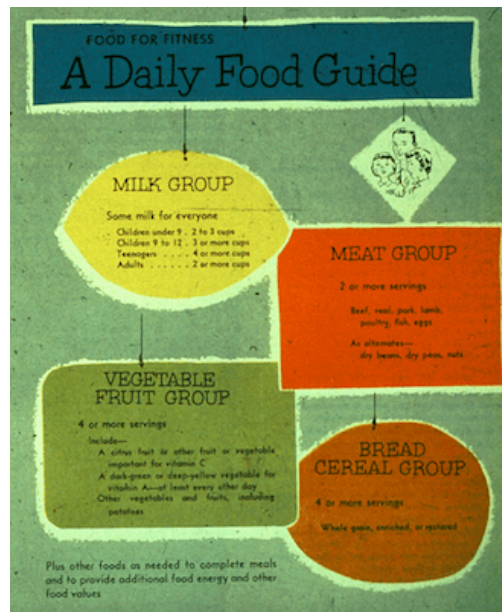
¹¹ Mudry, 63.

¹² Mudry, 65.

a restaurant menu or a grocery aisle. Adhering to the Basic Seven diagram meant “fortify[ing] America at war.”¹³ This quantitative representation of food – based purely on nutritional value – set the foundation for food consumption and health in the following years.

The Basic Seven was replaced with the Basic Four, shown below, in 1956 to appease post-World War II America. Following a period of food rationing and strict food restrictions, America entered a period of rapidly growing food processing. Supermarket shelves were soon filled with packaged foods that looked less like its original food item. The Basic Four served as a general guideline for nutrition with more flexibility and choice available for Americans.

Figure 2. Basic Four Food Groups (1956)



¹³ Mudry, 66.

The USDA combined all fruits and vegetables into one and got rid of butter and margarine as a food group.¹⁴ Like the Basic Seven, this new guide focused on preventing nutritional deficiencies and set only minimum servings. If you met the serving minimum, or if a food did not fall into a particular category, additional consumption was not quantified. This focus on “eat more” carried until the 1970s when new research showed the correlation of overeating with chronic diseases.

In 1977, the Senate Select Committee on Nutrition and Human Needs, originally established to “lead the war against hunger among the nation’s young, old, and poor,” published the first *Dietary Goals for the United States*.¹⁵ The publication was met with significant discourse as it marked a shift in understanding the nation’s health. Instead of information on hunger, the report was the first to link overconsumption to chronic diseases such as hypertension and heart disease. As a result of their findings, the Dietary Goals designated certain “bad” and “good” food items, maximum serving sizes, and hierarchies within each food group.¹⁶ Due to the controversy around this report, it took the USDA another 15 years to fully integrate this new understanding of health into its dietary guidelines.

The USDA’s 1992 Food Guide Pyramid, shown below, was a carefully constructed visual that focused more on proportionality and moderation. Jessica Mudry, in her analysis of nutrition in the US, argues that the Food Pyramid “illustrated quantities, connoted qualities, and encouraged Americans to adopt a new understanding of what

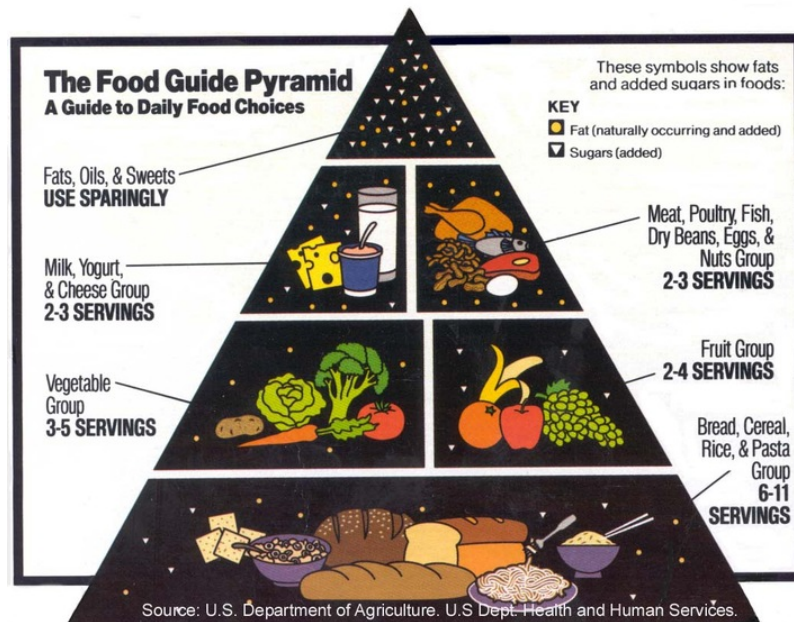
¹⁴ Marion Nestle, *Food Politics: How the Food Industry Influences Nutrition and Health* (Berkeley: University of California Press, 2002), 37.

¹⁵ Ibid, 38, 40.

¹⁶ Laura S. Sims, *The Politics of Fat: Food and Nutrition Policy in America* (Armonk, NY: M.E. Sharpe, 1998), 230.

kind of food they should eat.¹⁷ Foods near the base of the pyramid constituted foods that were better for one's health and should be a greater portion of one's diet.

Figure 3. Food Guide Pyramid (1992)



The size of each group, in relation to the rest of the pyramid, gave Americans visual cues on how to eat “healthy.” For the first time, the USDA also supplemented the illustration with maximum suggested serving sizes. Rather than “some milk for everyone,” the pyramid allocated 2-3 servings of milk, yogurt and cheese. The USDA’s goal to create a memorable aid proved successful. Marion Nestle described the Food Pyramid as “the most widely distributed and best recognized nutrition education device ever produced in this country.”¹⁸ Though the pyramid was widely recognized, obesity levels in the US were consistently climbing at the turn of the century.

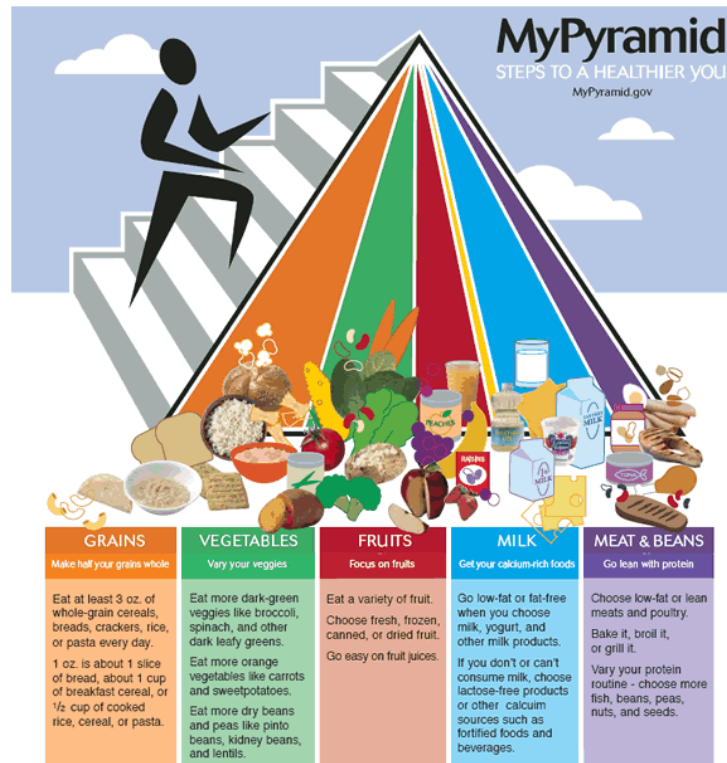
The USDA revamped the food pyramid in 2005 to address the country’s rising health concerns. MyPyramid (Figure 4) kept the strengths of the previous model but

¹⁷ Mudry, 97.

¹⁸ Marion Nestle, "In Defense of the USDA Food Guide Pyramid," *Nutrition Today* 33, (September 1998): 189-97, Accessed April 28, 2016.

added in new graphics and concepts such as the stick figure climbing up the side of the image to indicate the importance of exercise.

Figure 4. MyPyramid (2005)



For the first time, the USDA created an online tracker where users could enter their weight, age, and activity level and receive a personalized diet plan. The tracker compared the users input with the recommended servings of each food group and indicated any discrepancies. The effectiveness of this approach was largely disputed. Critics of this new model rallied around its lack of simplicity as well as the discernable influence of large food companies. The *Scientific American* writes:

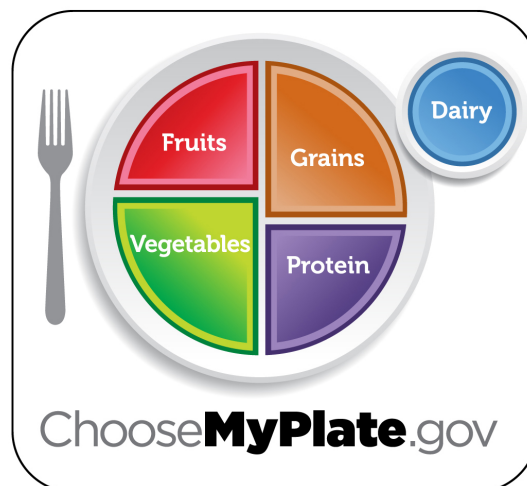
[T]he USDA eliminated all traces of hierarchy, presumably because food companies do not want federal agencies to advise eating less of their products, useful as such recommendations might be to an overweight public.¹⁹

¹⁹ Scientific American, "Flawed Food Pyramids," *Scientific American*, August 8, 2007, Accessed May 03, 2016, <http://www.scientificamerican.com/article/flawed-food-pyramids/>.

Like the previously mentioned Food Pyramid, MyPyramid was not successful in encapsulating the components of a healthy diet. The guide's recommendations were limited by Americans' quantitative understanding of nutrition. BMIs, serving sizes, and calories were still predominantly at the forefront of America's health.

The most recent USDA food guide overhauled the 19-year old food pyramid in 2011 as a simpler representation of a healthy meal. MyPlate, shown in Figure 5, attempts to stray away from numerical serving sizes by offering a point of reference for proportion sizes. Key points on each food group accompany the figure such as "Go lean with protein" and "Remember to choose skim milk or 1% milk."²⁰ MyPlate is now used in schools across the country to teach students about nutrition.

Figure 5. MyPlate (2011)



The historical analysis of USDA food guides is not a direct explanation of the healthiness of the American diet. However, they provide a visual understanding of the country's scientific approach to health. Since the nineteenth century, the government has

²⁰ "MyPlate," Choose My Plate, January 07, 2016, Accessed May 03, 2016, <http://www.choosemyplate.gov/MyPlate>.

shaped concepts of “health” through the widespread diffusion of these visual aids. One’s feelings toward fats in 1992 are vastly different from one’s feelings today. These constantly changing food guides reflect the new information discovered about the science behind food and their nutrients. Furthermore, though we have come a long way since the first vitamin was discovered, nutritionists still debate over the components of a healthy diet.

The Components of Healthy Food Trends

In order to get a complete picture of health in the United States, the analysis must take into account the power of businesses and politics within the food industry.

Companies have always found a way to incorporate new scientific health findings into their marketing campaigns and product design. The food industry is laden with products that boast various health benefits on their packaging. Almost every aisle of the supermarket has some “Heart Healthy” or “Low-Fat” food. These health attributes have become a common selling point for companies to stand out from the shelf. The ubiquity of these health claims provides another framework to analyze health in America.

Consumers today are incessantly bombarded with the newest “superfood” or diet that is acclaimed by a vague food association named after some “revolutionary” (mostly likely white) nutritionist. The Atkins Diet, gluten-free diets, and Greek yogurt are all prime examples of a food trend that captured America’s attention with the help of both businesses and nutritionists. Diet and health foods, as we understand today, first emerged in the 1960s and 1970s when America realized the risks of diet-related chronic disease.²¹

²¹ Nestle, *Food Politics: How the Food Industry Influences Nutrition and Health*, 38.

The presence of these types of food came about in opposition to the industrialization of foodways previously mentioned. As the industry became more standardized and processed, a counter cuisine emerged that urged consumers to avoid processed foods. The 1980s saw a rise in organic farming that “questioned and challenged conventional science and agribusiness.”²² However, the movement did not gain much traction because, as Mudry writes, “the alignment of science, government, and industry proved too effective at dispensing dietary advice.”²³ In the mid-twentieth century, countercuisine movements did not have effective marketing channels, and therefore the bandwidth, to disprove the health findings of the USDA. Shifts in these industries can be understood by delving deeper into one of the previously mentioned trends: the Atkins Diet.

The Atkins Diet’s low-carb regimen was shown to help people lose weight but successful weight loss was not the sole explanation for its popularity. The diet fit well within American food preferences and their understanding of health in the 2000s. Robert Atkins, a cardiologist, first created the diet in 1972 with a focus on low-carb and high-protein foods. At the time, Americans saw carbohydrates as good and fat as bad. Dr. Atkins, by proposing not all fats should be off-limits, went against traditional nutritionists’ beliefs. Atkins was ultimately dismissed as another “fad diet” as nutritionists continued to claim fat as the principal cause of high obesity levels. The USDA Food Pyramid warned people to use fat and oil “sparingly,” taking up the smallest portion of the diagram. It was not until 2002 that the Atkins Diet revolutionized the diet industry. Scientists and nutritionists began to question previous claims as obesity levels

²² Mudry, 100.

²³ Ibid.

reached an all time high in 2001. A *New York Times* article written by science journalist Gary Taubes summarizes this turning point:

The perversity of this alternative hypothesis is that it identifies the cause of obesity as precisely those refined carbohydrates at the base of the famous Food Guide Pyramid...While the low-fat-is-good-health dogma represents reality as we have come to know it, and the government has spent hundreds of millions of dollars in research trying to prove its worth, the low-carbohydrate message has been relegated to the realm of unscientific fantasy.²⁴

Taubes continues to analyze the science behind a low-carb diet, suggesting the validity of Dr. Atkins's assumptions. The article spends multiple pages describing ideas such as the glycemic index and the role of insulin. Nutritionists' changing views on fat, summarized in the article, provided the ideal foundation for the Atkins Diet's success.

Scientific uncertainty around healthy diets gives companies the perfect business opportunities. People like Dr. Atkins can capitalize on the idea of carbohydrates as the main source of obesity before scientific evidence is discovered to validate or even disprove the claim. As a result, many factors other than science affect Americans' understanding of health and nutrition. Marion Nestle summarizes these conflicting powers in *Food Politics*:

Nutrition advice might be less confusing and far less controversial if it were based solely on scientific knowledge, but research studies are subject to interpretation. Dietary guidelines necessarily are political compromises between what science tells us about nutrition and health and what is good for the food industry.²⁵

Food companies have learned to strategically position their product offerings to capitalize on food trends. America's obsession over superfoods follows a similar trajectory to that

²⁴ Gary Taubes, "What If It's All Been a Big Fat Lie?" *New York Times*, (July 7, 2002), <http://www.nytimes.com/2002/07/07/magazine/what-if-it-s-all-been-a-big-fat-lie.html?pagewanted=all>.

²⁵ Nestle, *Food Politics: How the Food Industry Influences Nutrition and Health*, 30.

of the Atkins Diet. Positioning kale as a superfood caused a huge increase of consumption of the green previously only used for decoration. Science behind the antioxidant and nutrient-rich leafy green, along with MyPlate's emphasis on vegetable consumption, helped support and sustain kale's popularity.

The rise of nutrient-based diet recommendations shaped the competitive landscape for many food companies. More brands were highlighting their product's low-fat or high vitamin C content as a way of differentiating themselves to health obsessed consumers. The stereotype of the healthy food movement is embodied in an upper class, white female. Companies that sell these health foods cannot afford to compete on price with their highly subsidized but less healthy counterparts. As a result, eating healthy has become synonymous with higher income. A Harvard study showed that the cost of eating healthy was on average \$1.50 per day.²⁶ This amounts to an additional \$180 a month for a family of four to maintain a diet rich in fruits, vegetables, nuts, and fish. The implications of this price premium are discussed in the next section.

In analyzing modern healthy food trends, there are 3 underlying players common to all popular trends: nutritionists, food companies, and consumers. Nutritionists are the first to set the foundation for an upcoming trend. They publish articles and reports with new recommendations on certain nutrient intakes or diet regimens. These scientific findings serve as the basis for any health claim food companies make. The next component to a healthy food trend is a food company or person that serves as a representative for the movement. The company (Chobani in the case of Greek yogurt) or individual (Dr. Peter Atkins in the case of the Atkins Diet) contributes the most in

²⁶ Mayuree Rao, Ashkan Afshin, Gintanjali Singh, and Dariush Mozaffarian. "Do Healthier Foods and Diet Patterns Cost More than Less Healthy Options? A Systemic Review and Meta-analysis." *BMJ Open*, 2013. 3:e004277. Doi:10.1136/bmjopen-2013-004277.

marketing and popularizing the food trend. Without an archetype, it is difficult for the movement to spread and gain traction across the country. Lastly, the food trend must appeal to consumers' existing taste preferences. The new food item or habit cannot stray too far from current predilections. For the remainder of this report, we will use this framework in answering the question of how food trends affect different socioeconomic groups.

Food and Socioeconomic Class in the US

For much of the twentieth century, poor health was analyzed as an individual problem. At the time, obesity was seen as a result of not knowing how to eat healthy. The USDA's food guides were then a way to address such an issue. However, even with the mass distribution of these food guides, people were not meeting the dietary recommendations. Reports on the prevalence of obesity changed previous beliefs and showed the link between socioeconomic status in the US and diet quality. Although the US food industry is full of healthy products, these items are marketed towards those with more purchasing power. These factors create a society in which food habits differ across socioeconomic groups.

Many studies on food issues in contemporary society have analyzed the phenomenon of poor diet quality linked to lower socioeconomic status (SES). A 2008 report in the *American Journal of Clinical Nutrition* found that diet quality was affected by age, sex, occupation, education, and income level.²⁷ The study measured diet quality based on a food's energy density. A diet consisting of low energy density foods,

²⁷ Nicole Darmon and Adam Drewnowski, "Does Social Class Predict Diet Quality?," *American Journal of Clinical Nutrition* 89, no. 5 (May 2008): 1107-112.

including fish, lean meats, whole grains, and fresh fruits and vegetables, was linked to better health.²⁸ When looking at health, the study found a positive relationship between SES and dietary quality. Within the framework of USDA guidelines, food habits of higher SES groups had a tendency to be closer to dietary recommendations and differences were more evident on the food level. People in this group were more likely to incorporate not just a greater amount but also a larger variety of fruits and vegetables (see Appendix A). Though the report did not find a significant relationship between SES and macronutrient intake, it is important to note that these groups maintain differences in overall food consumption.

The purpose of this thesis is not to examine poor diet quality in people of low SES. Rather, differences in food habits across socioeconomic groups serve as a basis for looking at why healthy food trends disproportionately affect different groups. As unhealthy, calorically dense foods have become the norm in the US, eating healthy became more of a luxury. Nutritionists' plea for Americans to eat healthier meant making conscious food choices that were not necessarily the most conducive to a typical "American lifestyle." Food companies have exacerbated this issue by placing a premium on healthy food. As previously mentioned, a healthy diet costs \$1.50 more per day compared to an unhealthy diet. People willing to pay more for healthier food are typically those of higher socioeconomic status. Food companies capitalize on this opportunity by emphasizing the health benefits of their products and contribute to the snowballing effect of food trends. The following analysis of Greek yogurt in the US serves as a way to look at food trends affects across various socioeconomic groups.

²⁸ Ibid.

Rise of Greek

The popularity of yogurt in America is no coincidence. Yogurt came about as a health food during the 1950s at a crucial time. Americans were looking for foods that fit into recommended food groups in order to maintain a healthy diet. Within this historical context, yogurt was set up for success as long as it was marketed for its health benefits. Prior to Dannon's marketing efforts, yogurt was largely a niche product of which most Americans detested the taste. However, Dannon was able to transform their attitude towards the product. The company created vanilla yogurt in 1953, announcing that yogurt was now "completely Americanized."²⁹ Dannon was also among the first companies to advertise yogurt as a natural solution to various medical problems from "gastrointestinal upset to colitis."³⁰

In the late 1900s, the company's advertisements, like the one below, aimed to emphasize the health benefits of yogurt. *In Soviet Georgia* touted a longer, healthier life for consumers who had yogurt as a part of their diets. Although yogurt products were high in sugar and resembled more of a dessert, there was still a general assumption that it was a health food. In her book, *What to Eat*, Marion Nestle describes yogurt as "a marketing miracle...It is a fast-selling dairy dessert with an aura of a health food."³¹ As yogurt became more of a dessert food, it grew in popularity and penetrated more American households.

²⁹ Rebecca Mead, "Just Add Sugar," *The New Yorker*, November 4, 2013.

³⁰ Cheryl Sternman Rule. *Yogurt Culture: A Global Look at How to Make, Bake, Sip, and Chill the World's Creamiest, Healthiest Food* (Houghton Mifflin Harcourt, 2015), 48-49.

³¹ Marion Nestle, *What To Eat*, (New York: North Point Press), 2006.

Figure 6. Dannon's *In Soviet Georgia* Print Ad (1977)



Though Fage was the pioneer in 1998, Greek yogurt did not become popular until the late 2000s.³² At the time, Fage's product did not have all three components of a healthy food trend as mention earlier. First, nutritionists at the time were still skeptical of high-protein diets. Greek yogurt, which has a higher protein content than regular yogurt, did not offer much health appeal apart from it being a serving of dairy. Second, Fage was not set out to be the nationally recognized brand to stand behind the Greek yogurt trend. The company initially introduced strained yogurt in America with a "niche thinking" approach. They focused on smaller retailers in New York due to the high price (\$2.49 for

³² FAGE USA. "The FAGE Story." FAGE Total Greek Yogurt. 2013. Accessed May 2016. <http://usa.fage.eu/company/about-fage>.

a six-ounce serving) and distribution barriers (the yogurt was imported from Greece).³³

The company's brand also did not leave a strong impression on consumers. Consumers were unsure of its pronunciation and did not know if it was supposed to be a diet food or snack food.³⁴ Lastly, Fage's initial product did not align with American taste buds.

Though their yogurt was still creamy and rich, leaving consumers feeling for satiated, it remained too tart to appeal to the masses.

In 2009, Hamdi Ulukaya and his company, Chobani, captured the Greek yogurt market by storm. Within five years, the company reached a billion dollars in revenue.³⁵ This exponential growth was due to a multitude of factors. First, the shifting idea behind fat and protein played in favor of Chobani. After the rise of the Atkins diet in 2002, Americans were seeking food products high in protein. Second, Chobani aggressively went after mass-retailers to supply its yogurt. Unlike Fage, Chobani's strategy was widespread distribution through retailers such as ShopRite.³⁶ Lastly, Ulukaya understood Americans preference for sweet food products as shown by the rise in dessert-like yogurt products previously mentioned. As a result, Chobani yogurt came in a variety of flavors – plain, vanilla, strawberry, blueberry – that sweetened its traditionally tart taste. Seeing the company's rapid success, other players began entering the market. Dannon created Oikos, its Greek yogurt brand, in 2011 and Yoplait revamped its Greek yogurt line with Yoplait Greek 100 in 2013. Appendix B shows a timeline of Greek yogurt products.

³³ Panos Mourdoukoutas, "How Greek Yogurt Captured The American Market: The Other Half Of The CNBC Story," Forbes Magazine, June 22, 2011, Accessed May 10, 2016.
<http://www.forbes.com/sites/panosmourdoukoutas/2011/07/22/how-greek-yogurt-captured-the-american-market-the-other-half-of-the-cnbc-story/#5533625d7326>.

³⁴ Mead, "Just Add Sugar."

³⁵ Ibid.

³⁶ Ibid.

Case Study

The Data & Hypothesis

For our analysis on Greek yogurt as a healthy food trend, we looked at a Nielsen dataset of Greek yogurt spend across 10 years. In the entire dataset, we observe over 429,000 instances. The data records 125,777 households' annual yogurt and Greek yogurt spend in dollars from 2004 to 2013. Each household is then characterized by a unique household ID as well as income, presence of children, marital status, age, education, race and state. We use this dataset to observe Greek yogurt trends across socioeconomic groups. We hypothesize that, due to the price point of Greek yogurt, there will be a positive relationship between Greek yogurt spend and income. We also expect to see white households spend the most on Greek yogurt. Given previous research on the Greek yogurt industry and health food trends in the US, we analyze this dataset to be able to either accept or reject the two hypotheses mentioned above.

Findings & Implications

In order to measure spend on Greek yogurt, we looked at the total market share of Greek yogurt within a household. This percentage was calculated by taking the Greek yogurt spend divided by total yogurt spend (regular yogurt spend plus Greek yogurt spend). When analyzing the data, we found three main trends regarding Greek yogurt market share, explained further in the following sections. The first is that there is a positive relationship between income and Greek yogurt spend. Households with higher income tended to spend more of their “yogurt budget” on Greek versus regular yogurt. This trend is also seen with household education levels. Families with higher education

generally spend more on Greek yogurt than families with lower education levels. Lastly, coastal states such as California and New York adopted Greek yogurt earlier than the rest of the country. The states with the highest average Greek yogurt market share are found in the coastal regions. These findings can be used to recommend ways for increasing diet quality in lower socioeconomic status groups.

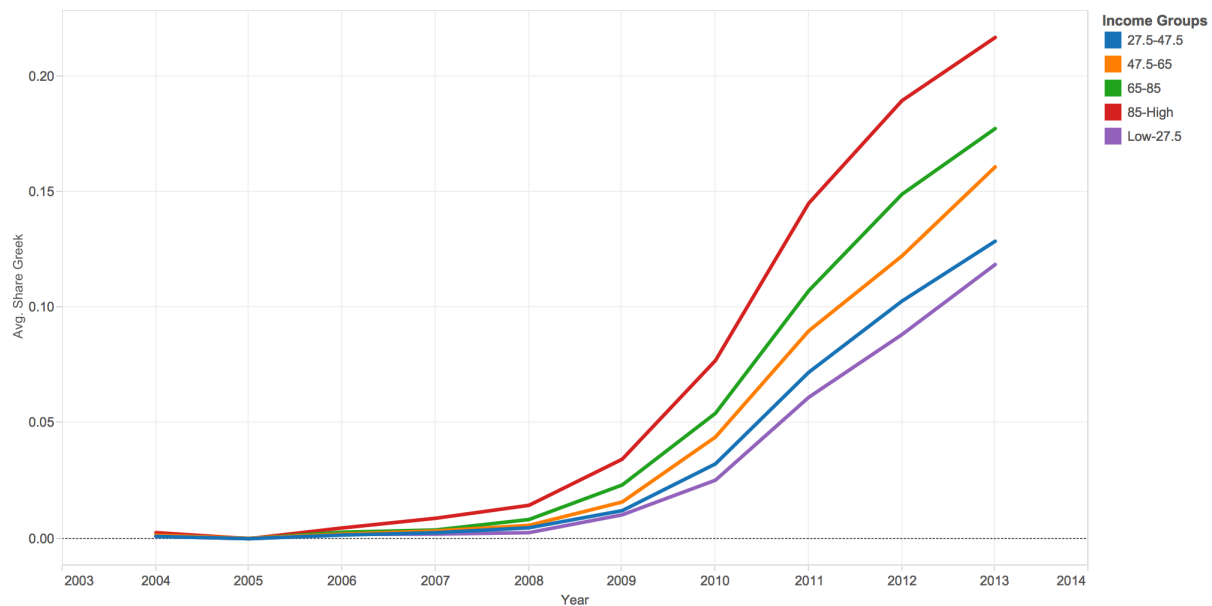
Income & Greek Yogurt

The first main finding is the correlation between household income level and Greek yogurt market share. To look at Greek yogurt spend across income, we divided households into five income buckets:

- 1) Low – \$27,500
- 2) \$27,500 - \$47,500
- 3) \$47,500 - \$65,000
- 4) \$65,000 - \$85,000
- 5) 85,000 – High

Using these income buckets, we looked at Greek yogurt market share across different factors such as time, race, children, and marital status. When looking at average spend broken down by years (Figure 7), there is logistic growth, increasing right after Chobani's opening in 2007 and leveling off as more competitors enter in 2011.

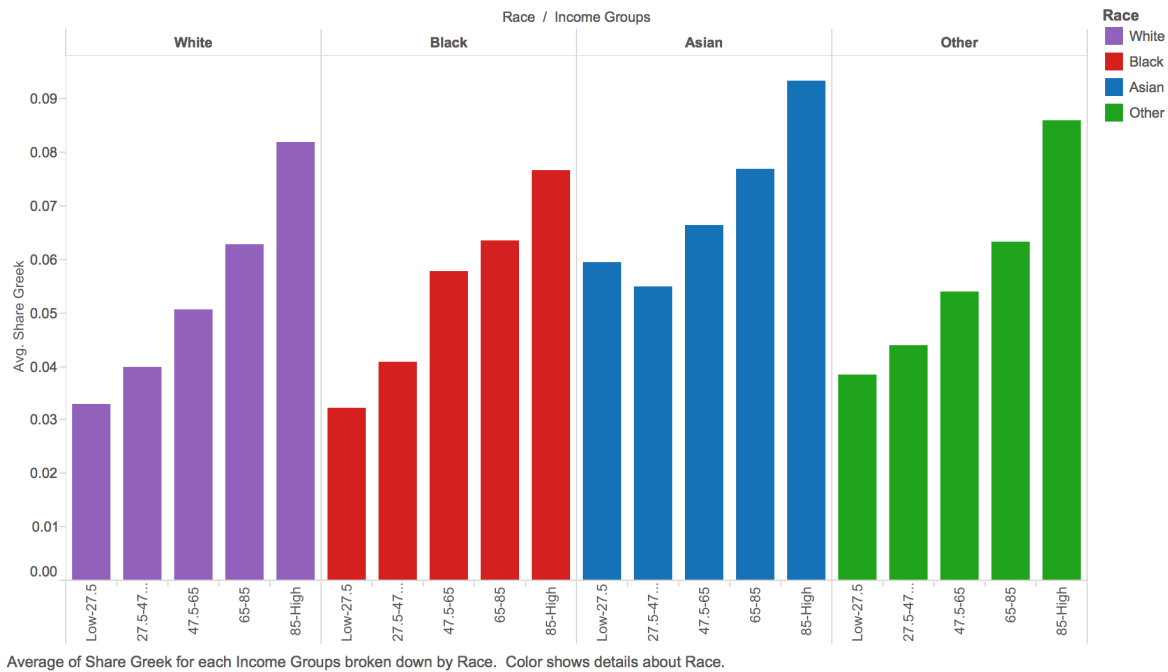
Figure 7. Greek Yogurt Trends by Income (2004-2013)



The trend of average of Share Greek for Year. Color shows details about Income Groups.

The differences between income groups also increase with time. The market share for households with incomes of \$85,000 or higher increase at a faster rate than that for households with incomes of \$27,500 or lower. We find that higher income households' Greek yogurt market shares are generally greater across other socioeconomic factors. Figures 8 – 11 show market shares across income groups subdivided by race, children, and marital status.

Figure 8. Greek Yogurt & Income by Race

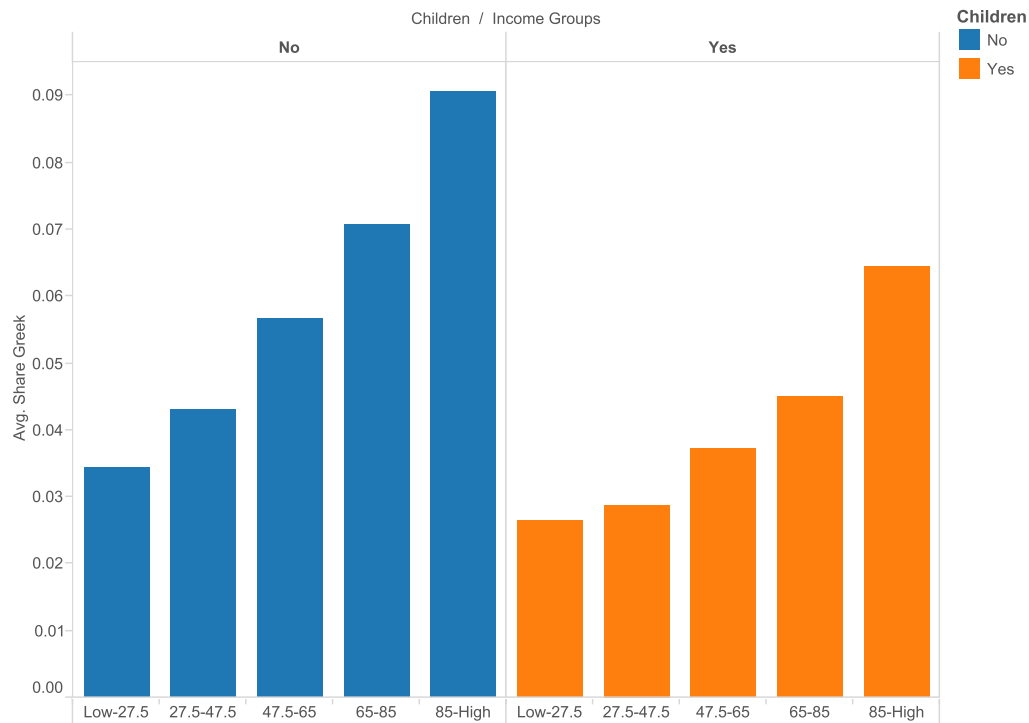


An interesting finding when looking at trends broken down by race is that Asians have less of a spending gap between lower and upper income groups. Asians with lower income have a higher (almost double) Greek yogurt market share than other race groups of similar income level. This difference may be explained by many factors. The first of which is that Greek yogurt appeals to lactose intolerant consumers. Though Greek yogurt still contains lactose, the straining process removes most of the lactose and the probiotics in yogurt help break down the remaining lactose. Due to this factor, Asians, who have the highest rates of lactose intolerance, can prefer consuming Greek yogurt to other dairy products regardless of its higher price point. Additionally, Greek yogurt can have social meaning for different racial groups. For example, eating Greek yogurt is a way for groups to feel “more American” regardless of income level. Food items like red meat see this

sort of trend where certain racial groups of lower class spend a higher percentage of their income because of the item's social significance.

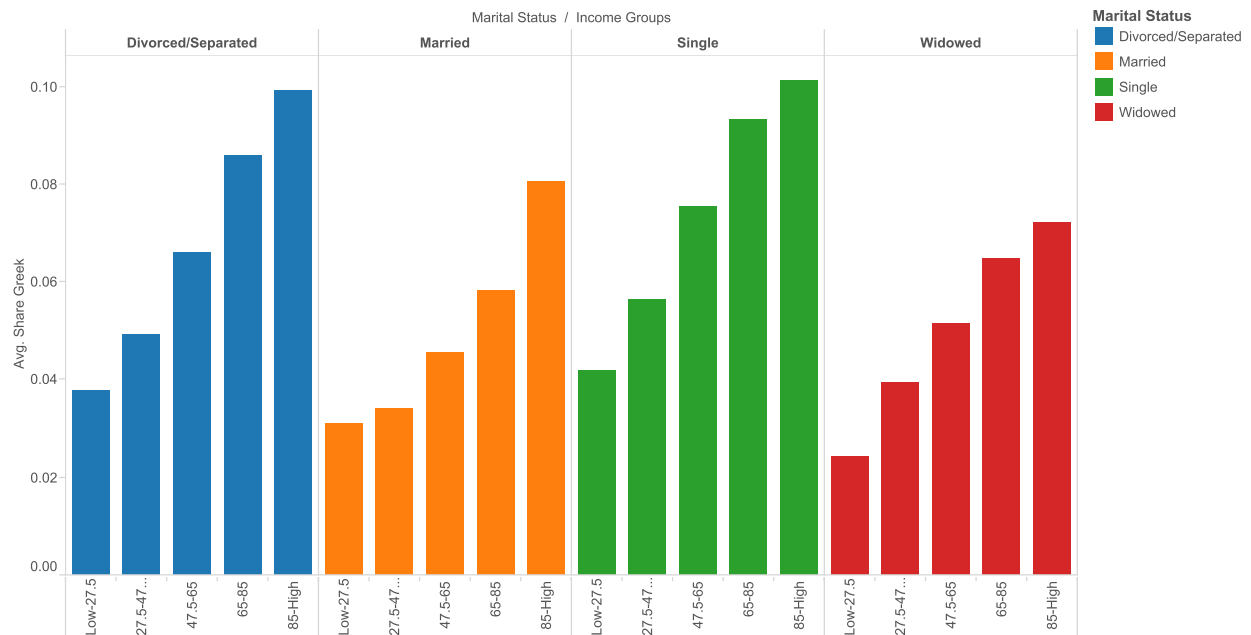
The trend between higher income and higher market share is also seen when broken down by presence or absence of children (Figure 9) and marital status (Figure 10).

Figure 9. Greek Yogurt & Income by Children



Average of Share Greek for each Income Groups broken down by Children. Color shows details about Children.

Figure 10. Greek Yogurt & Income by Marital Status



Average of Share Greek for each Income Groups broken down by Marital Status. Color shows details about Marital Status.

The slightly more moderate increase in Greek yogurt spend found in households with children can be explained by larger households. Households with children will have more expenses than those without children, leading to less disposable income to spend on Greek yogurt. When looking at marital status, widowed households generally have lower spend on Greek yogurt. Further analysis reveals that widowed households, on average, are older. They have an average age of 72 compared to divorced, married, and single households who have an average age of 59, 54, and 52, respectively. This age difference can explain lower Greek yogurt spending in widowed households. A 2015 Nielsen study found that younger consumers were more willing to buy healthy foods and pay a

premium for the product.³⁷ Children in married households, who are gaining purchasing power, are demanding more healthy foods regardless of the price premium.

Overall, there is a positive correlation between income level and Greek yogurt spend. Implications for this relationship include the equal importance of other factors (such as health benefits and social status) in determining how much one spends on Greek yogurt. Of course, the easiest way to increase Greek yogurt consumption among lower income groups is to lower price. However, if price cannot be lower, companies can consider marketing other attributes of the yogurt such as its lower lactose content and importance in the American diet.

Education & Greek Yogurt

The next observation the data shows is the positive relationship between education level and Greek yogurt market share. Education is broken down into the following groups:

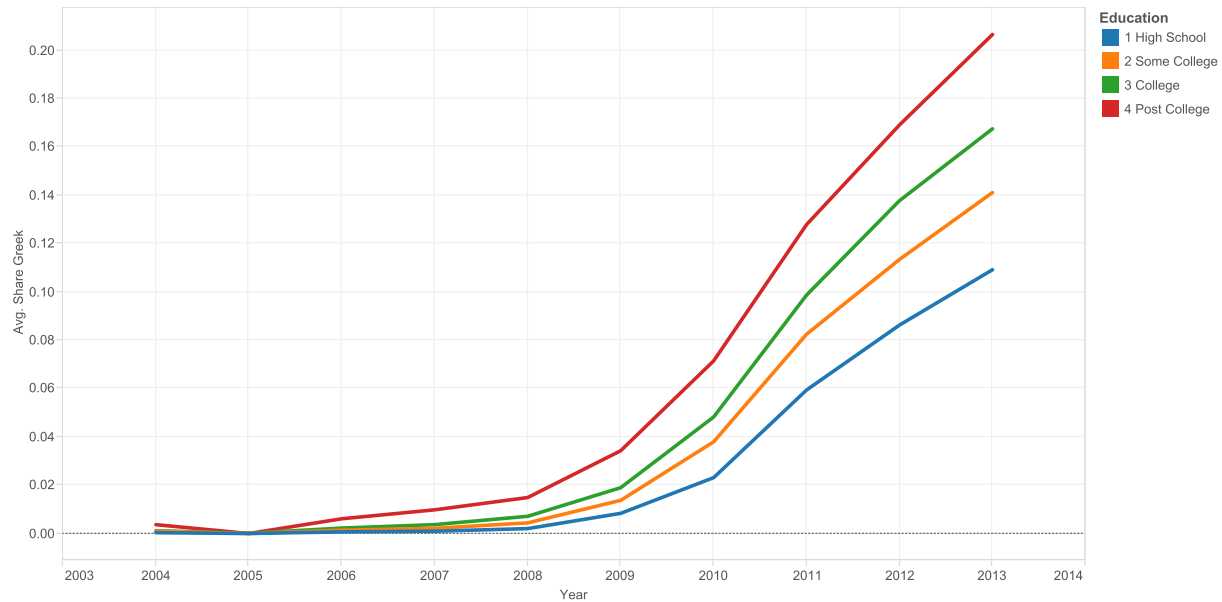
- 1) High School
- 2) Some College
- 3) College
- 4) Post College

The relationship between higher education and Greek yogurt spend can be attributed to the correlation between education levels and income. Households that have achieved higher levels of education are more likely to have higher incomes. The relationship

³⁷ "Younger Consumers Endorse Healthy Foods With A Willingness To Pay a Premium." Nielsen Newswire. February 5, 2015. Accessed May 10, 2016.
<http://www.nielsen.com/us/en/insights/news/2015/younger-consumers-endorse-healthy-foods-with-a-willingness-to-pay.html>. ‘ \

between Greek yogurt market share and education across time, shown in Figure 11, is similar to Figure 7 where Greek yogurt spend among education levels increase as the product becomes more popular in American diets.

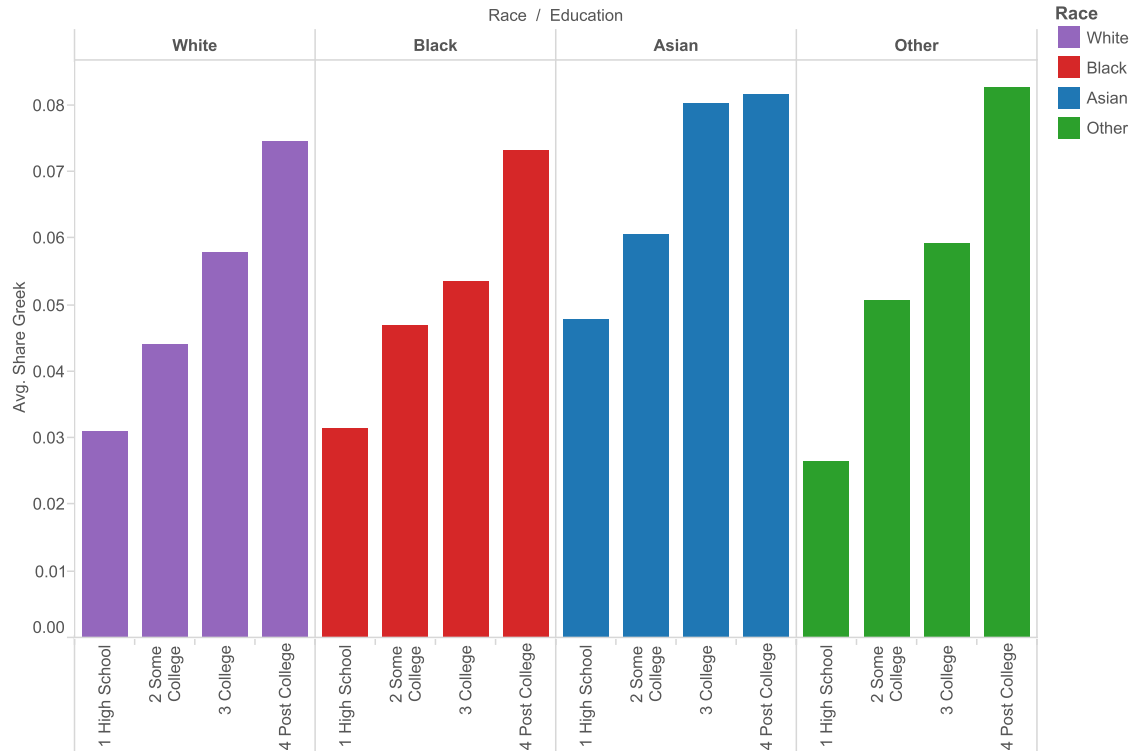
Figure 11. Greek Yogurt Trends by Education (2004-2013)



The trend of average of Share Greek for Year. Color shows details about Education.

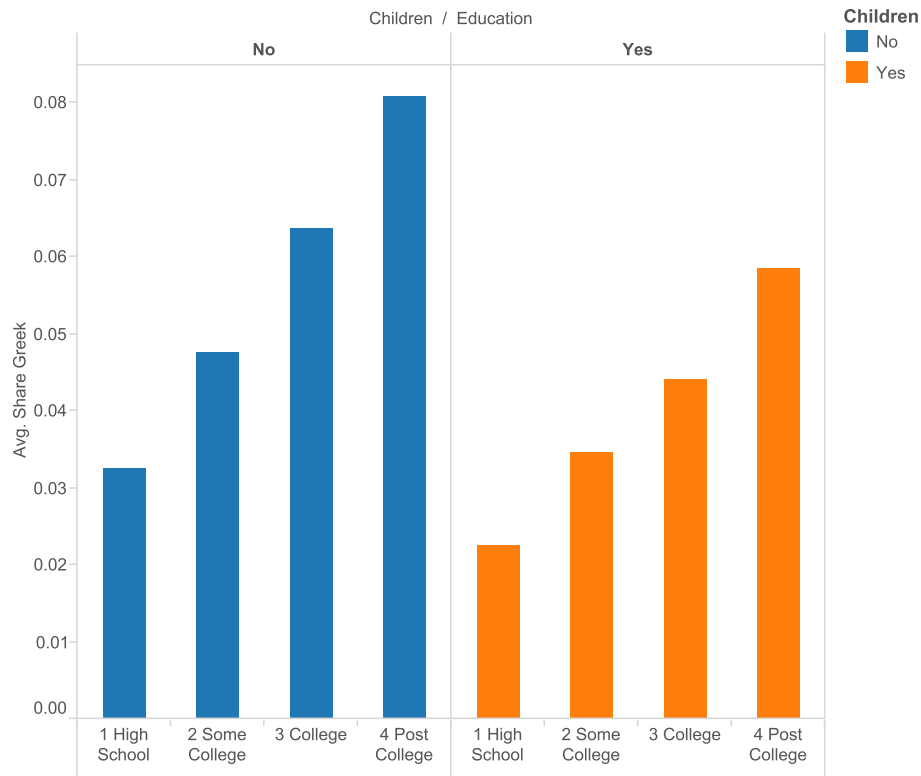
The previously mentioned trend among Asians to spend higher amounts on Greek yogurt is also seen when looking at the data broken out down by income (Figure 12). A reason for this, again, can be due to high levels of lactose intolerance among Asians. Figures 12-14 below show the relationship between Greek yogurt market share and education subdivided by race, children, and marital status, respectively.

Figure 12. Greek Yogurt & Education by Race



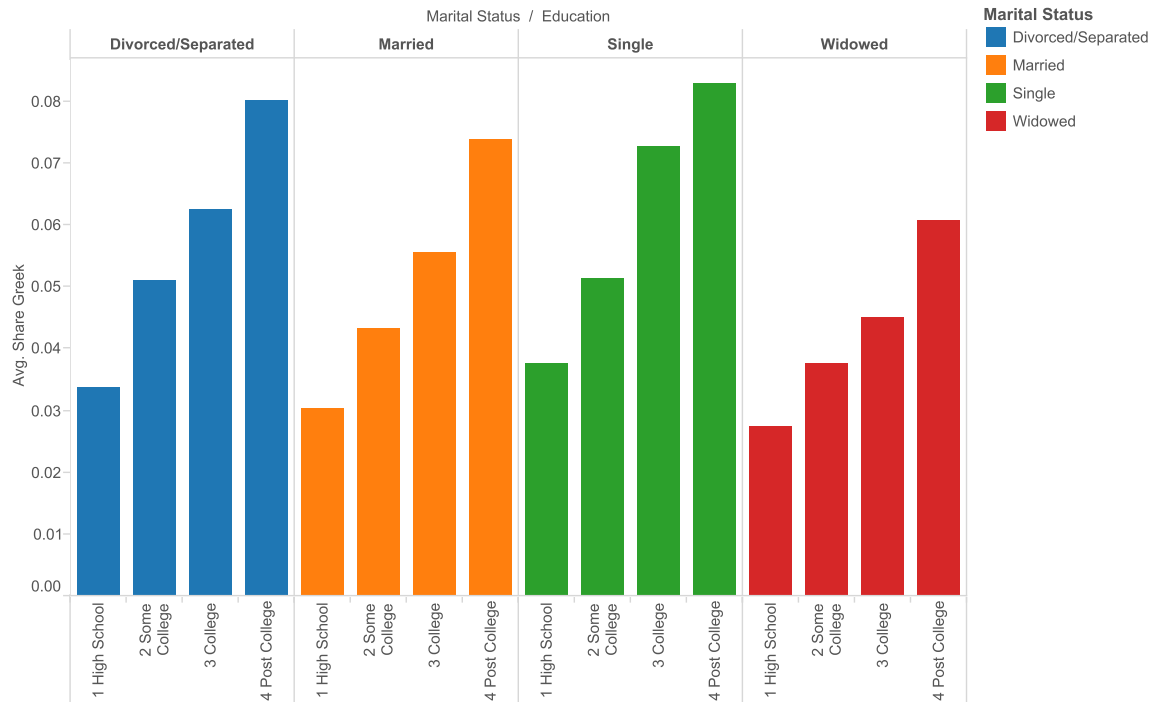
Average of Share Greek for each Education broken down by Race. Color shows details about Race.

Figure 13. Greek Yogurt & Education by Children



Average of Share Greek for each Education broken down by Children. Color shows details about Children.

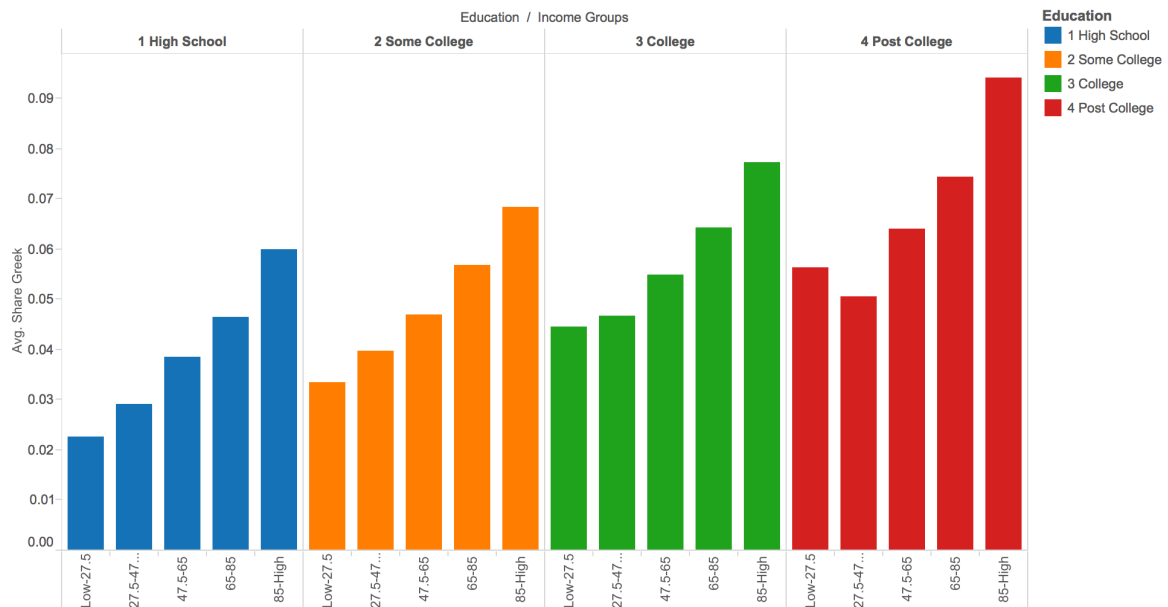
Figure 14. Greek Yogurt & Education by Marital Status



Average of Share Greek for each Education broken down by Marital Status. Color shows details about Marital Status.

Given the assumption that households with higher education are the ones with higher incomes, we decided to look at the relationship of Greek yogurt spend and income grouped by education. Figure 15 below shows the results.

Figure 15. Greek Yogurt & Income by Education



Average of Share Greek for each Income Groups broken down by Education. Color shows details about Education.

The main takeaway from this graph is that when looking at lower income households that have high education levels, the positive correlation with Greek yogurt spend is not as strong. Households with a post college education level did not see as clear of a trend compared to households with a high school education level. An explanation for this includes consumer's understanding of the health benefits of Greek yogurt. At a higher education and lower income level, consumers are more likely to know that Greek yogurt is healthy and be more willing to purchase it regardless of the price. This idea implies that diet quality can be improved among lower socioeconomic status groups through nutrition education focusing on specific food items.

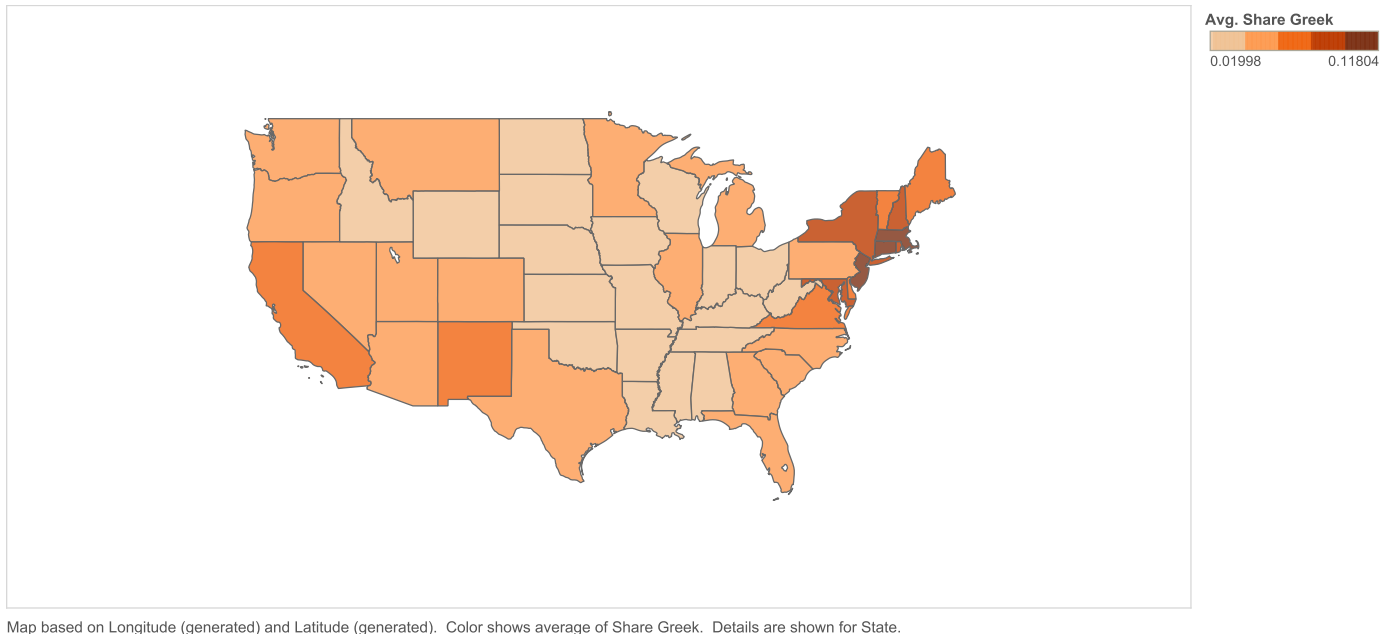
Coastal Regions and Greek Yogurt

Aside from socioeconomic status, we are also interested in geographic regions in which Greek yogurt market shares were highest. When looking at average market share during 2004-2013, we find that it is highest in the coastal regions such as the Northeast and West (Figure 16). The first reason for this finding is availability. When Fage first introduced Greek yogurt, they focused mainly on New York grocery stores. Additionally, Chobani opened its first production facility in New York. As a result, consumers in these areas have higher access to Greek yogurt products.

Foods trends have a tendency to catch on faster in coastal regions. This trend is seen even with non-food items such as fashion. The ability for food trends to move this quickly, however, can be an impetus for health foods as a whole. When trying to change food habits, the government takes a top-down approach, starting from legislative change and trickling down to the consumer level. However, food trends can act as a mechanism

for both governments and food companies to influence consumers to improve their diet quality.

Figure 16. Greek Yogurt Market Share by State



Further Research

The scope of this study is limited in that it is unable to explain the differences in food trends across socioeconomic groups. Factors not included in this study include exposure to food marketing, individual taste preferences, and reason for purchase. This information can have a large influence on whether households purchase Greek yogurt and how much they decide to purchase. If Greek yogurt is representative of larger healthy food trends, governments and companies can use this information to improve the health of lower socioeconomic groups. Efforts can include increasing availability of healthy food and bettering the understanding of certain food's health benefits.

Food trends also serve as an interesting area of study for businesses. An area for further research includes looking at how certain companies can gain (and sustain) a larger market share within food categories. In the case of Greek yogurt, Fage was the first mover but was quickly overshadowed by Chobani. Today, though Chobani is still the leader in Greek yogurt, Fage has been able to decrease Chobani's lead in the industry. As more players enter the Greek yogurt industry, competition can decrease costs and increase availability for the product.

Another area for further research is to look at when and why food trends have a permanent effect on the way Americans eat. Food trends, by definition, eventually lose traction as a newer, trendier product is introduced into the market. However, there are a handful of cases in which the trend became the norm. For example, organic food was first introduced in the 1960s as a countercuisine to the industrialized American food system. Organic was only for those who opposed the commoditization of food and destruction of traditional agriculture. In the early 2000s, organic food began to shape existing food habits and has since become a \$40 billion industry. What major components are needed to ensure that a food trend does not die off? Understanding how to make systemic changes in the food industry can help affect the way we approach food issues in America.

Conclusion

The results of this study help to address food inequality issues in the United States. With the highest obesity rates, America has searched for ways to increase diet quality among lower socioeconomic groups. Though a large portion of this issue is due to the amount of processed foods available, there is a large discrepancy in the availability of

healthy foods. Healthy food trends have traditionally been marketed towards individuals of higher income and socioeconomic status. Whole Foods Market thrives on the upper class and their willingness to pay a premium for healthier food items. As a result, food companies have largely ignored individuals of lower socioeconomic status. Instead, large fast food chains like McDonalds use predatory marketing in lower income neighborhoods and profit from their cheap prices.

A healthy diet and access to healthy foods should not be a privilege. This study finds that though income, education, and Greek yogurt market share are positively correlated, other factors can influence an individual's spend on healthy food. These factors include knowledge of a food's health benefits and the accessibility of healthy foods. Efforts to increase knowledge and availability of healthy foods can aid the movement to better the overall health of Americans.

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Appendix A

TABLE 1

Socioeconomic status (SES; education, income, and/or occupation) and food intakes: summary of findings from individual food consumption surveys in adults

High intakes among low-SES individuals	High intakes among high-SES individuals
Grains and starchy vegetables	
Bread, white, or unspecified (37, 42–46)	Whole bread (37, 44, 45, 47–50)
Pasta/rice/cereals, refined or unspecified (18, 42, 49, 51, 52)	
Potatoes (18, 43–46, 48)	
Legumes (32, 42)	
Vegetables and fruit	
	Fruit and vegetables, unspecified (44, 45, 53–61)
	Fruit and vegetables, fresh (62)
	Vegetables, unspecified (18, 19, 33, 37, 43, 47, 63, 64)
	Vegetables, fresh/frozen (15, 42, 65)
	Fruit, unspecified (15, 19, 33, 37, 45, 46, 48, 63, 66)
	Fruit, fresh (42, 43, 52)
	Fruit juices (19, 43, 46)
	Nuts (65)
Meat, fish, eggs	
Meat, unspecified (18, 44, 46, 48, 67)	Meat, unspecified (42, 47, 49)
Organ meats (51)	
Fatty/fried/canned/deli meats, sausage, stews (32, 37, 42, 43, 45, 48, 49, 51, 63, 65)	Lean meat (37, 45, 48)
Fish, fried/canned (32, 51)	Fish/seafood, unspecified (18, 19, 37, 46, 52, 63)
Eggs (32, 37, 68)	
Dairy products	
Milk, unspecified (43, 44)	Milk, low-fat (15, 37, 45, 47–49, 63, 69)
Milk, whole (49, 63, 64, 69)	Cheese (19, 37, 43, 44, 46–49, 70)
Fats and sweets	
Added fats, unspecified (19, 44, 45, 48, 71)	Added fats, unspecified (47)
Animal fats (42, 43, 70)	
Vegetable fats (46)	Vegetable fats (19)
Sugar (18, 42, 46, 49)	Candy (42)
Sweets/cakes (46, 48, 65)	Pastries/desserts (42, 47)
Beverages	
Sweetened beverages (37, 46)	
Beer (18, 45, 46)	Wine, alcohol (45, 46, 65)

Appendix B

Greek Yogurt Market in the US: Major Players

