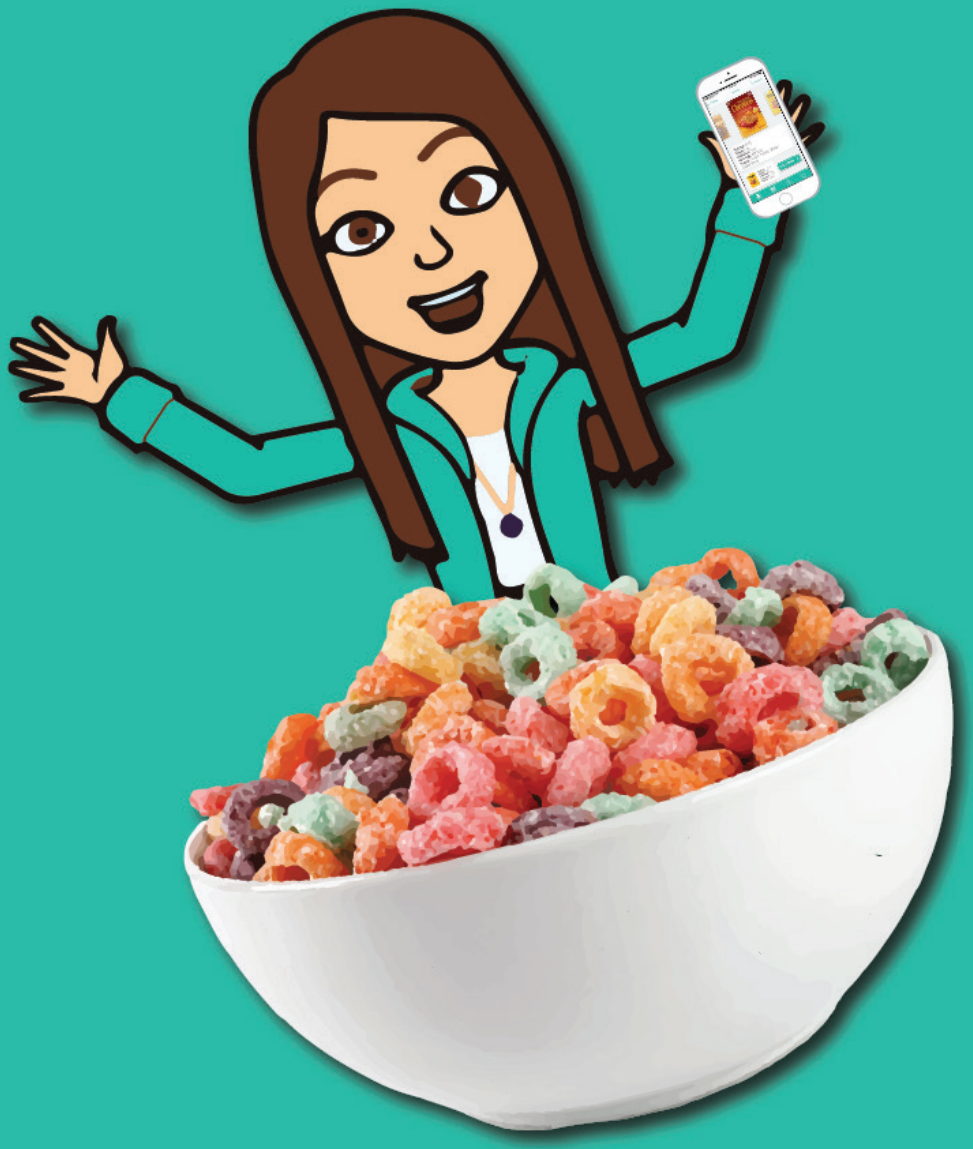
A SMARTPHONE APP FOR SUGAR-FREE SHOPPING

JANINE DENNEY-MAZZILLI



INDEX

ACKNOWLEDGEMENTS

Thank you to the Community, Environment & Planning major and leanring community for supporting me as I changed projects and asked for peer feedback. Thank you to my mentor and friend, Kelly Hostetler, for giving me guidance and helping to narrow my project scope. Thank you to my accountability group, Kat Mccarroll and Carlie Stowe, for adding a bit of humor and fun to the senior project process. Thank you to Megan Herzog for giving me vital feedback throughout every stage of this project. Thank you to Christopher Campbell for teaching CEP 200 and showing me how CEP could contribute to my university experience. Thank you to Esther Kim, a senior in the Information School at the University of Washington, for meeting with me to provide offer advice for designing smartphone apps. And finally, thank you to my friends and family who were there when I was excited, needed to vent, and have supported me since day one.

ABSTRACT

Research shows that the excessive consumption of sugar is one of the primary factors leading to obesity and health problems in American. One of the most significant sources of added sugars in American diets is breakfast cereal. The aim of this project is to explore the potential of a smartphone app to educate and mitigate the confusion caused by food labels on cereal boxes at grocery stores. This project aims to help American consumers make healthier choices by laying the groundwork for a new app that will help consumers make sensible decisions when choosing breakfast cereals. The app will provide the visual framework for providing key information on the nutritional and sugar content of common breakfast cereals, as well as make recommendations for alternative cereals that are lower in sugar. Specifically, in the project I designed a set of example screen displays of a smartphone app that provides real-time shopping assistance to compare products and receive a recommendation based on the sugar content. I conducted a literature review of the health impacts of added sugars and the marketing techniques utilized in selling breakfast cereals. This smartphone app will positively influence consumer choices at grocery stores by providing nutrition information relevant to cereals and mitigate the confusion caused by complex nutrition labels. If successful with cereals, later versions of the app can include additional food products.

INTRODUCTION

America is facing an obesity epidemic as a result of a complex combination of unhealthy food intake and inactivity.14 One of the biggest contributors to obesity is an exuberantly high intake of added sugars, which provide no nutritional benefit and make it challenging to meet nutrient needs. The challenge of choosing healthy foods is intensified by complex food and nutrition labels. With the popular phrase, "breakfast is the most important meal of the day" guiding many to look to quick meals in the morning, cereal has become an American staple. Unknown to many, however, is that one of the biggest culprits of added sugars in the American diet is breakfast cereals.

For the past two years at the University of Washington, I have taken nutrition courses that discuss the connections between diet and disease. Many diet-related diseases, such as diabetes, can be directly tied to sugar consumption. As a result, I was motivated to combine my CEP focus in public health and minor in Nutritional Sciences with my growing interest in digital design to design a smartphone app that mitigated the confusion that occurs when trying to make healthy choices while shopping.

After conducting research on other food and nutrition apps available on the iPhone app store, I came to the conclusion that there is a gap in products available for use while shopping. Many food and nutrition smartphone apps, such as Fooducate and MyFitnessPal, focus on tracking food and caloric intake or ranking foods the consumer already ate. Apps for use while shopping typically offer coupons and receipt scanners, rather than focus on nutrition. My research demonstrated that nutrition-focused smartphone apps educate the consumer of what they had eaten in the past, rather than providing recommendations or a mechanism for making better choices while shopping. After discovering the lack of smartphone apps that help consumers real-time in stores, I decided that designing the visuals for a smartphone app that provides real-time shopping assistance allowed me to combine my interest in food systems, minor, and gave me a way to expand my digital design skills.

The final product of this project is a set of screenshots of the user interface (front-end visuals) for a smartphone app that allows consumers to scan a cereal product in stores, compare it to another cereal product, and be given a recommendation based on the sugar content of the product. The scope of this project is limited to the frontend visuals of the app, rather than the backend coding to ensure quality results. Furthermore, the scope is limited to cereals because they are an American breakfast staple and, to the surprise of many, oftentimes contains more sugar than a dessert. Finally, I targeted the smartphone app's design to millennials and young millennial parents because they are the generation most likely to download and utilize their smartphone for nutrition information.

My goal is to challenge myself personally to design a smartphone app with a new set of software, to broaden my understanding of nutrition and obesity, and explore the connections between education and behavior changes related to public health and technology. I addressed these goals by meeting with a design expert in the Information School at UW to receive design feedback and expanded my understanding of public health, obesity, and education versus behavior changes by conducting a thorough literature review.

METHODOLOGY

1 LITERATURE REVIEW

2 APP EVALUATION

3 APP DEVELOPMENT

This project aims to address the growing public health concerns of diet-related diseases by creating the visuals for a smartphone app that can break through the barriers of understanding food labels and help make the healthy choice, the easy choice when shopping. To do so, the methodology was broken down into three sections: 1) Background research; 2) Evaluation of smartphone apps currently available on the market; and 3) App Development.

The background research stage was conducted through a literature review via online searches of academic journals and popular press articles. Academic journals were utilized to understand the scientific research currently being conducted on obesity and diet-related diseases, with a particular emphasis in the role that sugar plays in perpetuating these health issues. The primary search engine was the University of Washington online library portal because it includes access to a variety of academic journals and includes the ability to filter for peer reviewed articles that are available online. Search terms included, but were not limited, to the following: added sugars, diet-related diseases, cereals, obesity AND marketing, children AND marketing, food AND marketing, and sugar AND obesity.

In addition to utilizing academic journals, the background research stage also involved the review and analysis of popular press articles. Few Americans regularly read academic articles or journals because of barriers such as the cost to access articles and the technical writing style. As a result, many Americans turn to popular press outlets, such as the New York Times, for overviews of scientific research and health advice. It was crucial to analyze the articles written by popular press articles about scientific, health-related research because these articles form the basis of how many Americans make their dietary choices. This review was conducted by searching for popular press articles written about the scientific articles found in the first stage of the literature review.

Following the literature review, this project progressed by reviewing and analyzing smartphone apps related to food and nutrition that are already available on the market. Designing an app that already exists would have made the project obsolete, so it was important to discover the gaps and opportunities for a new app. It was discovered that a majority of food and nutrition apps focus on what happens after foods are purchased, such as tracking caloric intake. Therefore, there was an observed opportunity to create a smartphone app that encourages healthier shopping before the calorie tracking even begins. The two most popular smartphone apps related to tracking caloric intake are

METHODOLOGY

METHODOLOGY

Fooducate, which provides a ranking for foods, and MyFitnessPal, a popular app that provides a nutrient breakdown for each food, meal and the day. However, both of these apps focused on the actions taken after shopping, thereby leaving an opportunity for an app that enabled consumers to make healthier choices while shopping by scanning items to either receive a ranking, a better recommendation, or compare it to another product the consumer is considering.

After gaining a strong understanding of the competitive apps available on the market, the production phase of the project began. Initially, the website Pinterest was used to search for different app designs and see what frequently resonated with the concept of food and nutrition. Search terms included, but were not limited to: Food smartphone apps, smartphone apps, color, user interface, iPhone apps, app design, smartphone app design, and colorful smartphone app. These searches provided a baseline of design inspiration, but no images were saved or tracked in the process.

To begin the development phase, brief sketches were made depicting the basic design of the user interface. Next, Adobe Illustrator was used to design icons, such as a Home Button and a Scan Button, for the bottom bar of the app. Illustrator was also used to experiment with different colors. Adobe InDesign was then used to put the pieces from Illustrator together into a single app screen. At this point, designs were exported to Adobe Xd, an app prototyping software. The preliminary designs were presented at a 6-in-5 presentation to the Community, Environment and Planning major at the University of Washington. At the presentation, students felt that the designs were strong and the interface was user-friendly.

The Information School at UW includes students who specialize in designing apps. After reaching out to several professors and advisors within the school, Esther Kim, a senior focusing in app design agreed to meet and offer feedback on the preliminary designs. The meeting significantly changed the course of the project as Kim recommended using the software Sketch because it included pre-set dimensions of typical app components makes the design process much smoother. Additionally, Kim recommended fonts and colors that are considered “best practices” for app user interfaces. The software Sketch offers a 30-day free trial. As a result, the final stage of design was limited to 30 days of development. Following the meeting with Esther Kim, all designs were exported to Sketch and dimensions were altered to match those provided by Sketch.

METHODOLOGY

Over the next 30 days, nine screens were designed to provide a thorough presentation of screen templates. The screens were a Loading page, Home page, a Scan page, a Results page, a Compare Scan page, a Compare Results page, a Search page, a Search Results page, and a Resources page. Turquoise was chosen as the primary color because of its gentle, yet exciting tone and its presence on many cereal boxes. Once designs were complete, they were reviewed by Megan Herzog, the CEP Program Coordinator. After making final edits from her feedback, the nine screens were exported for use in the final presentation and as a framework should the app be programmed in the future.

METHODOLOGY

LITERATURE REVIEW

INTRODUCTION

This literature review aims to analyze the health impacts of sugar on Americans and, more specifically, children. Part of this literature review focuses on cereals marketed to children, opposed to similar versions marked to adults, because the sugar content of children's cereals is typically significantly higher to improve the palatability.[7] It will first provide a history of obesity and explain the health impacts and policies for sugar in the United States. Further, it will discuss breakfast and the common staple of cereal by providing an overview of typical nutritional information of cereals before demonstrating that cereal is one of the worst offenders to unhealthy diets in the United States. It will then detail the marketing regulations to children and of sugary breakfast cereals, before discussing behavior changes and the use of phone applications for healthy diet choices. Although nutrition policy is an important factor in healthy dietary patterns, it is not the focus of this project. Instead, this literature review focuses on behaviors surrounding diet choices and sugar consumption.

SUGAR AND POLICY BRIEFING

In 2003, the World Health Organization (WHO) declared that sugar should contribute no more than 10% of an individual's daily calories.[6] Today, the WHO states that less than 5% of an individual's calories should come from sugar. More recently, policymakers and government offices have begun to recognize the negative health impacts of sugar consumption. This can be seen clearly in the transformation of the regulation of sugar in the Dietary Guidelines, a set of recommendations published every five years to guide American health policies and professionals in helping "Americans make healthy choices in their daily lives to help prevent chronic disease and enjoy a healthy diet."[17] For years, sugar was included as a substance to limit; but no numerical limit was included.

In 2010, the Dietary Guidelines began associating sugar with obesity.[16] Throughout these guidelines, sugar and solid fats are consistently discussed together, both of which excessively contribute to daily calories and therefore must be reduced. The effectiveness of alternative forms of sugar for long-term weight loss was just beginning to be questioned in these guidelines, but their use as short-term calorie reeducations is confirmed.[16] Nevertheless, for the first time, added sugars were considered worse than natural sugars because added sugars do not contain nutrients as natural sugars, as in fruits, do. Furthermore, added sugars are empty calories and therefore make it challenging to meet nutrient needs within calorie limits.

Finally, the most recent 2015 Dietary Guidelines, for the first time, give an

LITERATURE REVIEW

exact percentage to limit of daily sugar intake in order to achieve a healthy eating pattern: less than 10% of overall calories, or about 12 teaspoons for an adult and 7 teaspoons for an 8-year-old child.[17] and 3 Also for the first time, the guidelines warn of a direct correlation between sugar and diseases, especially obesity, type 2 diabetes, and cancer.[17] However, not only is the WHO recommendation stricter than the Dietary Guidelines, but the American Heart Association's (AHA) has followed suit by recommending that less than 10%, or 100-150 calories, for adults and less than 5%, or 4 teaspoons, for children be consumed from of added sugars.[3]

These nutrition policies and recommendations, including the Dietary Guidelines, impact many food programs throughout the United States, such as the USDA's National School Lunch program and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Although food and nutrition policies are beneficial, they take years to change and improve because research must be conducted and analyzed before government agencies are willing to come to an agreement. Further, the visual and web tools created by government agencies for the average American, such as the Food Pyramid and MyPlate, are often too long and complex for the average American to utilize regularly. As a result, many Americans turn to marketing, trusted brands and stores, and digital resources to understand and guide their dietary choices.

BACKGROUND ON OBESITY

In just the past "three decades the average prevalence of obesity in the US adult population has risen from below 20% to 35.7%."[14] Further, the United States Center for Disease Control (CDC) supports a study's findings that the medical expenses associated with obesity in the United States were $147 billion in 2008 and have now increased to range somewhere between $3.38 billion and $6.38 billion.[15] As obesity and its related costs have increased, so has the availability of foods high in sugar, fat, and calories. The average American consumes nearly 800 calories, or 35% of the recommended caloric intake, from solid fats and added sugars alone.[16] Early research on obesity focused on metabolic disorders; and only recently was it considered a possibility that hyperpalatable foods, such as sugar, could be addictive and follow many parallels of addictive drugs.[14] Overall, research shows a relationship between the brain activity engaged by drugs and by foods like sugar, that consumption of overly palatable diets changes opioid peptides, and that "individuals that have higher behavioral or physiological responses to palatable foods are more likely to have subsequent increases in body weight."[14]

In 2016, the New York Times published an article that went viral called "How the Sugar Industry Shifted Blame to Fat." The author Anahad O'Connor argues that in the 1960s, prior to the first publishing of the Dietary Guidelines, the sugar industry shifted the blame for obesity and heart disease to fat by paying off scientists to misconstrue evidence in a review regarding, sugar, fat, and heart disease.[11] The sugar industry selected specific articles to be presented in the review that minimized the connections between sugar and disease and shifted the focus to fat. Since then, Americans have been encouraged to reduce their fat consumption, thereby increasing the consumption of low-fat foods that commonly contain tremendous amounts of sugar to make up for the flavor loss from fat.

SUGAR & CHILDHOOD HEALTH

At any age, consuming sugar makes it challenging to meet other nutrient needs because of its high calorie content and lack of nutrient value. Further, the high rates of sugar consumption contribute to the development of diet-related diseases. For children, these effects are amplified. In 2013, 20% of children aged 5-17 in many high- and middle-income countries were overweight or obese.[9] In the United States, 31.8% of children aged 2-19 were overweight (14.9%) or obese (16.9%).[9] For many foods marketed to children, opposed to similar versions that are marketed to adults, the sugar content is significantly higher to improve the palatability.[7] Additionally, when fed high amounts of sugar, children become accustomed to the flavor and addictive qualities previously discussed. As a result, higher sugar consumption as a child likely leads to higher sugar consumption throughout life.[7]

THE AMERICAN BREAKFAST

It is generally accepted that children "who eat breakfast have healthier overall nutrition and lower BMI, and breakfast consumption may enhance academic achievement."[7] What may surprise many is to learn that breakfast cereals are one of the worst offenders when it comes to sugar content. Many of these products are labeled with "Health Claims" such as, "Great Source of Vitamin C," "Good Source of Fiber," "Low-fat!," and "Contains Antioxidants!" These health claims often confuse customers into believing that they are making a nutritious choice for themselves or their children; when in reality these products are simultaneously allowed to be filled with added sugars. For some nutrients, such as saturated fat and sodium, the Food and Drug Administration (FDA) requires disclosures if health claims are made.[3] However, when it comes to sugar, no disclosure statements are required.

Cereal has become an American breakfast staple. Americans have fallen

in love with mascots such as Tony the Tiger, Cap'n Crunch, Toucan Sam, Sonny, and Trix Rabbit. For children, they are fun a way to eat before school. For parents, they encourage their kids to eat breakfast, the most important meal of the day, and are a trusted source of calories. For our bodies, however, they contribute to unhealthy eating habits as one of the largest sources of added sugar in the American diet. In fact, "on average, 34 percent of the calories in children's cereals come from sugar."[3] Furthermore, just one serving of many cereals marketed to children contain more than 30% of the recommended sugar intake for the entire day.[3] By weight, cereals marketed for children contain up to 40% more sugar than comparable cereals marketed to adults.[7 and 3] Due to the commonality of cereal for breakfast, the complexity of consumption habits, and the extensive marketing campaigns that promote these products as healthy choices, the focus of this project is on sugary cereals. Though there are many surprising added-sugar offenders, such as bread, salad dressing, and condiments, cereal is a staple consumed at almost every age, especially children.

An analysis by the Environmental Working Group of 1,556 cereals available for sale in the United States discovered that 92% of cold cereals include added sugars.[3] Only 47 cold cereals and 155 hot cereals in the analysis were sugar-free.[3] Moreover, every single cereal marketed to children contained sugar. For 40 different cereals, a single serving contains over 60% of the daily recommended sugar intake for children. However, most children consume more than the typical serving size of ¼ cup to 1 cup, depending on the cereal. Oftentimes cereal serving sizes are listed in grams, which few Americans the ability to quickly convert when pouring a bowl for breakfast. As a result, what seems like a simple breakfast choice quickly becomes nothing more than a dessert in disguise. In fact, "Breakfast cereals are the fifth highest source of added sugars in the diet of children under 8, after sugary drinks, cookies, candy and ice cream."[3] Nestle, a popular food production corporation, has created an entire website devoted to breakfast cereals and portion sizes.[10] The site includes unrealistic videos recommending that families count the individual pieces of cereal that go into the bowl or use a scale to get the correct number of grams.[10] The mere existence of a site further exemplifies the complexity of sugary cereal consumption and their impacts on human health and obesity.

MARKETING TO CHILDREN

Marketing is defined as, "an activity an organization engages in to facilitate an exchange between itself and its customers/clients."[13] Marketing to children can include television commercials, in-school marketing, product placements, the internet, and toys.[13] The regulations for marketing to children state that "companies are free to market to children, through packaging, TV and other means, any cereal containing 2 ½ teaspoons or less sugar per serving."[3] Cereal companies take advantage of this guideline by boasting small serving sizes and the belief that it is "appropriate to advertise to children cereals that are up to 37 percent sugar by weight."[3] Although the FDA has recently edited the Nutrition Facts label to include added sugars and alter serving sizes to better reflect actual consumption, cereal companies continue to take advantage of the marketing regulations.

It has been determined that marketing food to children is often successful and influences their preferences and choices as a child.[9] The seriousness of marketing sugary cereals to children stems from the biological tendency to prefer sweet and salty foods.[9] The "eating behaviors established during childhood track into adulthood and contribute to long-term health and chronic disease risk."[13] Rather than promote healthy foods that will positively influence eating behaviors, "many popular cartoon brand mascots and media characters are used to promote products high in added sugars, salt and fat, which contribute to unhealthy weight gain and poor diet quality for children."[9] A strong example of this statement is the use of cartoon brand mascots for cereal brands.

The persuasive power of utilizing cartoon brand mascots to advertise to children has not been overlooked. Popular cereal mascots include Trix Rabbit, Chip the Wolf, Sunny, Buzz Bee, and Cap'n Crunch. "Brand mascots are used by food and restaurant companies to create product identity, promote brand personality and continuity across integrated marketing communications."[9] In other words, due to the longevity of these mascots, children who consume these products form relationship feeling with the brand's personality and become more likely to purchase the product. The characters can be featured in TV ads, in magazines, on billboards, or placed at eye-level in grocery stores. Due to the vulnerability of children who cannot yet differentiate between facts and persuasive marketing campaigns, some have advocated that brand mascots be eliminated from child-targeted marketing.[9] Nevertheless, such marketing has continued to prevail.

BRAND LABEL MARKETING

Unknown to most, there are over sixty different names for sugar that can be included on ingredient labels.[2] The FDA requires that manufacturers list all ingredients on food packages, but they can be challenging to read or pronounce, let alone know what a majority of those ingredients really are.[4] It is comprehensible that evaporated cane juice, beet sugar, corn syrup, and even glucose are different types of sugar. However, it is

LITERATURE REVIEW

unlikely that the average shopper would know that dextrin, ethyl maltol, diastatic malt, maltodextrin, D-ribose, or Florida crystals are actually just different types of sugar.[2] It could be said that parents should be clever enough to read labels before purchasing products; but reading labels requires self-educating or a data plan with internet access to search the unrecognizable words. Sure, one could look at the new Nutrition Facts panel that includes added sugars; but this ceases to provide the complete picture.

As previously discussed, many breakfast cereal labels are covered with "health claims" to convince the shopper that one product is superior to alternative products. Health claims often present the item's vitamin, mineral, fiber, or antioxidant content while keeping the unhealthy facts to the nutrition label. Allowing manufacturers to promote some nutrients while simultaneously being high in fats, sugars, and salts misleads consumers into believing they are purchasing a healthy product. The Chilean government has found a way to intervene in misleading labels with their black octagonal stop-sign warning labels that apply to foods high in calories, saturated fat, sugar, and sodium.[1] The new labels were enacted to provide clear "health claims" that acknowledge the unhealthy ingredients, rather than just the healthy ones. Although a system like this took years to enact, and would likely take longer in the U.S. because of the power of the sugar industry that was discussed in the New York Times article, it is an example that demonstrates the backwards tendencies of American labeling.

MAKING THE HEALTHY CHOICE, THE EASY CHOICE

The responsibility for ensuring healthy food consumption is currently considered the individual's responsibility, partially as a result of persuasive labeling and clever marketing strategies. Changing individual health behaviors is challenging. Convenience, cost, culture, social acceptance, comfort, marketing, product placement, store placement, advertisements, brand trust, ingredients, allergies, kitchen access, serving size, and so much more influence behaviors surrounding food choice.[8] Eating healthy has become a challenge that many simply cannot attain. Creating healthy behavior changes requires making the healthy choice is the easy choice.

For parents, grocery shopping can be an exhausting challenge. Children's preferences developed from marketing conflict with parent intentions of choosing healthy. Walking down the cereal aisle can be overwhelming because of the hundreds of choices with bright colors, mascots, health claims, and complicated labels. The vulnerability of children requires their parents to educate themselves on how to read nutrition labels, what to look for, and how to monitor the marketing campaigns that their children observe. However, even once parents have this information, many neglect to change their behaviors or purchasing habits for a myriad of reasons.

SOLUTION: A PHONE APP?

One approach to mitigating the grocery shopping challenge presented above is smartphone apps. Today, smartphones are used by millions of Americans not only for fun, but for regular communication with friends and family, email access, internet access, efficiency, and connectivity. A Washington Post article explained that smart phones are not a luxury or excessive good, but rather are a priority item for many families.[5] As a result, designing a smartphone app has the ability to positively influence many American lives. Apps are easy to download and, if designed right, easy to use. There's an app for nearly everything. From social media and texting, to games and movies, and to trip-planning and shopping, apps offer immediate information and can serve very specific needs.

The market for diet-related apps in particular has not been overlooked. There are many apps designed to influence diet that focus on food delivery, online shopping, calorie and macronutrient tracking, coupon distribution, and marketing campaigns through apps that pay you when you purchase certain items. Nearly 50% of U.S. smartphone owners own a health-related app, demonstrating their effectiveness as a healthy choice influencer.[12] Some health-related apps include barcode or QR code scanners to provide quicker information or easily input an item into a calorie-tracker.

In terms of sugar-related apps, many visually depict the sugar through sugar cubes or teaspoons. Fooducate is one app that is making headlines as "a 'bullshit detector for marketing messages' on packaged foods."[12] The app provides a letter grade for foods based on a system designed with dieticians and tells why the product received its grade, perhaps for artificial flavors or high fructose corn syrup.[12] Where this app falls short is in partnerships with food companies that in turn try to manipulate Fooducate to promote their products through higher letter grades.[12] For example when searching the site, cereals from big-names companies that have over ten ingredients, including more sugar, rank higher than ingredients from relatively unknown brands with fewer ingredients and less sugar. Other apps such as MyFoodWatch, AllergyEats, and Don't Eat That also attempt to help consumers make healthier choices.[12]

Though it may be more accurate to compare nutrition labels side-by-side, this takes time and enough nutrition

LITERATURE REVIEW

education to spot the different names for sugar and know what to look for when comparing serving sizes. Health-focused smartphone apps have the ability to break through these barriers and enable anyone to make healthier choices at the grocery store. Though there will be differences in every analysis and ranking of foods, smartphone apps run by third-parties can provide a quick analysis of the nutritional content of foods and enable consumers to make educated choices.

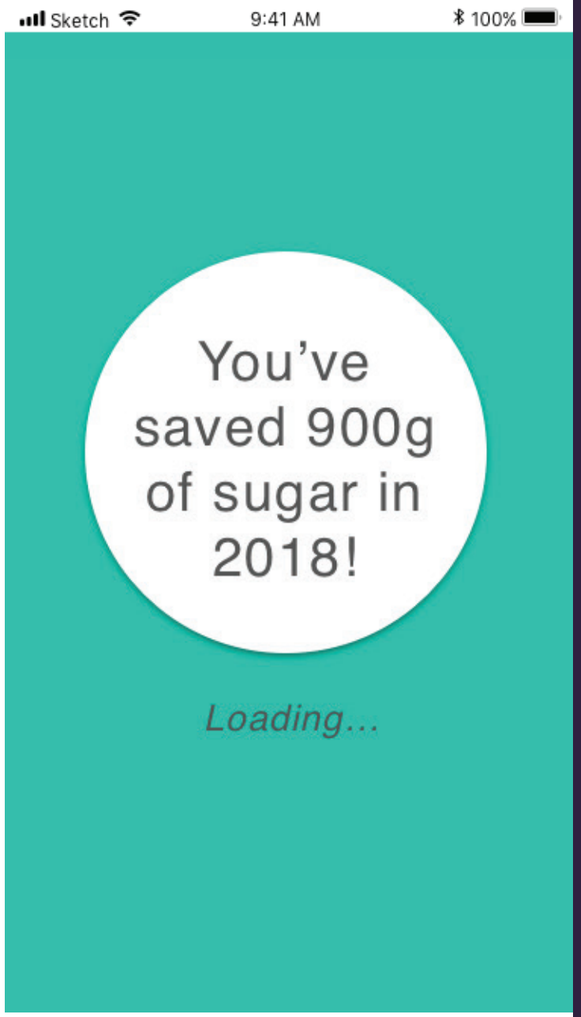
CONCLUSION

In the United States, obesity rates continue to rise while unhealthy foods become more available. The health impacts of American diets result in disease development that starts as children. Persuasive marketing techniques influence consumer decisions and complicate the health contents of many products. There is a severe lack of governmental policies for food and food marketing and the complexities of its nutritional publications, such as the Dietary Guidelines and MyPlate, are simply too complex for the average consumer to regularly utilize. When the government neglects to take action to better label products or prevent unhealthy products from reaching store aisles, entrepreneurs must take action to develop resources that help individuals make healthier choices. Although many factors and foods contribute to obesity, cereal is a staple product consumed by nearly every American; and most notably, children.

To address the obesity crisis, many have begun developing phone apps to guide consumer choices. Some focus on allergies, others on the overall content. Yet no applications focus on making healthy choices at the store, rather than tracking foods through a calorie tracker. As a result, there is an opportunity for the development of a phone app that provides individuals with product information so that the healthy choices becomes the easy choice. Cereal and its sugar content can serve as a starting point because it is consumed at the “most important meal of the day” and sugar content is often higher than most desserts. Changing the way that Americans eat has the ability to transform the obesity crisis. The sugar content of cereals is just one way to start.

LITERATURE REVIEW

RESULTS: APP DESIGNS

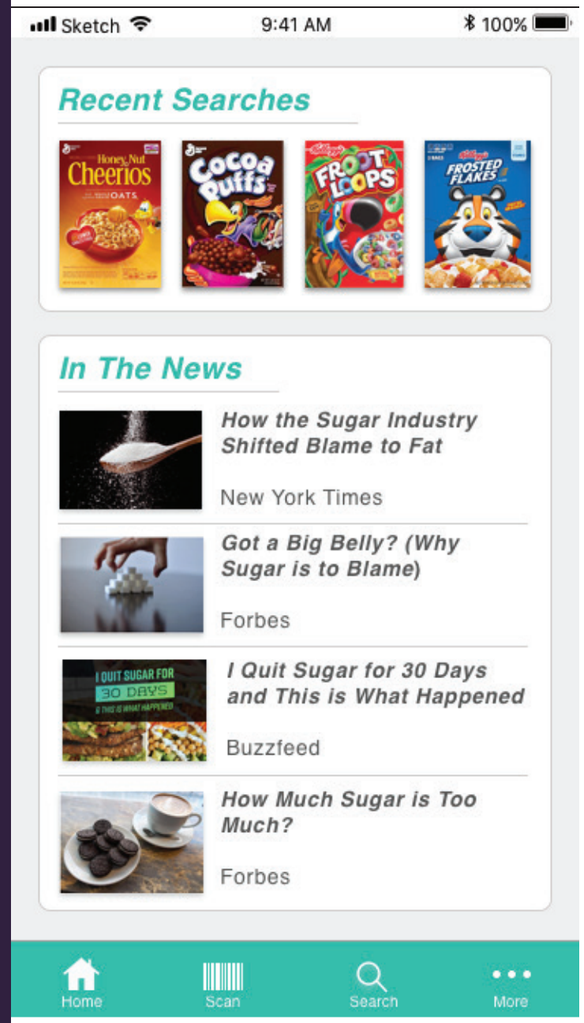


LOADING

WHILE THE APP LOADS, USERS ARE CONGRATULATED FOR THE PROGRESS THEY HAVE MADE BY MAKING HEALTHIER CHOICES

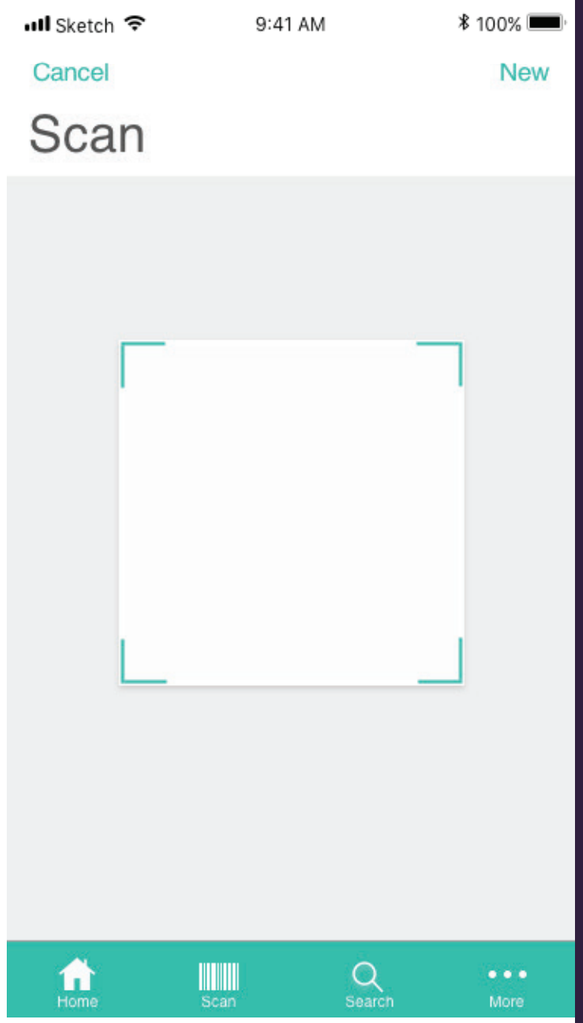
HOME

ACCESS TO RECENT SEARCHES AND A NEWSFEED THAT INCLUDES RECENT ARTICLES FROM TRUSTED MEDIA OUTLETS



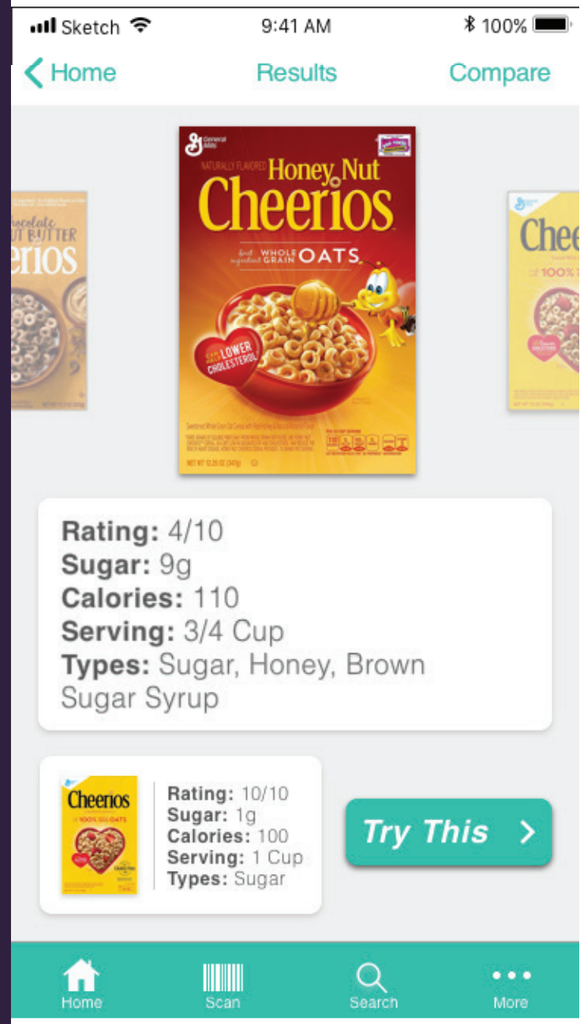
SCAN

USERS MAY SCAN A PRODUCT IN A GROCERY STORE TO VIEW SIMPLE RESULTS AND RECEIVE A RECOMMENDATION



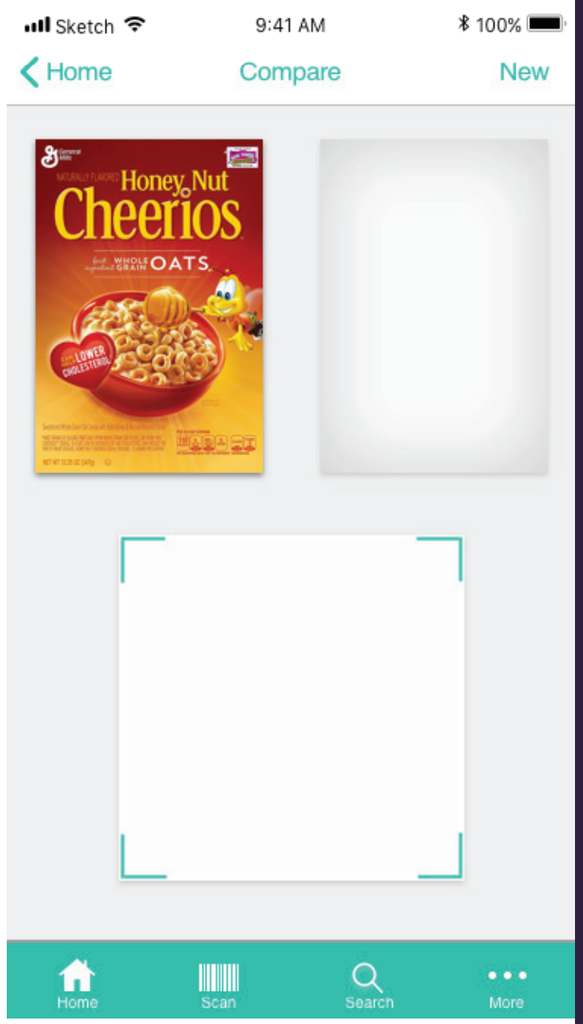
SCAN RESULTS

RESULTS INCLUDE A NUTRITION OVERVIEW, THE ABILITY TO SWIPE TO SEE SIMILAR PRODUCTS, AND A RECOMMENDED PRODUCT



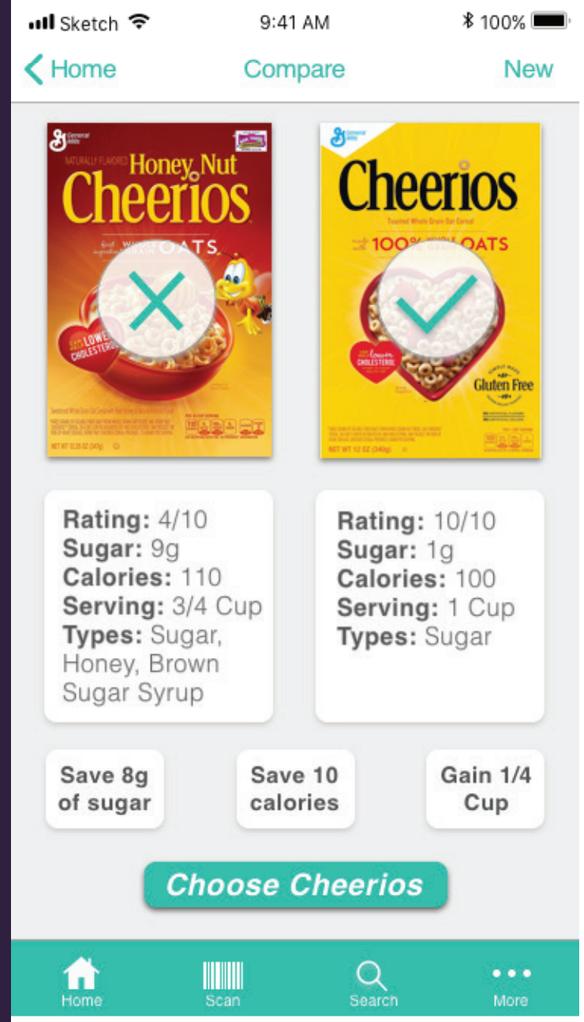
SCAN TO COMPARE

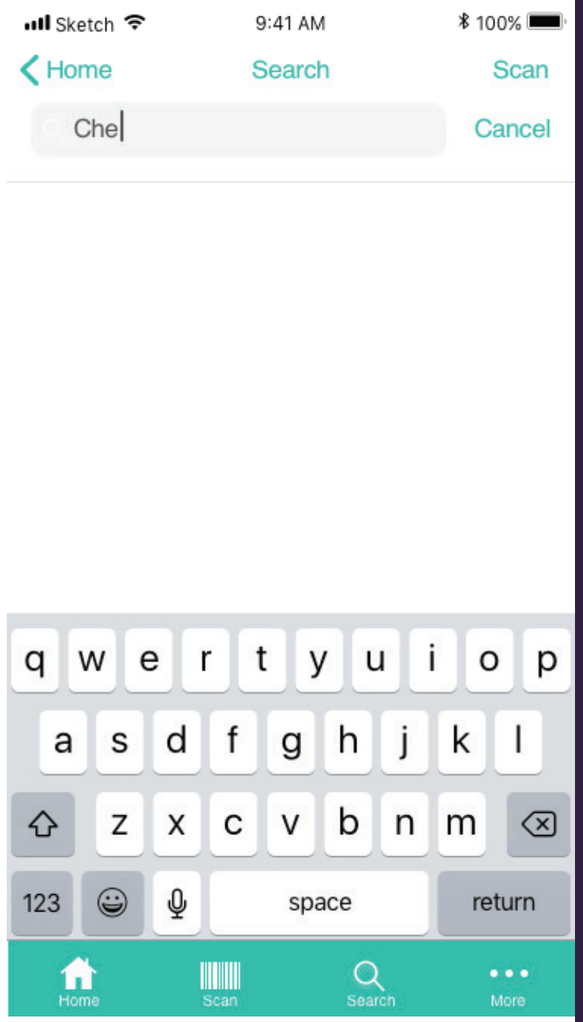
USERS MAY COMPARE ANOTHER PRODUCT WITH THE PREVIOUS SCAN STILL VISIBLE



COMPARE RESULTS

COMPARISON INCLUDES A NUTRITION OVERVIEW, A RECOMMENDATION, AND AN OVERVIEW OF WHY APRODUCT IS A HEALTHIER CHOICE



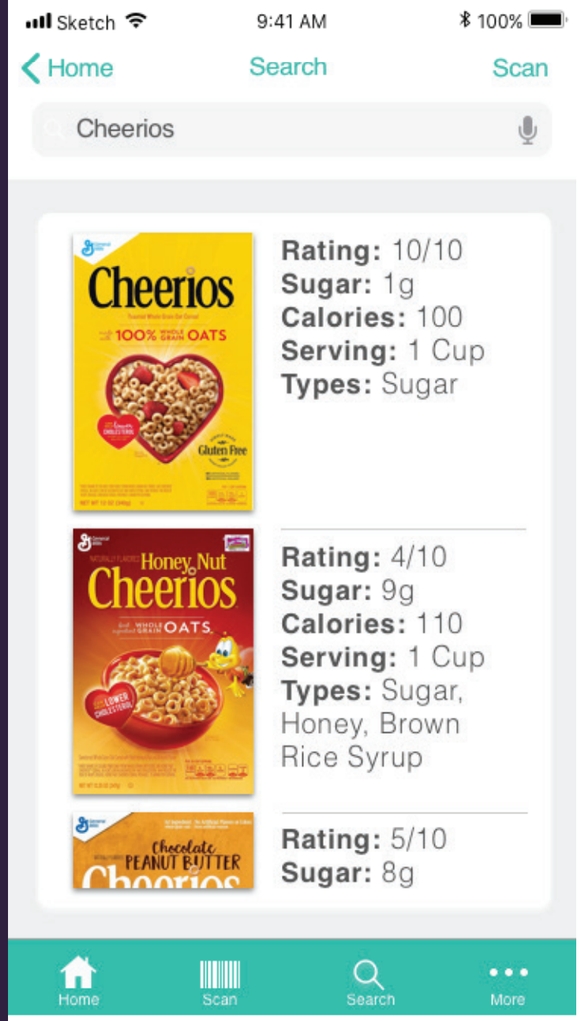


SEARCH

WHILE THE APP LOADS, USERS ARE CONGRATULATED FOR THE PROGRESS THEY HAVE MADE BY MAKING HEALTHIER CHOICES

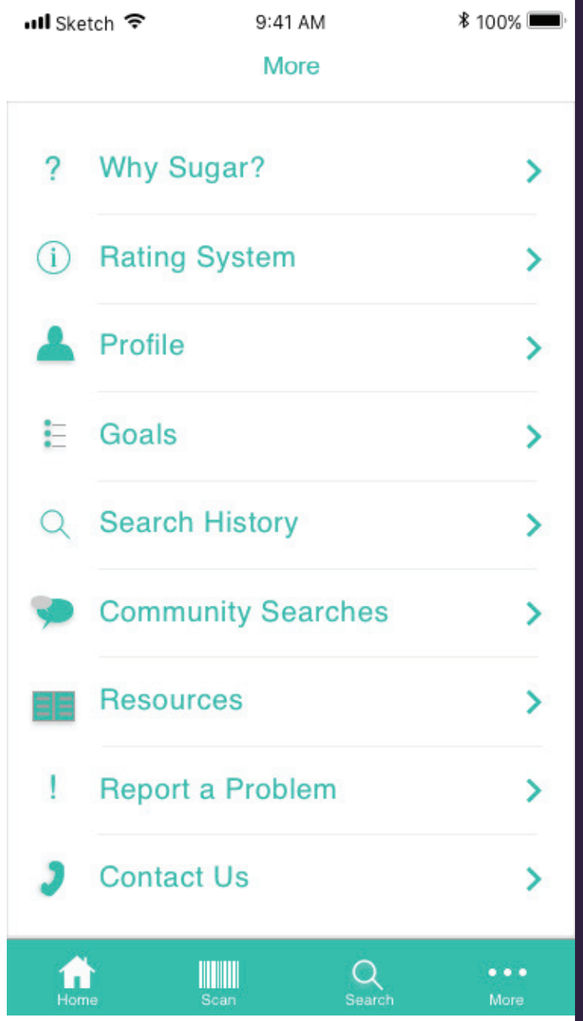
SEARCH RESULTS

NUTRIENT OVERVIEW AND RELATED PRODUCTS



MORE

USERS HAVE ACCESS TO RESOURCES, HISTORY, AND PERSONAL PROFILE



NEXT STEPS

Smartphones not only provided a way to communicate with friends and family, but they are an outlet for education. For many Americans, particularly Millennials, their smartphone is the first thing seen when waking up and the last thing seen when going to bed. The presence of smartphones in the average millennial's life provides an incredible opportunity to positively impact food choices. Many food-focused apps already exist to track nutrition, with MyFitnessPal being one of the most widely known and utilized because of its vast database of foods and portion sizes. As the idea of being a "foodie," or someone who enjoys trying new foods and taking aesthetically pleasing pictures of their meals, begins to prosper among millennials, so does the ability of marketers to tap into a technology-driven world.

The next steps for this project can be divided into five primary stages. 1) Meet with a Registered Dietician to develop a ranking system; 2) Hold focus groups with millennials and young parents to test the user interface; 3) Program the backend of the app; 4) Expand the scope of the project to include ingredients other than sugar and products other than cereal; and 5) Implement a social media campaign to gain momentum for downloads and awareness of the app.

To begin with, forming a ranking system for foods is the primary selling-point of this app. Meeting with Registered Dieticians who are able to consider all components of a food, from the ingredient list to the processing, is vital. A Registered Dietician can, in partnership with a software developer, formulate a ranking system so that when a product is scanned, a ranking and recommendation would be automatically generated. If possible, this could be developed in partnership with or modeled after Fooducate, a smartphone app that has already created a ranking system for foods.

Following the development of preliminary designs, it is important to hold focus groups with millennials and young parents to understand what improvements must be made and whether the design is user-friendly. The focus groups should follow the "best practices" for testing user interfaces and should include a demographically diverse group of individuals. Additionally, some focus groups should occur at grocery stores to test a real-life situation in which the app would be used. After the app is programmed, additional focus groups must be held to test for errors in programming or problems with the user experience.

At this stage in development, all designs should be complete. The next step is to program the backend of the app. Software engineers and computer scientists can act as consultants. During this stage, the scope of the project can expand. Data scientists can catalog product ingredients and, with the help of registered dieticians, program the recommendation and ranking systems into the app.

In concurrence with the previous stage, the scope of this project can be dramatically expanded to include more ingredients and processing in the ranking and to include foods other than cereals. Processed foods fit within the scope of the app more than whole foods because processed foods are more marketed and have complex ingredient lists.

The final foreseen "next step" is amedia campaign to advertise the app. This can include running advertisements on social media, running advertisements in other smartphone apps, and partnering with a grocery store to advertise the app as a resource for shoppers. Analyzing the app's ability to be culturally sensitive and relevant to other cultures' food should be included in this final stage. There is considerable potential for this smartphone app to positively impact public health. By following these next steps, the app can be successfully implemented.

LEARNING OUTCOMES

Upon completion of this project, I have five main takeaways: 1) First, obesity requires solutions from multiple sectors; 2) smartphone apps and technology have great potential; 3) Marketing is extremely influential and public policy has not mitigated the problems; 4) On a more personal note, digital design is challenging but rewarding; and 5) I want to learn more about behavior versus education.

Researching public health, nutrition, and obesity was eye-opening. I discovered that obesity rates in the United States have increased at a much more rapid rate than I anticipated and that education and personal choices alone cannot solve the issue. Although the Dietary Guidelines for Americans is an important educational tool, making healthy choices should be easy. That begins by regulating what is allowed in a product sold for consumption. Nevertheless, personal choices play a vital role in mitigating obesity because in the end, it is the individual's decision that determines what foods are consumed. Through my literature review, I broadened my knowledge of nutrition and depend my understanding of the connections between diet-related diseases, ingredients, and marketing.

Prior to this project, I knew at an individual level that I enjoy reading nutrition labels because it enables me to choose healthier versions of products, such as cereal. I quickly discovered that these actions were only possible because of my vast knowledge of how to read and understand food and nutrition labels. To the average individual who doesn't enjoying researching nutrition, understanding a nutrition label is out of their grasp. As a result, the research phase of my project demonstrated that technology has an incredible potential to play a pivotal role in addressing obesity. Many individuals already spend hours every day staring at a smartphone screen. I want to play a role in harnessing this potential and utilize it to encourage healthy choices at grocery stores. Using an app similar to the one I designed has the ability to fill this niche opportunity.

Over the past year, my familiarity with marketing has grown both within the context of this project and as part of my food waste prevention internship with the City of Seattle. Through my literature review, I discovered that marketing children's cereals is more common because children can be easily influenced by bright colors and mascots. At the same time, my internship focusing on food waste prevention utilized marketing as an opportunity to encourage ethical, healthy, and environmentally friendly choices. Marketing at its core is simply a way to present the benefits of a product to consumers to influence their behaviors. Prior to this project, I saw marketing as a field that was driven by profit. Now, I see marketing as an incredible opportunity to positively influence behavior and am investigating the possibility of working for an ethical marketing company, such as the non-profit Ad Council. In any case, however, I do believe that there must be stronger regulations for marketing to children and that warning labels should be placed on unhealthy products.

My interest in digital design has grown throughout the past year working on the Comunications Committee in CEP, designing the app for my senior project, and taking the Digital Design Practicum. This year, I have taken initiative to learn basic skills in Adobe Illustrator, Adobe InDesign, Adobe Xd, Photoshop, ArcGIS, Sketchup, Lumion, and Sketch. Having the ability to create something from a blank canvas feels empowering. I hope to be able to utilize these skills in my future career by creating communications platforms and design elements that engage the public.

Although it did not fit directly within the scope of my project, one of the most intriguing aspects of my literature review was learning that education alone does not influence behavior. For example, I have spent a majority of my coursework at the University of Washington taking classes that focus on food and nutrition. In addition, I chose a senior project focusing on the negative health impacts of added sugars. Yet, I continue to eat ice cream. Although I attempt to limit my consumption, I nevertheless consume it. My education has not directly influenced my behavior, and this is true for most people. In the future, I want to further research the relationship between education and behavior changes in terms of food choices.

In terms of personal growth, this project influenced my career goals. Prior to beginning the project, I wanted to work for the government on food and nutrition policy, ideally creating the Dietary Guidelines for Americans. Paired with my internship for the City of Seattle, this project demonstrated that I thrive in fast-paced situations where I can be creative within a set of guidelines and get to work in the realm of outreach and communications. As I search for my first job after college, my goal is to further my design, marketing, and communications skills rather than work on policy. Although I do see immense value and opportunity for federal, state, and local policy to influence consumer choices, I see marketing and communications as a way to quickly change direction and address current events without dealing with bureaucracy. Finally, this project taught me that I enjoy working with others and prefer situations where I feel part of a community like CEP.

BIBLIOGRAPHY

1) "Chile's New Food Labelling Laws Commence." Food & Beverage Industry News, Aug 09, 2016, Agricultural & Environmental Science Database, https://search.proquest.com/docview/1810925299?accountid=14784.

2) "Different Words for Sugar on Food Labels." SFGate, healthyeating.sfgate.com/different-words-sugar-food-labels-8373.html

3) Environmental Working Group. "Children's Cereals: Sugar by the Pound." www.ewg.org/research/childrens-cereals#.WmgE9iPGw1g.

4) FDA. 2006. Food Labeling: Food; designation of ingredients. Code of Federal Regulations: Food and Drug Administration, Department of Health and Human Ser- vices. Available: http://edocket.access.gpo.gov/cfr_2006/aprqtr/pdf/21cfr101.4.pdf

5) Fung, Brian. "The Luxury of Telling Poor People that iPhones Are a Luxury." The Washington Post, WP Company, 8 Mar. 2017, www.washingtonpost.com/news/the-switch/wp/2017/03/08/the-luxury-of-telling-poor-people-that-iphones-are-a-luxury/?utm_term=.12a42f8f684c.

6) Hagmann, M. (2003). Nutritionists unimpressed by sugar lobby's outcry. World Health Organization.Bulletin of the World Health Organization, 81(6), 469-70. Retrieved from https://search.proquest.com/docview/229631590?accountid=14784

7) Harris, Jennifer L, et al. "Effects of Serving High-Sugar Cereals on Children's Breakfast-Eating Behavior." Pediatrics, vol. 127, no. 1, 2011, pp. 71–6.

8) "Harvard Public Health Review: A Student Publication." The Key to Changing Individual Health Behaviors: Change the Environments That Give Rise to Them. Harvardpublichealthreview.org/the-key-to-changing-individual-health-behaviors-change-the-environments-that-give-rise-to-them/.

9) Kraak, V. I., and M. Story. "Influence of Food Companies' Brand Mascots and Entertainment Companies' Cartoon Media Characters on Children's Diet and Health: a Systematic Review and Research Needs." Obesity Reviews, vol. 16, no. 2, 2015, pp. 107–126.

10) "Nestle Cereals." Nestle Cereals, Nestle, www.nestle-cereals.com/global/en.

11) O'connor, A. (2016). How the Sugar Industry Shifted Blame to Fat. Retrieved December 08, 2016, from http://www.nytimes.com/2016/09/13/well/eat/how-the-sugar-industry-shifted-blame-to-fat.html

12) Patel, Kunur. "Your Favorite Food Just Flunked the Phone Test." Advertising Age, vol. 83, no. 15, 09 Apr. 2012, pp. 2-60. EBSCOhost, offcampus.lib.washington.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=74207698&site=ehost-live.

13) Story, Mary, and Simone French. "Food Advertising and Marketing Directed at Children and Adolescents in the US." The International Journal of Behavioral Nutrition and Physical Activity 1 (2004): 3. PMC. Web. 30 Jan. 2018.

14) Stice, Figlewicz, Gosnell, Levine, & Pratt. (2013). The contribution of brain reward circuits to the obesity epidemic. Neuroscience and Biobehavioral Reviews,37(9), 2047-2058.

15) Trogdon, J. G., et al. "Indirect Costs of Obesity: a Review of the Current Literature." Obesity Reviews, vol. 9, no. 5, 2008, pp. 489–500.

16) U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government Printing Office, December 2010. https://www.cnpp.usda.gov/sites/default/files/dietary_guidelines_for_americans/PolicyDoc.pdf

17) U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition. December 2015. Available at https://health.gov/dietaryguidelines/2015/resources/2015-2020_Dietary_Guidelines.pdf