

LESS IS MORE: APPLYING COMMUNICATION DESIGN METHODOLOGIES
AND PRINCIPLES TO HELP REDUCE DOMESTIC
CONSUMER FOOD WASTE

by

Seunghee Lee

A thesis submitted to the Graduate Council of
Texas State University in partial fulfillment
of the requirements for the degree of
Master of Fine Arts
With a Major in Communication Design
May 2019

Committee Members:

Jeffrey Davis, Chair

Claudia Röschmann

Gwendolyn Hustvedt

COPYRIGHT

by

Seunghee Lee

2019

FAIR USE AND AUTHOR'S PERMISSION STATEMENT

Fair Use

This work is protected by the Copyright Laws of the United States (Public Law 94-553, section 107). Consistent with fair use as defined in the Copyright Laws, brief quotations from this material are allowed with proper acknowledgement. Use of this material for financial gain without the author's express written permission is not allowed.

Duplication Permission

As the copyright holder of this work I, Seunghee Lee, refuse permission to copy in excess of the "Fair Use" exemption without my written permission.

DEDICATION

I dedicate this thesis to four beloved people who have always believed in and supported me during my graduate education. First and foremost, I would like to thank my parents, Kyung-Ran Han and Sang-Jae Lee, for bringing me into this world, raising me with the greatest love, and teaching me the value of food in my childhood where this research (food waste) originated.

I would also like to thank my aunt, Kyung-An Han, for mentoring and encouraging me to not only achieve success in this educational journey, but also move forward to the next step for my life in America—my gratitude is beyond words.

Last but not least, I dedicate this to my brother, Ju-Hyun Lee, who has been taking good care of my parents while I am far away from home and heartening me up because I am far away from home.

ACKNOWLEDGEMENTS

I would wholeheartedly like to express my gratitude to my thesis committee members, Jeffrey Davis, Claudia Röschmann, and Dr. Gwendolyn Hustvedt, for the knowledge, insight, and inspiration they provided throughout this thesis process. To my chair, Jeffrey, thank you for your guidance and leadership filled with faith in my work to make this all possible. To Claudia, your enthusiasm and eye-opening input pushed me further to complete this the best. To Dr. Gwendolyn, I am grateful for your fruitful feedback, and also for your offer to work for the International Federation of Home Economics. It was a great privilege for me to have all of you as my committee.

I would also like to thank Christine Haney for her willing support that made everything run smoothly and efficiently. Every time I had trouble or question, she was always there. Huge thanks to the MFA faculty and my fellow classmates who constantly encouraged me to be productive and inspired me through critical discussions and helpful references.

Special thanks to all professionals associated with retail business, city waste management, and academic field, for providing the insightful advice that polished my research. Additional thanks to all my friends at the Wake the Dead coffee shop for always cheering me up.

TABLE OF CONTENTS

| | Page |
|---|-------------|
| ACKNOWLEDGEMENTS | v |
| CHAPTER | |
| I. INTRODUCTION..... | 1 |
| Defining Food Waste..... | 1 |
| Global Issue of Food Loss and Waste | 2 |
| Food Losses in the United States..... | 3 |
| Statement of Problem: Food Waste | 4 |
| Objective and Hypothesis..... | 6 |
| Why Raising Awareness? | 7 |
| II. PRELIMINARY RESEARCH | 9 |
| Target Market | 9 |
| Brand Story..... | 10 |
| Community Involvements | 11 |
| Customer Analysis..... | 13 |
| Private Label Brands | 13 |
| SWOT Analysis..... | 15 |
| Case Studies..... | 16 |
| Inglorious Fruits and Vegetables by Intermarché | 16 |
| Hankki Babsang by Lotte | 17 |
| Wefood Supermarket..... | 17 |
| Survey on Awareness of Food Waste..... | 18 |
| The Purpose and Overview | 18 |
| Facts and Insights | 19 |
| III. METHODS..... | 20 |
| Awareness Campaign | 20 |
| The purpose of the Campaign..... | 20 |
| Target Audience | 21 |
| Call to Action | 21 |
| Applications..... | 22 |
| Launch New Brand..... | 23 |
| Packaging Adjustments through Sustainability..... | 23 |

| | |
|--|----|
| Ideation | 25 |
| Rough Sketching | 25 |
| Prototyping | 25 |
| IV. OUTCOMES | 27 |
| Good Taste Zero Waste | 27 |
| Campaign Logo | 27 |
| Color and Typography | 28 |
| Promotional Applications | 28 |
| Shopping Cart and Basket Advertising | 29 |
| Interior Benner..... | 29 |
| Check-Out Promotion..... | 30 |
| Wearable Applications | 30 |
| Transportation Advertising..... | 30 |
| Website and Mobile App..... | 31 |
| H-E-B Eat Up | 32 |
| Brand Logo | 32 |
| Food Packaging and Label | 32 |
| V. CONCLUSION | 35 |
| User Testing in Select H-E-B Stores | 35 |
| Building a Team | 36 |
| Future Research and Expansion | 37 |
| VI. ILLUSTRATION | 40 |
| APPENDIX SECTION | 84 |
| REFERENCES | 93 |

I. INTRODUCTION

Food is one of the most fundamental needs for human life. Historically, that need was fulfilled by hunting, gathering and farming, only to be replaced by food served on a plate at a restaurant or a cooked meal at home using food products that were purchased from a grocery store. With the advancement of technology improving our ability to grow, harvest, store, and prepare food, we have been able to not only satisfy the need, but also appreciate the flavor of food. However, there is a problem; with these advancements, we now waste over 30 percent of most food produced for human consumption.

Understandably, as the global population grows, more food is needed to feed people globally. Additionally, an alarming amount of resources, including water, electricity, and fuel, is needed to make food through transportation, processing, and handling. Food waste is an ever-increasing global problem with an unsustainable rate of growth, which not only diminishes natural resources it also uses significant energy costing billions of dollars annually.

Defining Food Waste and Food Loss

According to a report by the United States Department of Agriculture (USDA), the definition of food waste is distinguished from food loss by where and how food is wasted, and it is important to define food waste in order to better understand this ever-growing problem. Food loss is defined as food that is intended for human consumption but is never consumed or is discarded due to factors such as qualitative decline, the results of natural shrinkage, damage by pests, or climate effects, and usually occurs at the farm, manufacture, and distribution stages. Food waste is a major part of food loss, which primarily occurs at the retailer and consumption stage. Food waste is defined as food that

is discarded even though it is suitable for human consumption, it also includes the results of food oversight or plate waste commonly associated with Western dining habits (Buzby, Wells, & Hyman, 2014).

Global Issue of Food Loss and Waste

Both food loss and waste are serious issues in not only developing countries, but also industrialized countries. According to a study commissioned by the Food and Agriculture Organization of the United Nations (FAO), “roughly one-third of food produced for human consumption is lost or wasted globally, which amounts to about 1.3 billion tons per year” (FAO, 2011). In developing countries including North Africa, South Asia, and Latin America, 40 percent of losses are from early stages—post-harvest and processing levels—whereas in industrialized countries including Europe, North America, and North Asia, more than 40 percent of losses occur at later stages—retail and consumer levels (FAO, n.d.).

More seriously, food waste causes further complications in terms of environmental threats, economic struggle, and social imbalance for malnourished individuals. First, the environmental impact is significant. Food waste that decays in landfills produces a large amount of methane, which is a stronger greenhouse gas (GHG) than carbon dioxide (CO₂), and heats up the earth’s atmosphere, triggering global warming and climate change (Climate Central, 2016). Not only that, food loss excessively aggravates the external effects as monocropping and agriculture expansion into wild terrains incur a loss of biodiversity, including mammals, birds, and fish (FAO, 2013). Second, food waste results in a substantial economic loss since resources (i.e., water, natural gas, and electricity) are used for food production and waste disposal. The

financial cost of food waste is almost \$1 trillion each year. Another cost is wasted in natural resources, which are estimated at \$700 billion; \$172 billion in wasted water; \$42 billion in logged forest; and \$429 billion in related greenhouse gas costs (Hoffman, 2014). Third, there is also a societal issue of insufficient distribution and access to food, causing food insecurity and famine. As reported by the FAO, the International Fund for Agriculture Development (IFAD), and the World Food Programme (WFP), approximately 805 million people in the world suffered from chronic malnutrition in 2012–14 and are still undergoing deficient access to food for their daily life (FAO, IFAD, & WFP, 2014). The true tragedy is that the global amount of food waste is more than enough to feed all of the people in need (WFP, 2017).

Food Losses in the United States

When the food loss issue specifically comes to the United State (U.S.), it occurs throughout all stages from farm to landfill, and the value of it is tremendous because “the U.S. as a whole wastes more than \$160 billion in food a year” (Sengupta, 2017). For the purpose of this thesis, food loss is divided into five major stages that are the most significant contributions to the problem, these stages are: 1) Consumption, 2) Retail, 3) Farm, 4) Manufacture, and 5) Distribution. The first and largest portion of food loss occurs at the consumption stage, these losses include cooking loss, plate waste and untouched products. Especially, perishables, such as fruits and vegetables represent the largest losses, due to the high demand and the tendency for these foods to go bad easily (Gunders, 2012). The second contributor is the retail stage. The value of waste in consumer-facing businesses is equivalent to \$57 billion annually (Rethink Food Waste through Economics and Data [ReFED], 2016). Most of the waste includes baked goods,

produce, meat, seafood, and, increasingly ready-made foods (Gunders, 2012). The third stage of food waste occurs at the farm level. An enormous amount of food is lost or remains unharvested on farms every year due to the affects of pests, weather conditions, labor shortages, and uncertain market demand (Gunders, 2012). Notwithstanding the losses, almost all is composted on-site and very little is sent to landfill (ReFED, 2016). Less than the loss at the farm, another portion of loss occurs at a manufacturer stage. The loss at the processing facilities is generated due to overproduction, product damage, technical malfunctions, and mostly trimming, “when both edible portions (skin, fat, peels) and inedible portions (bones, pits) are removed from food” (Gunders, 2012). Lastly, additional food loss takes place at the distribution stage. The main contributing factor of food loss at the distribution stage is inconsistent refrigeration of food while transporting to supply chains significantly reduces its shelf life and even makes them spoiled (Gunders, 2012).

Statement of Problem: Food Waste

Compared to farm, manufacture, and distribution stages, food waste at retail and consumption stages is more serious—the total food waste weight of the retailer and consumer is over three times more than that of the farm, manufacturer, and distribution stages (ReFED, 2016). More surprisingly, 31 percent of the available food supply from U.S. retailers and consumers was discarded in 2010, even though it was still completely edible—10 percent for retailers, 21 percent for consumers—and this statistic suggests that U.S. annual food waste at both stages is substantial (Buzby, Wells, & Hyman, 2014).

A study in 2012, conducted by the NRDC (National Resources Defense Council), identified major factors that contribute to food waste at the U.S. retail stage including

overstocked product displays, high consumer expectations of perfect food, and confusion over food-date labels (Gunders, 2012). For example, grocery stores stock their products based on cosmetically perfect shape, size, and color despite the fact that they have nothing wrong with quality. This preference is caused by customers' expectations and leads grocery stores to take the low grade out of stock and discard (Jacobs, 2014).

Another contribution to retail stage food waste is that many customers are confused with the sell-by date, which is aimed at retailers as a guideline for how long the product should be displayed for sale before the quality declines. This does not mean that the product is unsafe to use after the date. However, most stores discard food products two or three days before the sell-by date owing to a fear that their corporate image of selling fresh products might be injured (Gunders, 2012).

While food waste happens at the entire food supply chain, consumers also throw away the equivalent amount of food to that of retailers. American families discard approximately 25 percent of all food they purchased, and the estimated cost for the average family of four is between \$1,300 and \$2,200 per year (Bloom, 2011). The drivers for consumer waste are various from purchasing products to eating meals, such as excessive purchases, undervaluation of food, misconception of label dates, and over-preparation. Since the price of available food in the U.S. is relatively lower than any other products, Americans tend to undervalue food, which contributes to the failure in meal planning and a lack of consciousness of the food waste issue (Gunders, 2012).

Furthermore, current date labels on food packaging—best by, best before, and use by—confuse consumers, leading to the premature disposal of food before it is spoiled. Most consumers misunderstand that date labels are related to food safety. In a national survey

conducted by the Harvard Food Law and Policy Clinic (HFLP), date labels are employed by consumers to make a decision of discarding food: 37 percent of the respondents (out of 1,029 respondents) always throw away food that is close to or past the date on its package, and 84 percent at least occasionally do so (HFLP, 2016).

In spite of the factors for both retailer and consumption, the Environmental Protection Agency (EPA) has found that compared to past years, more food reaches landfills and incinerators than any other materials in our everyday trash, meaning food waste is the single largest occupant in the U.S. landfills (EPA, n.d.). Thus, the food waste of U.S. consumers still remains a problem to be addressed as the biggest contributor to the food waste issue.

Objective and Hypothesis

Although food waste is well managed at the manufacture and distribution stages, there are still possibilities and better processes to reduce waste even more. For the purpose of this thesis, food waste will be addressed at the retailer and consumer stages where there is the greatest need for reducing food waste. This thesis aims to create a domestic food waste awareness campaign applying communication design methodologies and principles with the intent of reducing food waste in the U.S.

The grocery store presents a good opportunity to make consumers aware of not only food, but also food waste. For instance, while in a grocery store a consumer smells, touches, and looks at food or products. Through the shopping process, the consumer also experiences the market's brand such as reading the instructions on packaged goods, seeing targeted messages such as interior banners, which are strategically placed around the grocery store. It is at the point where communication design is most affective at

targeting consumers, delivering messages and educational information. With this approach, the main challenge for this project is to bridge between retailer and consumer through the awareness campaign, expecting to raise consumer awareness of food waste.

Why Raising Awareness?

The national attention to the issue of food waste has been continuously raised, and efforts to reduce food waste also have grown rapidly in recent years. Few states in the U.S. including California, Connecticut, Massachusetts, Rhode Island, and Vermont have already taken action, prohibiting from wasting food and other organic waste that can be dumped in landfills. For example, one of the states, Vermont, started to ban organic waste in 2014, which is generated by businesses, and sending any organic waste produced by businesses and residents to landfills will be illegal in 2020 (Frandsen, 2017). Aside from this, there is another effort to minimize food waste by repurposing it. “If food is not suitable for human consumption, many local farmers are willing to pick up the scraps to feed to their livestock—saving money while reducing wasted food” (Vogliano & Brown, 2016). GrubTubs Inc. located in Austin, Texas, supports family farms and sustainable cities by collecting food waste from restaurants and grocery stores, turning into nutrient rich food, and then taking them to the farm for animal feed (“What We Do,” n.d.).

Though these actions are beneficial, more action is needed to reach significant reductions in food waste, combining with industry-led initiatives such as an education and awareness campaign targeting consumers. Currently, no comprehensive food waste campaign created at a corporate scale exists in the U.S. In a report, *A Roadmap to Reduce U.S. Food Waste by 20 percent*, consumer education about food waste is the most practical and profitable solution since consumers are directly able to leverage in reducing

food waste in and outside of home including food purchase, eating behaviors, and food disposal (ReFED, 2016). Furthermore, raising awareness of food waste can also encourage businesses to be more responsible for operating and managing food (ReFED, 2016).

II. PRELIMINARY RESEARCH

For the purposes of this research, an awareness campaign was created at the consumer and retailer level. The first step in the research was a selection of a grocery store chain (i.e., Kroger, Whole Foods, H-E-B) with substantial domestic market operations, to address food waste using their brand presence and product line. Since each grocery market has different food-managing systems and policies, the selection of a single grocery store chain established a baseline for the research.

Target Market

H-E-B is one of the largest independently owned food retailers in the U.S. having more than 340 stores across the state of Texas and Mexico (H-E-B, n.d.). As of 2017, it was ranked No. 12 on the list of “America’s Largest Private Companies”, with more than \$20 billion revenue and 100,000 employees, which makes it the biggest privately held employer in Texas (Forbes, n.d.). With the market’s great achievement, H-E-B has permeated into the heart of Texans, leading to loyal customers throughout Texas.

Though H-E-B is best categorized as a regional grocery retailer, it ranks in the top 20 on the Federated Top 100 list of national retailers (Thomas, 2018). H-E-B has a diverse customer base representing over 4.1 million foreign-born citizens, in addition to being one of the largest populations of Hispanic and African American citizens in the U.S. The location of H-E-B’s corporate headquarters in San Antonio, Texas, is in close proximity to Texas State University in San Marcos, Texas where this research was conducted and has proved beneficial for area site visits and collecting market insights.

Brand Story

The story of H-E-B throws back to 1905. The first store was founded in Kerrville, Texas, named “the C.C. Butt Grocery Store” by Florence Butt with her savings of \$60 (H-E-B, n.d.). The initial concept of the store was to offer “excellent service, low prices, and a friendly and close shopping experience... rather than focusing on profit, focus on service and customer satisfaction” (Lunsford & Raven, 2015). In 1919, her youngest son, Howard E. Butt, took over the store, changed the name to H-E-B Grocery after his initials in the mid-1930s, and then expanded both the size of the store and product line including a fish market, butcher shop, pharmacy, and bakery (Lunsford & Raven, 2015). Howard’s remarkable attainment was to not only provide goods with low price and best value, but also replace “the credit-and-delivery system with a policy of self-service cash-and-carry”, which was opening up a new era in shopping (Kleiner, 2010). In 1971, his youngest son, Charles, became president of H-E-B and greatly expanded the number of market throughout Texas, restructuring the market management and diversifying products such as bulk foods, fresh flowers, and video rentals (Kleiner, 2010). From the early mom-and-pop store to the giant enterprise, H-E-B has faithfully followed its initial concept and responded to the demands of its customers. As a result, H-E-B currently operates five different retail formats with different concepts: general H-E-B store for the general public, H-E-B Plus providing expanded products (music, DVD, garden equipment, etc.), Central Market specifically providing international food with its gourmet grocery, Mi Tienda reflecting the growing Hispanic population in Texas, and Joe V’s Smart Shop for cost-conscious customers who pursue lower prices on groceries (Lunsford & Raven,

2015). By its industry contribution and effort, H-E-B was awarded as “Retailer of the Year” in 2010 (H-E-B, n.d.).

Community Involvements

H-E-B has been involved in diverse communities in terms of education, environment, disaster relief, hunger relief, and so forth. At this phase, it is important to investigate on primary initiatives that the company is presently supporting, in order to comprehend a sense of purpose in their job.

Education: “The H-E-B Excellence in Education Awards” were created in 2002 to honor outstanding public school educators, who dedicate themselves to making a difference in children’s lives (H-E-B, n.d.). The awards are also given to those who have inspired others to do the same, including students, administrators, and principals, not only educators. From the classroom to the community, H-E-B supports them by giving over \$10 million each year in awards (H-E-B, n.d.).

Environment: H-E-B is taking good care of our environment. According to its official website, in 2014 they “diverted more than 186,000 tons of waste from landfills by recycling cardboard, plastics, organics, office paper, metals, and truck tires” (H-E-B, n.d.). Additionally, their own in-store equipment and system, such as the infrared diagnostic installation and landscaping, save tremendous energy (electricity, water) costs annually and return to customers as lower prices of goods (H-E-B, n.d.).

Disaster Relief: The emergency aid during disasters is the essential core of H-E-B’s Helping Here philosophy; the company has helped their communities in crisis by providing relief goods and emergency guides. For instance, when

Hurricane Harvey caused severe damage throughout Texas during the summer of 2017, H-E-B devoted their best efforts to victims sending supplies and donating financial support. Especially, all H-E-B stores across Texas initiated a tear pad campaign giving customers an opportunity to help victims through a voluntary donation, which can be added up to their grocery bill (H-E-B, 2017).

Hunger Relief: According to Feeding America (FA), a U.S. nonprofit organization dealing with a nationwide hunger problem, in Texas, 1 in 7 people is in food insecurity, and 1 in 4 children struggles with hunger (FA, n.d.). To fight the problem, H-E-B founded the Food Bank Assistance Program in 1982, which donates food and finance to food banks. As part of the program, the company holds an annual campaign called “Help End Hunger”, and in the same way as the tear pad campaign above, it encourages customers to donate \$1, \$3, or \$5 at the checkout (Marchat, 2017).

These community involvements result in two positive effects. First, they provide motivation to employees, “giving them a sense that they are part of something larger than themselves, helping to raise the standards in the communities in which they serve” (Dybdahl, 1999). Second, it creates a sense of fellowship between the company and the community, generating “goodwill in the mind of the consumer that in turn strengthens the company’s image and promotes customer loyalty” (Dybdahl, 1999). In addition to a long history of community programs and existing goodwill between customer and retailer, H-E-B is an excellent candidate for the proposed public awareness campaign due to its large scale of operations, diverse customer base, and favorable geographic location.

Customer Analysis

As grocery stores improved their food managing or selling methods with new technologies (e.g., home delivery, scan-and-go, biodegradable packaging), the customer's shopping trends have also changed. For example, approximately 80 percent of all consumers purchase prepared foods more often than they used to—meaning the purchasing rate of a prepared meal has been increased (Technomic, 2017).

H-E-B is known within the industry to pay great attention to their customers and focuses on customer experience. As reported by KPMG L.L.C., a global network firm offering audit, tax, and financial advisory services, H-E-B was ranked at No. 4 among U.S. industries that provide personalized customer experiences (Redman, 2018).

Additionally, a survey, conducted in 2017 by Market Force Information (MFI), found that H-E-B was ranked No. 3 of America's favorite grocery stores among U.S. shoppers for the first time (MFI, 2017). The survey also indicates that H-E-B's customers were mostly satisfied with the availability of items, ease of finding items, and specialty department services (MFI, 2017). These proven statistics imply that H-E-B's customers expect to have their personal needs and circumstances catered to, seeking individualized solutions. Moreover, in view of the fact that H-E-B chains are located in only Texas and ranked fourth place among industries in the U.S., the customers are "proud to emphasize their association with the state" and have "a strong sense of identity" (Dooley, 2014).

Private Label Brands

In order to give an appealing choice to customers in terms of quality, price, and value, H-E-B launched private label brands. The company manufactures a variety of their private label products under several brands such as H-E-B Select Ingredients, H-E-B

Organics, H-E-B Meal Simple, and H-E-B Primo Picks, all popular brands among customers (Lunsford & Raven, 2015). By producing the private label products, H-E-B not only attracts the customers, but also consolidates themselves as the vendor and supplier of goods. In this phase, the brands were investigated to explore opportunities for the issue of food waste.

H-E-B Select Ingredients: Offering food choices free from undesirable ingredients such as high fructose corn syrup and artificial flavors, H-E-B introduced this new sub-brand that excludes more than 200 synthetic ingredients (Durham, n.d.). To make these products easily identifiable, the packaging of each item was designed with a new logo including the green checkmark.

H-E-B Organics: “Over the past several years there has been a trend towards more and more customers asking about organics and just looking for a variety of choices for their different lifestyles”, H-E-B Spokeswoman, Lacey Kotzur, said (Moore, 2014). Reflecting this demand, the H-E-B Organics brand products, which are certified by the USDA, are for customers who look for specifically organic food.

H-E-B Meal Simple: As mentioned earlier, demand for the prepared meal is growing since it is fast and easy to cook, perfect for people who have a hectic routine. The H-E-B Meal Simple brand was designed to provide easy and affordable dining experiences, offering a fully prepared-meal with fish, chicken, beef, or sides (Sutton, 2018).

H-E-B Primo Picks: Unlike other brands, the H-E-B Primo Picks line provides unique and special food products, which were created by local entrepreneurs or

small businesses. The products are selected at an annual competition, named Quest for Texas Best, by a H-E-B's panel of expert judges based on taste, flavor, uniqueness, and market potential (H-E-B, 2018; Cloud, 2014).

The preliminary research on the target market, H-E-B, furnished a better understanding of the market identity with insights and opportunities that communication design can be involved in. The crucial data from this research was included in the next phase, the SWOT analysis.

SWOT Analysis

SWOT, which represents Strengths, Weaknesses, Opportunities, and Threats, is an analytical technique to assess a particular business or organization. Identifying the elements and the target's strategic position, the main objective of this analysis is to further develop potential solutions and ultimately achieve a designated aim. In general, Strengths and Weaknesses “refer to internal factors, which means the resources and experiences readily available” and Opportunities and Threats apply to external factors that cannot be controlled such as market trends, legislative laws, and social standard (Fallon, 2018).

Based on the market research, this phase of the preliminary research aims to grab possible opportunities and shape design methods and outcomes through an in-depth analysis on the SWOT elements of H-E-B chains: Strengths that differentiate from other competitors, Weaknesses that hinder H-E-B from operating at its optimal level, Opportunities that help H-E-B to grow or reach for a better position, and Threats that potentially harm H-E-B or affect H-E-B toward a negative condition (see Appendix A, p. 85).

Case Studies

Food waste is a global-major concern to such an extent that the United Nations (UN) set “Zero Hunger” as one of the “Sustainable Development Goals”, which are plans to achieve a better future for all (UN, n.d.). In order to alleviate the food waste issue, retailers in various countries have been attempting to reduce food waste. This comparison study was conducted to understand what type of attempt other grocery stores previously executed for addressing food waste and analyze how they accomplished their goals.

As previously stated, no comprehensive food waste campaigns—created at a corporate scale—currently exist in the United States. Due to this lack of national, regional, or local food waste campaigns, this thesis research utilized international food waste case studies to gain valuable insights on conceptual approaches, implementation methods, and effectiveness.

Inglorious Fruits and Vegetables by Intermarché

In 2014, Intermarché, one of the largest French supermarket chains, initiated a huge campaign called “Inglorious Fruits and Vegetables”. This campaign was aimed to reduce waste by inducing its customers to purchase visually imperfect or ugly products, which farmers usually threw away (Godoy, 2014). To convey the issue of food waste, *Inglorious Fruits and Vegetables* mainly focused on the fact that the appearance of produce does not affect its nutritional value or taste. As noted on the promotional video created by Marcel, which is a French creative agency, the campaign created a great impact on media, and more importantly, “increased awareness of food waste” in France (Marcel, 2014).

Hankki Babsang by Lotte

Lotte, a huge supermarket chain in South Korea, also took action to reduce food waste in 2017 by launching a new brand Hankki Babsang, which literally means one meal for one table. According to Statistics Korea (SK), the rate of single-person households in 2015 had grown over the past five years (SK, 2017). With the increased proportion, the households showed a trend of eating a meal alone or cooking only one meal. Reflecting this trend, Hankki Babsang introduced reduced amounts of ingredients that a consumer can cook only for a single dish, hoping to avoid buying excessive food and eventually throwing away leftovers. Furthermore, its packaging design conveys sustainability by downsizing the appropriate amount of food and using fewer materials to manufacture it. In a month, the brand gained sensational popularity, and Lotte plans to expand items gradually (Jang, 2017).

Wefood Supermarket

Denmark is a European leader in the anti-food waste movement—food waste in Denmark had been reduced by 25 percent in five years through massive action plans (Marsh, 2015). One of them, Wefood, is the first food surplus supermarket in Denmark selling goods that normal supermarkets can no longer sell due to damaged packaging or nearing expiration date, but still safe to consume. In addition to that, the products are at a significant discount of 30 to 50 percent. “A supermarket like Wefood makes so much sense and is an important step in the battle to combat food waste”, Eva Kjer Hansen, the Danish Minister for Food and the Environment, said (Payton, 2016). There are a number of reasons for this successful reduction, and the most contributing factor is that Wefood reused or recovered food, which could possibly end up in landfills.

As these studies show, each case focuses on a specific cause of food waste: Inglorious Fruits and Vegetables—high consumer expectations of perfect food; Hankki Babsang—excessive food purchase; Wefood—confusion about food-date labels. These case studies proved beneficial and inspired design methods and outcomes in this thesis project in two main ways: 1) What causes of food waste need to be focused in the awareness campaign and, 2) How these causes need to be addressed using communication design methodologies and principles.

Survey on Awareness of Food Waste

The Purpose and Overview

Although there is general data available, regarding consumer trend, perception, and behavior on food waste, it is vital to obtain insightful and conscious data based on the particular target audience for this project. In order to understand consumers' perceptions of food waste and investigate their waste patterns, an online survey was conducted over a one-month period. Since the research topic is focused on a specific area—Texas—participants were selected as ordinary individuals over eighteen-years-old residing in Texas, and a total of 300 participants responded to the survey.

The survey was comprised of eighteen questions total, which had fifteen multiple choice and three essay questions. While the multiple choices were intended to acquire the average and peak values of each specific question, the essays were aimed to be open-ended allowing respondents to add more information and self expression. Furthermore, the questions in the survey were divided into three scopes: the first section aimed to understand how participants perceive the food waste issue, the second one inquired how they discard the waste or how it occurs at the consumer level, and the third examined

what efforts they try to do for minimizing their waste. This questionnaire format provided opportunities and practicable options, which were incorporated into the design outcomes (see Appendix B, p. 86).

Facts and Insights

On the basis of the survey responses, data analysis was executed to grasp key facts and discover insights. Since each of the questions has a unique value, the analysis method needed to be classified into two techniques. More specifically, the key facts were focused on only a single question and evaluated by results, whereas the insights were not only concentrated on a question, but also compared with other questions. For example, the result of the question—*How much do you generally care about food waste in your daily life?*—clearly shows that the majority of respondents (80.7%) care about food waste most of time, and the result of the question—*Do you check what items you already have and then plan what to buy before going shopping?*—indicates that the majority (96.3%) checks and plans their grocery shopping; both are facts. When they are compared, an insight can be found as the respondents, who generally care about food waste in their life, check items before going shopping and are good at grocery planning (see Appendix C, p. 89).

III. METHODS

Based on the introduction and preliminary research, this phase addresses the conception and process of final design outcomes including principal elements of an awareness campaign, methods to support the campaign, and initial ideation to specify design ideas. The first prerequisite prior to the initiation of the campaign is to define what to accomplish, who to aim, and what to be conveyed. Next, once the campaign is concretely defined, it is necessary to clarify its applications describing how to be executed. Lastly, using communication design methodologies and principles, the applications are visually ideated. The following steps help inform the final design outcomes and are the foundation of the campaign implementation.

Awareness Campaign

The purpose of the Campaign

To raise the awareness of the food waste issue, conducting a large-scaled consumer campaign is one of the most effective solutions since it not only motivates consumers to decrease food waste, but also educate them about useful tips so that they may practice such as the proper food-storage information and the meaning of food-date labels (ReFED, 2016). Educational knowledge, awareness, and instruction through the campaign need to be particularly “directed at consumers undergoing crucial life moments, which are known to entail changes in perceptions and habits ... the latter action is also one element of educating consumers in food skills in terms of assessing food and managing and planning food purchasing and handling” (Aschemann-Witzel, Hooge, Amani, Bech-Larsen, & Oostindjer, 2015). Moreover, education regarding food and food waste during the campaign helps consumers to take action.

Target Audience

The target audience for the awareness campaign in this project is a general customer who shops at a H-E-B grocery store. In particular, they are also a resident of Texas where the majority of H-E-B stores are located, with the exception of few stores in Mexico. By targeting a specific audience, who is the Texas resident, the effect of the campaign can be maximized since H-E-B focuses on providing products grown and produced in Texas rather than bringing all brands to their customers (Lunsford & Raven, 2015). The next phase is to determine the contents of the campaign to be delivered with the intent of raising awareness of food waste.

Call to Action

What kind of content does the campaign need to deliver? What information does the target audience need to be aware of or educated? While the obvious goal is to raise awareness of food waste, contents of delivery through the campaign are required to be more specific to help achieve the goal. With this in mind, the contents are as follows:

- **Food Waste in America:** As a critical element of the awareness campaign—the issue of food waste in the U.S.—is addressed to the H-E-B consumer, the campaign needs to include statistics, facts, and impacts of the issue. For example, the contents cover proven information—40 percent of food produced for human consumption in the U.S. is wasted even though it is still edible, wasted food is the single largest occupant of American landfills, and Americans waste \$165 billion worth of food each year (Buzby, Wells, & Hyman, 2014). Such powerful information grabs a consumer’s attention and ultimately “ignites from a strong emotion”, giving motivation (Leman, 2012).

- **Education about Food Date:** As stated earlier, the confusion over the food date labels is one of the significant factors that contribute to the food waste problem at the consumer level. “A lack of standardization of date labels often leads consumers to throw away food before it’s spoiled, causing an estimated 20 percent of at-home food waste” (ReFED, 2016). Reflecting on the statement, educating consumers on the meaning of date labels can help reduce the great amount of food that they unnecessarily discard (HFLP, 2016).
- **Instruction on Proper Storage:** Produce and produced foods have a preferred way to be stored to extend its shelf life or duration that the item remains consumable. Adding to that, the temperature in the refrigerator varies in each section, which means the freshness longevity is greatly influenced by temperature, moisture, and oxygen. Although a storage instruction is already indicated on food packaging, food is still discarded in households due to “improper or suboptimal storage and poor visibility in refrigerators” (Gunders, 2012). For that reason, the instruction needs to be improved with a clearer and easier way for consumers to follow.

Applications

To convey the contents of the awareness campaign, it is important to set up promotional materials that easily communicate with consumers. Based on H-E-B’s existing supplies and materials that promote its brand, applications for the campaign are twofold: internal materials to be directly distributed in store such as interior banners and shopping cart advertising, and external materials to be spread out of store such as website

and transportation advertising. This ultimately allows the campaign to be promoted without restriction on a place.

Launch New Brand

Inspired by H-E-B's own brands (H-E-B Select Ingredients, Organics, Meal Simple, Primo Picks), this thesis project involves launching a new sub-brand. The purpose of this sub-brand is mainly to invigorate the awareness campaign through a new product line, which embodies sustainable and informative features. The brand will assist the campaign at the point of consumer purchase, incorporating two specific elements: Sustainability and Packaging Adjustments, by delivering not only useful information about food, but also a message to the consumer regarding the food waste issue. With the elements, the following phase is to define a specific concept of this new brand.

Packaging Adjustments through Sustainability

In terms of food waste, the notion of sustainability has globally received attention for preventing food waste before it is discarded, reducing the amount of food waste while it is being discarded, and managing food waste after it is wasted. The term of sustainability, especially in management of food and food waste, represents "a systematic approach that seeks to reduce wasted food and its associated impacts over the entire life cycle, starting with the use of natural resources, manufacturing, sales, and consumption and ending with decisions on recovery or final disposal" (EPA, n.d.). The principles of sustainability generally embrace the 3R's, which is also considered as the waste hierarchy: Reduce, Reuse, and Recycle. Expanding the principles, the new brand of H-E-B includes an additional "R" which stands for "Rethink".

Food packaging applied with the expanded principles of sustainability is a fundamental feature on the brand. The ReFED revealed major challenges that retailers can attempt: individual packaging sizes and configurations based on food tendency; minimized packaging size with the reduced amount of food to avoid over purchasing; eco-friendly packaging materials to help consumers recycle (ReFED, 2016). Applying the concept of sustainability, the Packaging Adjustments entail the 4R's as follows:

- **Reduce:** Based on the number of family members and duration of freshness, the amount of food or ingredients needs to be contemplated. Reducing the amount not only keeps consumers from purchasing in bulk, but also enables the size of packaging to minimize.
- **Reuse:** To prolong the freshness of food, the packaging function is required to be enhanced by a reusable trait, instead of a disposable function. “Reusable packaging is often designed to promote durability, ease of use, ease of cleaning, ease of repair, and collapsibility or nestable design to provide inexpensive return when empty” (Leblanc, 2018).
- **Recycle:** The more food is produced, the more materials are needed to pack them for protecting contents and extending shelf life. Even though the value of packaging is significant in reducing food waste, it also causes a negative environmental impact. For instance, “additives used in plastic, such as plasticizers, stabilizers and flame retardants, can be released to the environment during disposal” (Grossman, 2014). For that reason, it is necessary to adopt more environmentally sustainable materials for packaging, which can be also easily recycled compared to alternative harmful materials.

- **Rethink:** The fourth R, Rethink, expresses that a consumer should ponder over possible options and question their actions, which may cause food waste. By delivering a message about food that a consumer purchased through the packaging, the new brand predisposes the consumer to think about the issue and be self-aware of their behavior toward food waste.

Ideation

Ideation is the creative process of formulating, materializing, and developing new ideas. It also enables designers to further enhance concepts and outcomes, giving inspiration to build prototypes and gain better solutions (Platner, n.d.). Based on the conception of awareness campaign and the results of the online survey, the ideation was conducted by visual processing methods: rough sketching and prototyping.

Rough Sketching

Rough sketching is a process of visualizing ideas generated in the ideation process, through hand drawing. Since only a pen and a piece of paper are required for this process, the advantages include rapidness, ease, and inexpensiveness to explore initial design concepts. In addition to that, it helps freely produce plentiful ideas without any restriction of format, select ideas worth pursuing, document ideas for later reflection (Greenburg, Carpendale, Marquardt, & Buxton, 2011). Rough sketching for this thesis project helped to create ideas including design of the campaign logo, the campaign applications, product packaging, and its label (see Illustration, p. 43, p. 50, p. 64).

Prototyping

“If a picture is worth a thousand words... prototypes go beyond the power of show and tell” (Walfel, 2009). Prototyping is one of the best methods in the design process,

especially in a three-dimensional model. It is usually implemented in the final design stage in order to test practicability of design, evaluate an idea or value of it, and then refine it through a basic form of mock-ups. By gaining insights and detecting any design problems, it ultimately creates a better solution. In the case of outcomes of this thesis, multiple prototypes were created and improved upon with the intent of designing packaging outcomes the best facilitate and deliver the campaign message of less food waste (see Illustration, p. 66, p. 71, p. 76, p. 81).

IV. OUTCOMES

The main purpose of this thesis project was to research, ideate, and create an awareness campaign to help reduce domestic food waste at a consumer level. Along with creating the campaign itself, design outcomes cover promotional applications to facilitate the campaign distribution and support brand elements (i.e., logo, style guide). In addition to that, launching a new sub-brand involves food packaging design and its label design with the intent of not only invigorating the campaign, but also encouraging consumers to take action. The outcomes were based on the preliminary research including the SWOT analysis and the results of the online survey.

Good Taste Zero Waste

Good Taste Zero Waste (GTZW) is the name of the campaign for raising awareness of food waste. The name was comprised of two features: word contrast and phonic rhyme. The word contrast between “Good Taste” and “Zero Waste” expresses a sense of the campaign’s message, which literally means taste is good, and waste should be zero. The phonic rhyme between “Taste” and “Waste” creates rhythmical sound, which induces fun and interest to people. These two features ultimately help people to easily memorize and invite to the campaign.

Campaign Logo

A logo is one of the most important design elements to identify a brand, company or product. Recognizable symbols enable companies to surpass cultural differences and language barriers and sustain brand consistency across a wide range of media (Airey, 2010). The logo for the GTZW is a type-based logotype, directly expressing the name of the campaign (see Illustration, p. 45). With the bald and simple expression, the

rectangular outline visually produces stability, and the different thickness between the words reflects the rhythmical sound to emphasize the purpose of the campaign.

Additionally, three versions of the logo (colored outline with white background, white outline with colored background, white outline with black background) can be applied to various applications without color conflict. The GTZW logo was created based on the rough sketching process.

Color and Typography

Color and typography play a crucial role in design implementation since they evoke particular moods and create unique perceptions depending on its treatment. For the color system in the campaign, the primary colors were selected as yellow and black—yellow attracts attention stimulating mental activity and black provides readability on a bright background. The secondary color was selected as red, which is used to make quick decisions or actions (Rikard, 2015). For the use of typeface in the campaign, Changa One, which is the open source font in the Google Fonts catalog, was selected based on legibility with the color system and correspondence with the purpose of the campaign. The Changa One is a sans serif typeface, designed by Eduardo Tunni, featuring its uppercases which have a rectangular counter-shape making them stand out. In order to maintain consistency in the campaign, the color and typography were applied to not only the logo, but the entire campaign applications.

Promotional Applications

As stated earlier, applications for the campaign are classified according to a place to be promoted: in-store applications (shopping cart and basket advertising, interior banners, check-out promotion) and out-of-store applications (transportation advertising,

campaign website, and mobile app). That way, the campaign can be effectively spread out undeterred by location or format. Particularly, the in-store applications reflect a shopping process. For instance, each of the design applications is placed from the beginning to the end of grocery shopping experience: grabbing a shopping cart, walking and looking around a store, and paying at the checkout.

Shopping Cart and Basket Advertising

As the H-E-B customers arrive, they immediately interact with the awareness campaign when they pick up a shopping cart or a basket. The bottom of both shopping carts and baskets is lined with bold and bright “GTZW” branded posters with brief descriptions about food dates and explanations on differences between “best by”, “sell by”, and “use by” (see Illustration, p. 51). This allows customers to look at the descriptions and learn about the food dates whenever they need to while shopping. The application reflects the results of the survey (Q10, Q14) and empowers the shopper (consumer).

Interior Banner

Once customers enter the grocery store, one of the most effective methods the retailer can visually communicate with them is with interior banners. The both large and small interior banners are generally used for products’ promotion by the appropriate placement throughout the store. In this case, it is used to inform the seriousness of the food waste issue with symbolical graphics and statistical data which are placed at the meat section (see Illustration, p. 53). This application reflects the results of the survey (Q1, Q17, Q18).

Check-Out Promotion

As the final component of the in-store experience, customers pay for their groceries at the checkout. At this point, customers are shown the rates of discarded materials in American landfills when putting their items on the conveyor belt loop. Then, by placing the divider stick, they are able to learn that the food waste is the highest rated occupant among the other materials (see Illustration, p. 56). This application reflects the results of the survey (Q1, Q17, Q18).

Wearable Applications

Unlike the in-store applications above, wearable applications, including caps, t-shirts, and aprons, are meant to be worn by H-E-B employees (see Illustration, p. 57). These applications aim to promote the GTZW campaign throughout customers' shopping experience and also engendering a sense of community between the company and its employees and customer.

Transportation Advertising

The H-E-B trucks transport goods from the distribution center to the store everyday, and the wrapping images on the trucks are shown to drivers on the road as advertising. With that purpose, this transportation advertising is to give notice of how much food is economically wasted in the U.S. through visual images (see Illustration, p. 58). Since this application runs out of the store, the exposure to random people, not only to the H-E-B customers, is the advantage of spreading out. This application reflects the results of the survey (Q1, Q3, Q4).

Website and Mobile App

The GTZW website and its mobile app are a comprehensive platform where a consumer can easily learn about not only food waste, but also tips reducing food to be thrown away. The platform is comprised of six main pages: Home, Plan, Cook, Store, Compost, and Donate. The Home page is where the awareness campaign is introduced with the food waste issue showing the proven statistics and facts. The Plan page provides grocery guides, which consumers can plan ahead on their meals. For instance, if a consumer is planning to cook cream spaghetti for four servings, it recommends specific products in the store with the proper amount of ingredients to avoid excessive purchases. The Cook page is where consumers can learn about popular food recipes depending on their interests. Not only that, it provides tips for using leftovers such as spaghetti frittata (omelet made of eggs and spaghetti leftovers). The Store page offers recommendations of how to store their food properly or improve shelf life. By clicking a specific item, customers can get its storage information to keep it as long as possible. On the Compost page, consumers can learn how to compost leftover food at home. This page aims to encourage them to recycle leftovers by themselves rather than to discard it into the waste bin. Lastly, the Donate page is where consumers can find locations to donate their food such as local food banks and donation centers nearby. The objective of the website and mobile app is to help promote the campaign by providing the practical information to reduce food waste so that consumers can keep on track of their waste outside the store. These applications reflect the results of the survey (Q10, Q12, Q13, Q15).

H-E-B Eat Up

H-E-B Eat Up (EU) will be one of the H-E-B private label brands, focusing on educating customers specifically about food date labels and storage tips through food packaging. As analyzed from the SWOT, expansion of private label products characterized by sustainable methods will open great opportunities to be embraced into the H-E-B market system.

Brand Logo

As the GTZW logo supports the campaign itself, it is necessary to create a logo for the H-E-B Eat Up brand, in order to represent the value of it. The most prominent feature in the brand logo is an arrow within the letter “U”, expressing an extension of shelf life, which is the purpose of the brand (see Illustration, p. 63). In order to be consistent with the GTZW logo, the same color and typography treatment was used in the brand logo.

Food Packaging and Label

According to the results of the online survey, question 11, the respondents answered fruit and vegetables as the top types of food that are wasted (44.5%), dairy products are the second (24.7%), and meat or fish is the third one (17.5%). Additionally, they responded to question 10 as the most common reason for discarding food at home is due to spoilage (51%), and past food date is the second reason (17%). That data brings to light why storage methods and food date information need to be improved with food packaging and label design. Based on that, one item from each food category was selected, in order to design more informative packaging: banana (fruit), broccoli (vegetable), milk (dairy product), and raw chicken breast (meat).

Since each of the items has a different way to improve shelf life, the form and function of the packaging were addressed to fit into each specific application. First, bananas release ethylene gas from their stems, and this makes them easy to ripen. The more gas is released, the faster bananas are ripened. To prevent the quick ripeness, wrapping the stems in plastic wrap is one of the best ways to keep bananas longer and fresh. Similar to this method, the detachable label on the EU bananas functions as plastic wrap so that consumers can wrap the stems each time they take a banana off (see Illustration, p. 65). Secondly, broccoli is an easy-perishable vegetable, which should be consumed while it is fresh—the shelf life is generally five to seven days. However, the vegetable can be stored without losing its nutritional value and freshness when properly treated and frozen—the shelf life is extended up to one year. In order to instruct this method, the EU broccoli expresses an encouraging message the inside of packaging made of recyclable paper, to lead consumers to follow (see Illustration, p. 69). Moreover, the visual element on the product tells how and where to store it in the refrigerator to optimize the quality, flavor, and freshness. Third, one of the dairy products that confuse consumers over the “sell by” date is milk. According to the video produced by the HFLP and Racing Horse Productions (RHP), “there is no federal law and expiration dates so states have a dizzying variety of date label laws that are not based in science or sound public policy” (HFLP & RHP, n.d.). The “sell by” date on milk is not related to safety, which means it is still drinkable up to a week after the date when properly stored. After the date, the most reliable method to detect whether the milk is spoiled is sniffing or tasting. With this information, the label on the EU milk provides graphic instructions simply describing the best spot to store in the fridge (see Illustration, p. 75). Notably, the

inside of the label on the transparent plastic bottle, which appears when milk is half-empty, delivers a notice allowing consumers to think about their milk before discarding (see Illustration, p. 74). Finally, compared to beef and pork, poultry has a shorter shelf life—in particular, raw chicken is generally up to 2 days when refrigerated. In addition to that, it needs to be carefully handled due to the salmonella, which is a leading cause of food poisoning. The best method to prolong its shelf life without having the threat is to separately freeze in an airtight container or bag—the shelf life is extended up to nine months. The EU raw chicken breast helps consumers follow that storage method. The number of contents (chicken breasts) is classified depending on the number of people in a household: 2 pieces for 1 or 2 members and 4 pieces for 3 or 4 members, enabling consumers to avoid purchasing in bulk and plan ahead on their meals. More importantly, the original packaging comes in two containers that can be separated one from another so that the rest can be stored in the freezer for future use (see Illustration, p. 79). The label on the packaging also conveys a message for the practical method.

V. CONCLUSION

This thesis project addressed the issue of food waste in the U.S., specifically at the consumer stage and investigated the causes that exacerbate the issue, and proposed an awareness campaign toward consumers as the most essential and effective solution. This research—once adopted and implemented—will add to the global body of case studies related to food waste and directly address the lack of domestic (U.S.) case studies.

Additionally, this research will serve as the initial foundation for implementing this awareness campaign. Once the campaign has been launched the next phase in this research is to review, analyze, and evaluate consumer reaction and knowledge of the campaign's goal of reducing food waste.

Utilizing the preliminary research, including the SWOT analysis, the case studies, and the online survey, the design outcomes were formulated and applied to an existing retailer (H-E-B), in order to initiate the comprehensive campaign. The ultimate value and importance of the outcomes will result from the interaction of consumers with the campaign and how the campaign will influence consumers' (user) behavior.

User Testing in Select H-E-B Stores

User testing will be the next phase in this research to be conducted on a small, yet diverse sample of existing H-E-B customers. In this phase, consumers will be interviewed and also asked to complete surveys and other tasks to help guide and influence the refinement and alteration, which will improve future iterations of the campaign. User testing is usually an iterative loop of the observation of users, evaluating user feedback, refining outcomes based on observations and feedback, followed by a re-testing by the

user. This process often occurs multiple times with the intent of improving the campaign with each iteration.

The implementation of the awareness campaign resulting from this research will initially be adopted in select H-E-B store locations. This selection, or “sample” of stores would be chosen for the purpose of including the following: a diverse customer base; varying socio economics, and store size. This sample should be large enough to include stores representing the overall make up of H-E-B, yet be small enough to be managed by a small research team.

Building a Team

This research was conducted from the experience and practices primarily found in the Communication Design discipline and would be well served by the inclusion of expertise and insights from other academic areas. Prior to implementing this campaign, it would be beneficial to create a multidisciplinary team of experienced professionals representing diverse backgrounds and areas of research such as Home Economics, Data Analytics, Human Behavior, Foreign Language, etc. Such a team would prove instrumental in not only obtaining more accurate results, but also improving the analysis of data gained from this campaign.

With the design and implementation of the GTZW campaign completed, H-E-B could set the industry standard for food waste awareness and sustainability. The GTZW campaign could be expanded and adapted for use throughout the entire grocery retail industry. Along with raising awareness on food waste, this project also addressed food waste prevention methods at the consumer stage—since consumers contribute the largest portion of aggregate food waste—through educational information and the practices.

Food waste is a massive problem in the U.S. However, it is also a solvable problem when the public becomes aware of its magnitude and negative impact, which was the starting point for solving the problem. Voluntary adoption and continuing awareness efforts accompanied by changed perceptions on food waste could significantly reduce food waste, conserve valuable resources and economic cost, alleviate environmental matters, and help address the needs of people living with severe hunger.

Future Research and Expansion

The problem of food waste covers a wide range of fields to be involved and demands broad actions to deal with. As previously stated, the exact causes of food waste vary throughout not only each stage, but each country. For instance, a consumer awareness campaign might be the most effective method in industrialized countries, while that same campaign might be less effective in developing countries since their food waste is mainly generated in post-harvest and processing stages due to the technical limitations. Therefore, methods and solutions addressing food waste need to be based on the specific situations or local circumstances, which tend to vary state to state, country to country. Although this project specifically suggests conducting the awareness campaign, further research and implementation are needed to help inform and improve future outcomes.

Future research will include the following:

- **Adoption by other domestic grocery retailers:** Though this research was specific to H-E-B, because of the diverse customer base and scale of operations at H-E-B, this campaign could be adapted for other domestic grocery retailers. Much of the research would apply to other domestic

retailers, however, additional research and the expansion of the research team would be required to gain the insights and understand differences unique to other retailers that might affect the outcomes when applied in other markets. Messaging could reflect the specific brand standards such as brand voice and visual brand elements (primarily color and typography) for each individual retailer.

- **Expansion into Mexico:** Since H-E-B already has stores throughout Mexico, the next logical step would be to adapt the awareness campaign into Spanish and the Mexican culture. The translating of the campaign would again call for the expansion of the team to include a Spanish language expert and would require further research into cultural and aesthetic norms, customs, and expressions that differ from the original English only campaign. With the successful implementation of the Spanish language awareness campaign in H-E-B stores in Mexico, the campaign could then be customized and adapted for other Mexican grocery retailers such as: Casa Ley; Grupo Chedraui; and Soriana. Messaging could reflect the specific brand standards such as brand voice and visual brand elements (primarily color and typography) for each individual retailer.
- **Expansion beyond Mexico:** After adapting the campaign throughout Mexico, it could then be adapted to other Spanish speaking—international markets—like Central, South America and Spain. The adaptation of the awareness in these markets would require additional research as the scope

of food waste changes from country to country and would be often determined by socio economic factors such as poverty and food scarcity, which fluctuates from country to country and influences consumer behavior.

- **Utilization of social media:** The awareness campaign primary utilized print media and environmental (in store) graphics to convey the campaign's messages. In order to further promote the awareness campaign, further plans call for the utilization of social media platforms such as Instagram, Facebook, and Twitter. Through social media, more specifically through the use of targeted content, consumers can be exposed to the campaign prior to experiencing the campaign in store. Additionally, consumers are able to share their experiences and thoughts about the campaign in the hopes of influencing others to make better choices related to food waste. It also allows consumers to connect with each other, be continuously engaged in, and possibly invite more consumers to participate in the campaign. Furthermore, once the GTZW website, app, and social media elements are designed and activated, data from these areas will be analyzed to help uncover hidden patterns and trends. This, along with other valuable data, will be utilized to better scale and improve food waste awareness and the GTZW practices moving forward.

VI. ILLUSTRATION

This section includes illustrations of the Good Taste Zero Waste awareness campaign, the campaign applications, and the H-E-B Eat Up brand. Details on each category are as follows:

- Good Taste Zero Waste Awareness Campaign
 - a) Logo Idea Sketches
 - b) Campaign Logo
 - c) Color System
 - d) Typography System
- Campaign Applications
 - a) Applications Idea Sketches
 - b) Shopping Cart and Basket
 - c) Interior Banners
 - d) Check-Out Promotion
 - e) Wearable Applications
 - f) Transportation
 - g) Website and Mobile App
- H-E-B Eat Up Brand
 - a) Brand Logo
 - b) Packaging and Label Idea Sketches
 - c) Bananas Label
 - d) Broccoli Packaging and Label
 - e) Milk Packaging and Label

f) Raw Chicken Breast Packaging and Label

**GOOD TASTE ZERO WASTE
AWARENESS CAMPAIGN**

Logo Idea Sketches - Digital Mock-Up



Campaign Final Logotype - Primary



colored outline with white background

Campaign Final Logotypes - Secondary



white outline with colored background



white outline with black background

Color System

PRIMARY



YELLOW

R: 254
G: 203
B: 13

C: 0
M: 20
Y: 99
K: 0

Web: #FECB0D



BLACK

R: 35
G: 31
B: 32

C: 0
M: 0
Y: 0
K: 100

Web: #231F20

SECONDARY



RED

R: 190
G: 30
B: 45

C: 15
M: 100
Y: 90
K: 10

Web: #BE1E2D

Typography System

Changa One

Extra Bold

**A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n
o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0**

Semi Bold

**A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n
o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0**

Regular

A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n
o p q r s t u v w x y z
1 2 3 4 5 6 7 8 9 0

CAMPAIGN APPLICATIONS

Shopping Cart and Basket Advertising

**FOOD DATES
ARE NOT
DEADLINES
TO THROW AWAY
FOOD!**



Ad at the bottom

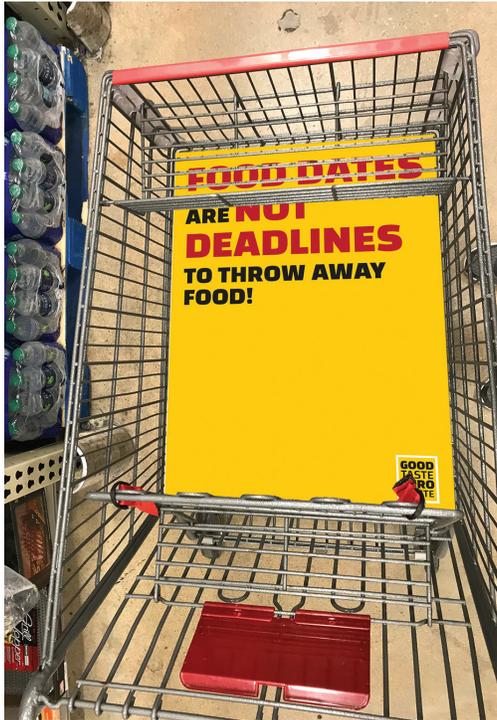
HOW TO READ FOOD DATE LABELS:

| | |
|---|---|
|  | YOUR FOOD IS STILL SAFE AND TASTY FOR A WHILE EVEN AFTER THESE DATES |
|  | |
|  | |

www.goodtastezerowaste.org

Ad near the seat

Shopping Cart and Basket Advertising



Interior Banners



Interior Banners



Check-Out Promotion



Conveyor Belt



Divider Stick

Check-Out Promotion



Wearable Applications



T-shirt



Cap



Apron

Transportation Advertising

**EACH YEAR, AMERICA THROWS AWAY
\$165 BILLION WORTH OF FOOD**

GOOD
TASTE
ZERO
WASTE

H-E-B



**EACH YEAR, AMERICA THROWS AWAY
\$165 BILLION WORTH OF FOOD**

GOOD
TASTE
ZERO
WASTE

H-E-B



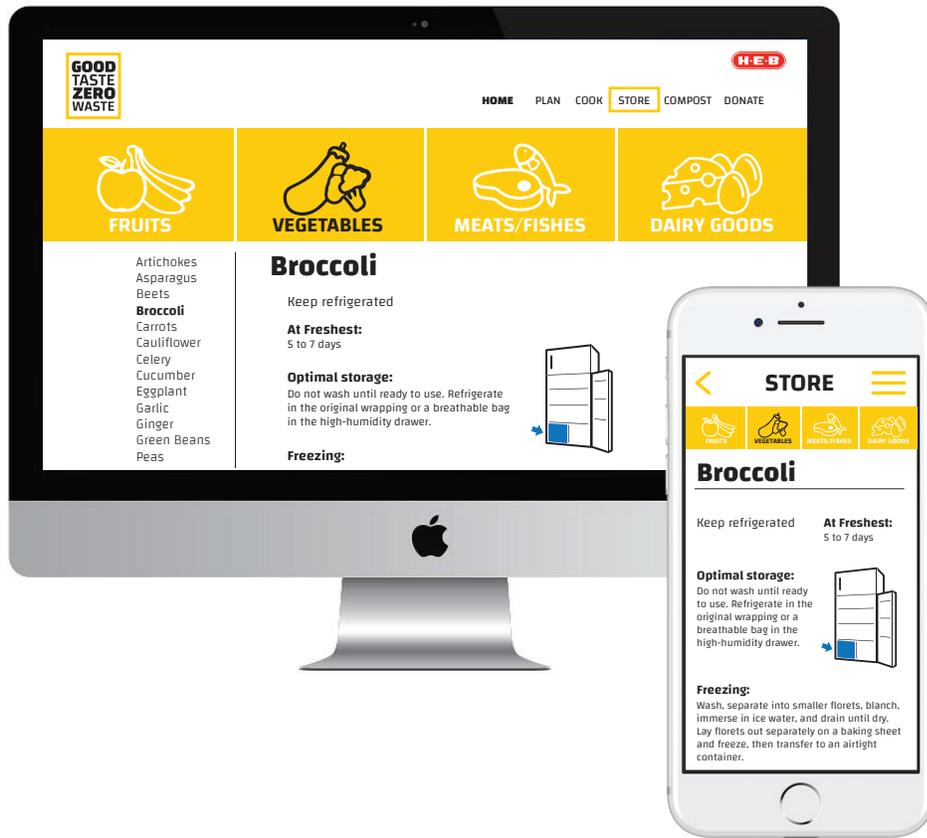
Transportation Advertising



Website and Mobile App (1/2) - Home Page



Website and Mobile App (2/2) - Store Page



H-E-B EAT UP BRAND

H-E-B Eat Up Logotypes



colored outline with white background



white outline with colored background



white outline with black background

Label and Packaging Idea Sketches

→ invigorate the campaign and educate consumers about **FOOD DATES & STORAGE TIPS**.

→ food waste process.

Prevent before discarded
↓
Reduce white discarding
↓
Manage after wasted.

Food to Design:

Vegetables
✓ Broccoli, Onion, Beet, Potato, Bell pepper, Tomato, Carrot, Radish, Fresh beans.

Fruits
Apple, Banana, Avocado, Citrus (lemon, orange), Berries.

Meat
Bacon, Fresh meat (beef, pork, chicken).

Dairies
Milk, Cheese, Butter, Eggs.

CONCEPT

- smaller size.
- where/how to store
- when will be expired? (food date).
- recyclable materials (innovative: paper, plant-plastic)
- reusable
- retickable message.

→ Packaging Adjustment.

- Confusing/inconsistent sizes and configurations.
- large bulk packaging causing over-purchase.
- Use of recyclable materials.

→ reduce, the amount of food & packaging.

- reuse, reusable trait - easy to use.
- recycle, sustainable materials
- rethink, a message about food waste → self-aware of their behavior.

[Chicken Breast] - Raw Meat

- 1 or 2 pc. (short shelf-life)
- plastic material.
- 1 ~ 2 days (in the fridge)
- 1 ~ 2 days (in the freezer)

Labels: Total: 2, Total: 4

[Label Contents]

- how to store / tips.
- food date.
- name of product.
- logo.
- See existing products.

Process: 1) Select items → 2) Search designs/ideas → 3) Sketch & Design. Prototype.

→ freezing tip (blanch & Freeze)

→ Visit the website.

→ See existing products.

[Milk] - Dairy

- Pasteurized: 1 week beyond Sell-by.
- Shelf-stable carton: Unopened - 6 months / opened - 7-10 days.
- Store in a cold part of the fridge (not the door).
- making a sniff test for evaluation
- Milk will smell or taste bad before it would make you sick.

Labels: plastic container, label, loss amount of milk.

Yellow + Black back (white milk), a message.

SELL-BY DATE PASSED? MAKE A SNIFF TEST. IT MAY BE STILL - IT SHOULD STILL BE GOOD TO DRINK IF YOU HAVE STORED PROPERLY.

[Bananas] - Fruit

- less ripe: 5-7 days.
- ripe: 1-2 days.
- room temperature.
- keep them away from heat/sunlight.
- ventilated, cool, dark place.
- keep them away from other fruits due to the ethylene.
- put into a bowl / hang them up!
- Wrap them with plastic wrap → stems!
- Look for "Pass'n Seal" (find).

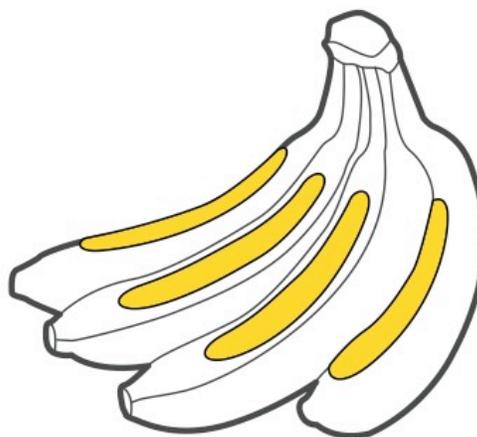
Labels: HANG ME UP!, detachable wrap, wrap the stem.

Bananas Label



detachable wrap

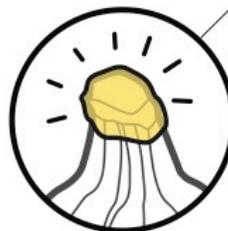
Label Location



peel off

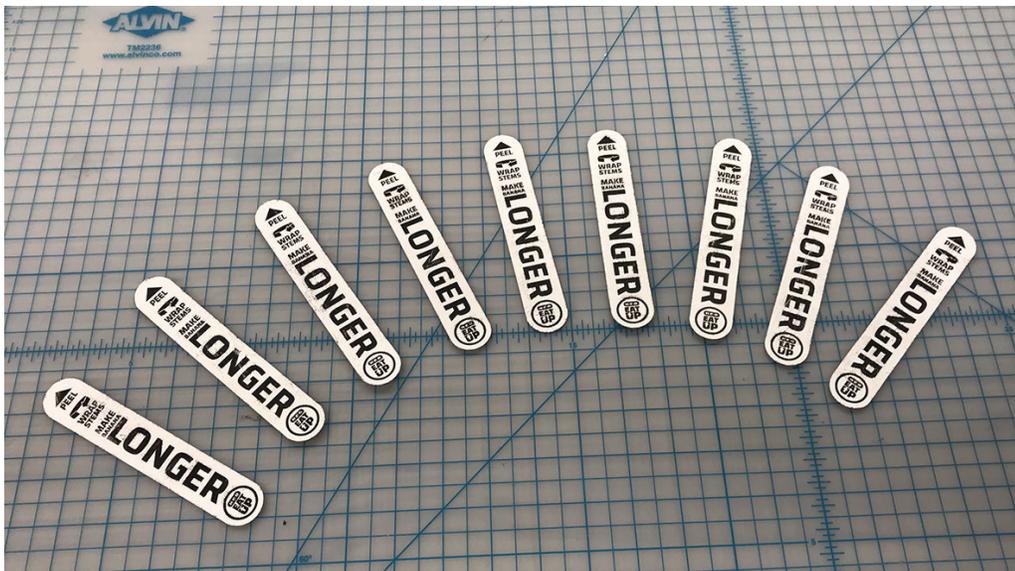


wrap the stem



keep banana longer!

Bananas Prototype



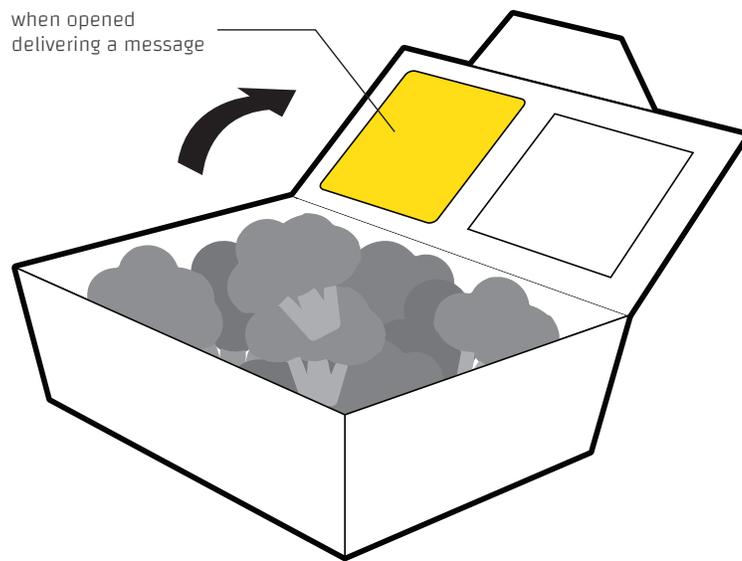
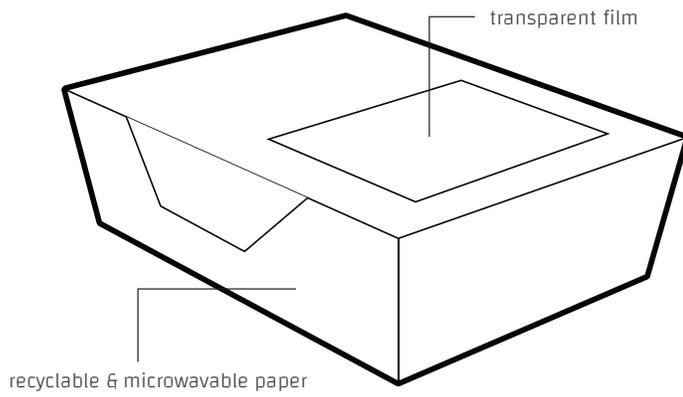
Bananas Final Outcome



Bananas Final Outcome



Broccoli Packaging



Broccoli Label



Packaging Die Cut

**BLANCH,
ICEWATER,
DRAIN,
AND FREEZE.**

**THIS IS HOW OUR
BROCCOLI LIVES
LONGER.**

WWW.GOODTASTEZEROWASTE.ORG

Label Inside

Broccoli Prototype



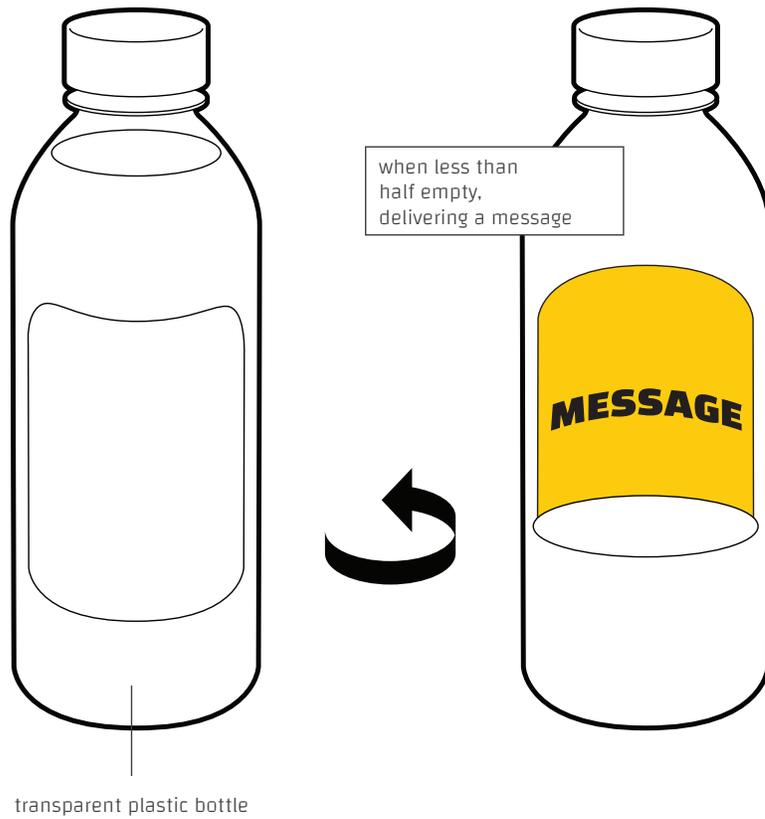
Broccoli Final Outcome



Broccoli Final Outcome



Milk Packaging



Milk Label

| | |
|--|---------------------|
| Nutrition Facts | |
| 4 Servings Per Container Serving Size 1 cup (250mL) | |
| Amount Per Serving | Calories 150 |
| % Daily Value* | |
| Total Fat 8g | 10% |
| Saturated Fat 4.5g | 23% |
| Trans Fat 0g | |
| Cholesterol 25mg | 8% |
| Sodium 105mg | 5% |
| Total Carbohydrate 12g | 4% |
| Dietary Fiber 0g | 0% |
| Total Sugars 12g | |
| Includes 0g Added Sugars | 0% |
| Protein 8g | |
| Vit D 2mg 15% | Vit E 5mg 35% |
| Iron mg 0% | Potas. 320mg 6% |
| Calcium 276mg 20% | |
| *Percent Daily Values are based on a 2,000 calorie diet. | |

GRADE A HOMOGENIZED PASTEURIZED



WHOLE MILK



KEEP REFRIGERATED BELOW 40°F

ONE QUART **946mL**

100% GUARANTEE
promise

If you aren't completely satisfied with this product, we'll be happy to replace it or refund your money. You have our word on it.

PACKED WITH PRIDE AND CARE FOR H-E-B, SAN ANTONIO, TX FROM



0 36000 29145 2

Front side

DATE EXPIRED?

THIS MILK IS STILL SAFE UP TO 7 DAYS IF PROPERLY STORED.

USE YOUR SENSES.

Back side

Milk Prototype



Milk Final Outcome

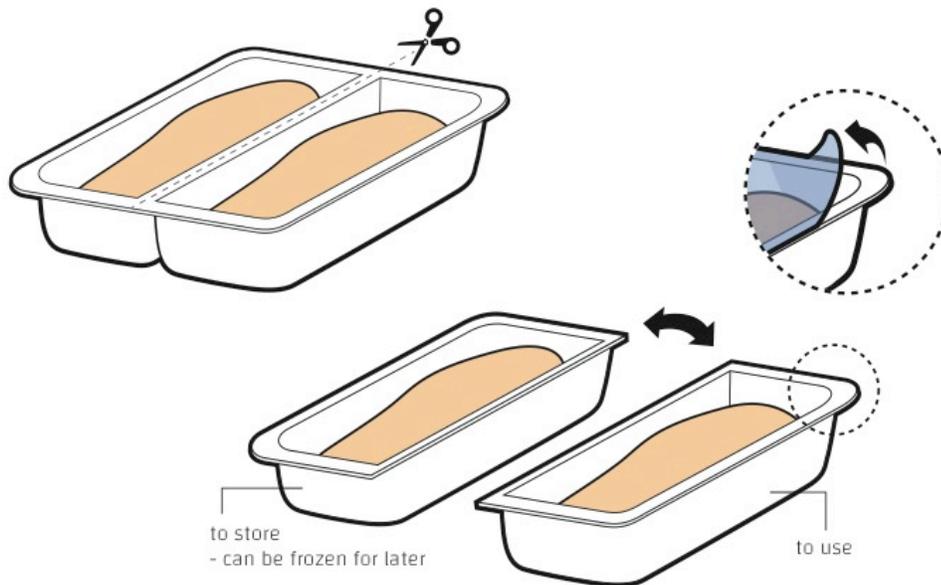
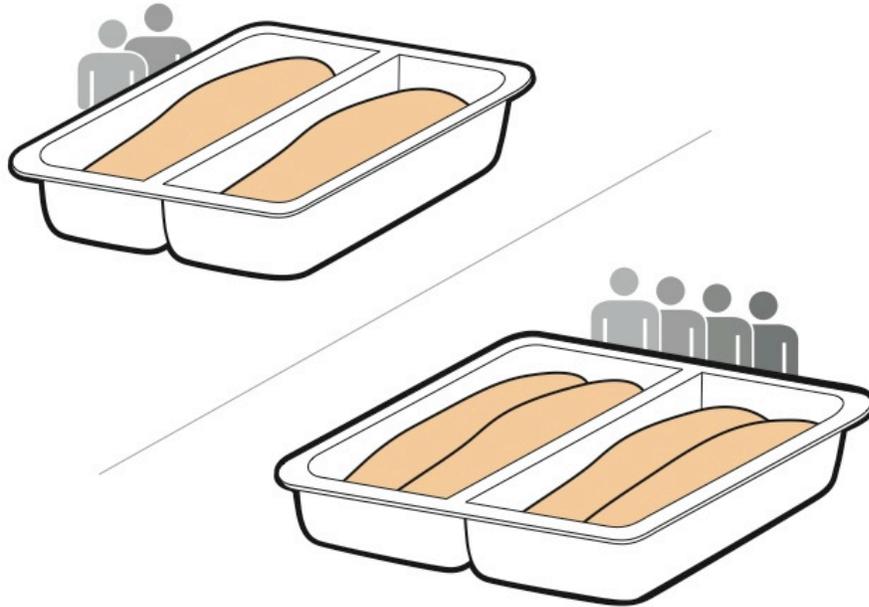


Milk Final Outcome



Raw Chicken Breast Packaging

Portion of Pieces



Raw Chicken Breast Label



CHICKEN BREAST

No Antibiotics
No Added Hormones
No Artificial Ingredients
No Preservatives



YOU KNOW?

THIS CAN BE SAFE & TASTY UP TO 9 MONTHS IF FROZEN.



SAVE UP FOR LATER.

* MINIMALLY PROCESSED AND NO ARTIFICIAL INGREDIENTS ADDED
** FEDERAL REGULATIONS PROHIBIT THE USE OF HORMONES OR STEROIDS IN POULTRY.





Keep raw poultry separate from other foods. Wash working surfaces (including cutting boards), utensils, and hands after touching raw poultry.



This product was prepared from inspected and passed meat and/or poultry. Some products may contain bacteria that could cause illness if the product is mishandled or cooked improperly.



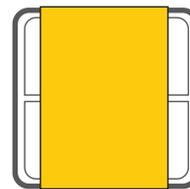
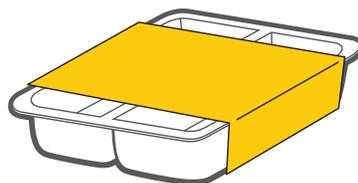
100% GUARANTEE promise

If you aren't completely pleased with this product, we'll be happy to replace it or refund your money. You have our word on it.

PACKED WITH PRIDE AND CARE FOR H-E-B, SAN ANTONIO, TX 78204

| Nutrition Facts | Boneless Skinless Chicken Breast | | Chicken Tenders | |
|---|----------------------------------|-----|-----------------------|-----|
| | Amount Per Serving | | | |
| Servings Per Container Varied • Serving Size 4 oz (112g) | | | | |
| Calories | 110 from Fat 10 | | 110 from Fat 5 | |
| | % Daily Value* | | % Daily Value* | |
| Total Fat | 1g | 2% | 0g | 0% |
| Saturated Fat | 0g | 0% | 0g | 0% |
| Trans Fat | 0g | | 0g | |
| Cholesterol | 70mg | 24% | 70mg | 23% |
| Sodium | 75mg | 3% | 45mg | 2% |
| Potassium | 410mg | 12% | 410mg | 12% |
| Total Carbohydrate | 0g | 0% | 0g | 0% |
| Dietary Fiber | 0g | 0% | 0g | 0% |
| Sugars | 0g | | 0g | |
| Protein | 24g | 48% | 26g | 52% |
| Vitamin A 0% • Vitamin C 2% • Calcium 0% • Iron 2% | | | | |
| <small>*Percent Daily Values are based on a 2,000 calorie diet.</small> | | | | |

Label Location



Raw Chicken Breast Prototype



Raw Chicken Breast Final Outcome



Raw Chicken Breast Final Outcome



APPENDIX SECTION

A. SWOT Analysis..... 85

B. Online Survey Questions..... 86

C. Online Survey Key Facts and Insights 89

APPENDIX A: SWOT Analysis

| | |
|--|--|
| <p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Over 340 chains across the State of Texas and northern Mexico • Low cost production and diversity of food • Holds loyal customers throughout Texas and powerful network with partners • Operation segmentation serves a wide range of shoppers (H-E-B Plus, Central Market, Mi Tienda, and Joe V's Smart Shop) • Strong and devotional community involvements create goodwill of customers • Various private label brands with a specific concept and products (H-E-B Select Ingredients, H-E-B Organics, H-E-B Meal Simple, H-E-B Primo Picks, etc.) | <p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Stores are located only in one state in the U.S. (Texas) • The company is not accessed to the capital market as it is privately owned • Donation campaigns initiated by the company only works when customers donate during checkout |
| <p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • Possibility to expand stores outside of Texas in the U.S. and continue to develop its market share • New technologies or sustainable methods to be embraced into its market system • Extension of private label products with a new brand targeting particular customers • Positive social impact by special programs or involvements • Strong leverage on customer loyalty • Potential to cater more to the Mexican population with great understanding of their culture | <p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Competitors having a strong hold in the U.S. (Wal-Mart, Whole Foods, Kroger) • Effect of local stores to H-E-B business • State policies blocking its efforts or resulting in negative aspects (i.e., foods that are past expiration date may not be donated and end up being thrown away) |

APPENDIX B: Online Survey Questions

1. According to Food and Agriculture Organization of the United Nations (FAO), approximately one third of the food produced in the world for human consumption gets lost or wasted every year. More specifically, the United States Department of Agriculture (USDA) has found that 31 percent of the available food supply at the U.S. retail and consumer levels in 2010 went uneaten, which is equal to \$162 billion. 10 percent of the available food supply belonged to retail level, and 21 percent of that fell under consumer level. Wasted food is also the single largest occupant in American landfills.

How much were you aware of the quoted information about food waste?

- Very much
- Moderately
- Somewhat
- Slightly
- Not at all

2. How much do you generally care about food waste in your daily life?

- Always
- Most of the time
- About half the time
- Sometimes
- Never

3. How much do you think that reducing food waste by households impacts on the economy, environment, and society?

- A great deal
- A fair amount
- A little
- Not very much
- Not at all

4. What would be the best benefit you personally expect to get by reducing food waste?

- Saving budget
- Gaining knowledge of food security
- Supporting social communities
- Conserving energy and resources
- Alleviating environmental issues
- Other (please specify) _____

5. How many people are in your household?

- One person
- Two people
- Three people
- Four people
- More than four people

6. How often do you buy fruit, vegetables, and other food for consumption at home?
Please select the closest one.

- 3 to 5 times a week
- Once a week
- Twice a week
- Once a month
- Other (please specify) _____

7. Where do you mostly shop for food?

- Supermarket chain
- Online supermarket
- Local convenience store
- Farmers' market
- Other (please specify) _____

8. What factor(s) do you usually consider at your point of purchase? (You may select more than one)

- Quantity
- Appearance (shape, size, color)
- Nutrition or Ingredient
- Food date (use-by, best-by, expiration date)
- Appealing package
- Price or Discount sale
- Brand name
- Other (please specify) _____

9. Approximately what percentage of your total waste is made up of food waste?
Please drag the bar to the appropriate position.

10. What is your most common reason for discarding food at home?

- Spoilage (mold, off color or smell)
- Past food date
- Fear of food poisoning
- Bought or cooked more than needed
- Do not want anymore
- Other (please specify) _____

11. What category of food do you tend to end up throwing away? (You may select more than one)

- Meat or Fish
- Fruit and Vegetables
- Dairy products (milk, cheese, yogurt, etc.)
- Convenience foods (canned items, frozen meals, etc.)
- Other (please specify) _____

12. Do you check what items you already have and then plan what to buy before going shopping?

- Yes
- No

13. Do you mostly follow the recommended storage information on packaged goods?

- Yes
- No

14. If you notice that an item of food is coming very close to its expiration date, what would you do?

- Discard it without bother
- Improve its shelf life (freeze, seal the air, etc.)
- Use or eat it as soon as possible
- Other (please specify) _____

15. If you have unavoidable leftovers that you will not eat or consume again, what would you do with that?

- Discard it in a proper way
- Donate (to local charities, food banks, etc.)
- Recycle at waste facilities
- Compost at home
- Other (please specify) _____

16. Whether big or small, do you currently take any action to minimize the amount of food thrown away?

If yes, please specify what /how you handle it.

If no, please specify what hinders you.

17. Please describe if you have specific moments or experiences that you felt the seriousness of food waste.

18. Do you have any final comments or thoughts that you would like to express about a food waste issue?

APPENDIX C: Online Survey Key Facts and Insights

Key Facts & Insights (- fact * insight)

Q1: How much were you aware of the quoted information about food waste?

- About half of the respondents (43.7%) are well aware of the seriousness of food waste.
- 21% of respondents are not aware of the issue at all.
- 35.3% of respondents slightly understand the issue.
- * There is still room to raise the awareness of food waste – for the 21%
- * The more they understand the issue, the more they care about food waste (compared to Q2)

Q2: How much do you generally care about food waste in your daily life?

- The majority of respondents (80.7%) think that they take good care of food waste.
- Only a minority of respondents (1.7%) do not care of food waste at all.

Q3: How much do you think that reducing food waste by households impacts on the economy, environment, and society?

- The majority (91.3%) thinks that reducing food waste by households can have great and fair impacts on the economy, environment, and society.
- The minority (8.7%) thinks that it does not influence much of the economy, environment, and society.
- * Reduction of food waste at consumer level is an important key since they agree that the reduction by households can have great impacts.

Q4: What would be the best benefit you personally expect to get by reducing food waste?

- About half of the respondents (45.3%) expect to save money from reducing food waste, which is the top expectation.
- The second expectation is conserving energy and resources (20%).
- Gaining food security knowledge is the lowest expectation (8%).
- * The campaign must include / convey the information regarding saving money and conserving energy and resources.
- * There is a chance to educate consumers about supporting social communities (13.7%) and alleviating environmental issues (12%) by reducing waste.

Q5: How many people are in your household?

- No insights found when it is compared to other questions.

Q6: How often do you buy fruit, vegetables, and other food for consumption at home?

- About half of the respondents (50.7%) go grocery shopping once a week, which is the highest proportion.
- The second proportion is 3-5 times a week (23%).

Q7: Where do you mostly shop for food?

- The majority of the respondents (92%) goes to a supermarket chain for food.
- * A supermarket chain is a great place for the campaign targeting a consumer.

Q8: What factor(s) do you usually consider at your point of purchase?

- Appearance/quality (19.1%), Food Date (19%), and Price/Discount sale (19.8%) are the factors that are considered at the consumer point of purchase.
- Quantity (16.6%) and Nutrition/Ingredients (15%) are the second factors.
- Appealing Packaging and Brand Name are low interests.
- * Design outcomes for the campaign need to focus on the most considering factors to grab consumer's attention.

Q9: Approximately what percentage of your total waste is made up of food waste?

- No facts and insights found.

Q10: What is your most common reason for discarding food at home?

- The most common reason is "Spoilage" (51%).
- "Past Food Date" is the second one (17%).
- * Storage information/improvement shelf life, food knowledge, and food date need to be improved.

Q11: What category of food do you tend to end up throwing away?

- Fruit and vegetables are the most wasteful food (44.5%).
- Dairy products are the second wasteful food (24.7%), and Meat/Fish is the third one (17.5%)
- * Fruit and vegetables must be involved in the new brand as a product line.
- * Dairy products and Meat/Fish can be a second opportunity to be incorporated.

Q12: Do you check what items you already have and then plan what to buy before going shopping?

- The majority of the respondents (96.3%) check items and plan before going shopping.
- * Those who generally care about food waste check items before going shopping and are good at grocery planning (Q2).

Q13: Do you mostly follow the recommended storage information on packaged goods?

- The majority of the respondents (85.6%) follow the storage information.
- * Even though they follow the information, the most common reason for discarding food is "Spoilage" (Q10) - thus, storage information needs to be improved.

Q14: If you notice that an item of food is coming very close to its expiration date, what would you do?

- The majority of the respondents (82%) would consume as soon as possible.
- The minority of the respondents (6.3%) would discard it without bother.
- 11% would improve its shelf life.

- * Most of them do not want to throw food away since they want to consume as soon as possible.
- * Most of them might not know how to improve shelf life, and it can be an opportunity to educate consumers.

Q15: If you have unavoidable leftovers that you will not eat or consume again, what would you do with that?

- The highest interest is to discard it in a proper way (64.9%).
- * Education about how to discard food is the most efficient way for a consumer to deal with their food waste.
- * Donation (5.7%) and Recycle (4%) might not be a persuasive way for a consumer.

Q16: Whether big or small, do you currently take any action to minimize the amount of food thrown away?

- They plan ahead on what to buy and what is needed for cooking.
- They consider their budget when shopping.
- They try to cook one meal at a time / small quantities.
- They try to reuse leftovers and improve shelf life (freezing, putting in a container)
- They try to use or eat food that is about to expire.
- They try to cook only a few days of meals at a time.
- Some are tired of what they bought and throw away.
- Some are busy and have no time to handle.
- By buying groceries weekly instead of monthly.
- * Frequent shopping may affect consumer's behavior. (less buying – less cooking – less waste)
- * Some buy food based on weekly schedules.

Q17: Please describe if you have specific moments or experiences that you felt the seriousness of food waste.

- Most of them feel bad when they throw away food or have to do so since food was expired.
- When they see or find leftovers in the fridge, which cannot be eaten.
- After big holidays, when there is too much food left.
- Some worked at a restaurant or hotel and saw a lot of good food wasted.
- When they see hungry people in other countries, even in the States.
- Corporations / Health Departments have rules about food that prevent distribution to homeless.
- When they cooked too much food and ended up throwing it away.
- When children (especially in school) leave food or throw a lot of food away.
- When they throw away a lot of food, they also realize how much money they could have saved.
- When they watch TV, Youtube, or news that shows food waste impacts on environment and society.
- When cleaning a refrigerator and pantry.

Q18: Do you have any final comments or thoughts that you would like to express about a food waste issue?

- Food waste is also a lot of food-packaging waste (smaller packaging would be beneficial).
- Expiration date needs to be improved by making it more understandable.
- It is bad that our society is so litigious for donation (people think government or laws hinders retailers and restaurants from donating).
- Feeling bad because there are still many hungry people.
- Some have seen that people ordered a lot of food, not eating them in a restaurant and fast food.
- To prevent food spoilage, it is important to use clean utensils due to the bacteria contamination.
- People are not conscious of food waste that is devastating and unemotional act of mankind.
- Some think that prepackaged / healthy meals are just as important as a set amount is already portioned meals.
- Most of them think people should be aware of this issue and pay more attention.
- Some want to share or give food to the needy.
- "It would help if at a young age we were taught ways to minimize our food waste".
- Most of them are willing to take action after taking the survey (their expressions were positive).
- Let's be more considerate and responsible.
- One said that it should be required by the law. If not, fines are issued.
- Respondents (Texan) are proud of their country (U.S.A.) (this emotion might be able to stimulate them).
- One pointed out "food date", saying "there is no information on fresh fruit to tell you eat by".
- One suggested that different food preservation techniques need to be implemented.
- One mentioned he/she needed to discard food because they changed their mind, even if they planed a week-meal.

REFERENCES

- Airey, D. (2010). *Logo Design Love: a guide to creating iconic brand identities*. Berkeley, Calif: New Riders.
- Aschemann-Witzel, J., Hooge, I. D., Amani, P., Bech-Larsen, T., & Oostindjer, M. (2015, May 26). Consumer-Related Food Waste: Causes and Potential for Action. *Sustainability*, 7(6), 6457-6477. doi:10.3390/su7066457
- Bloom, J. (2011, August 30). *American Wasteland: How America throws away nearly half of its food (and what we can do about it)*. Cambridge, MA: Lifelong Books/Da Capo Press.
- Buzby, J. C., Wells, H. F., & Hyman, J. D. (2014). *The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States*. U.S. Department of Agriculture, Economic Research Service.
- Climate Central. (2016, November 22). *Food Waste, Methane and Climate Change*. Retrieved from <http://www.climatecentral.org/gallery/graphics/food-waste-methane-and-climate-change>
- Cloud, K. (2014, August 18). H-E-B Primo Picks Quest for Texas Best Reveals 25 Statewide Finalists. *The Shelby Report*. Retrieved from <http://www.theshelbyreport.com/2014/08/18/h-e-b-primo-picks-quest-for-texas-best-reveals-25-statewide-finalists/>
- Dooley, R. (2014, January 28). The Smartest Supermarket You Never Heard Of. *Forbes*. Retrieved from <https://www.forbes.com/sites/rogerdooley/2014/01/28/h-e-b/#79a1edd332b8>
- Durham, C. (n.d.). *H-E-B to Roll Out New H-E-B Select Ingredients*. Retrieved from <http://myppbrand.com/2016/09/19/h-e-b-to-roll-out-new-h-e-b-select-ingredients/>
- Dybdahl, A. (1999, June 4). *Leading the way with a shared and inspiring vision*. Retrieved from http://adybdahl.tripod.com/winners_and_losers.htm
- Environmental Protection Agency. (n.d.). *Sustainable Management of Food Basics*. Retrieved from <https://www.epa.gov/sustainable-management-food/sustainable-management-food-basics>
- Feeding America. (n.d.). *What Hunger Looks Like in Texas*. Retrieved from <http://www.feedingamerica.org/hunger-in-america/texas/>
- Fallon, N. (2018, March 2). *SWOT Analysis: What It is and When to Use It*. Retrieved from <https://www.businessnewsdaily.com/4245-swot-analysis.html>

- Food and Agriculture Organization of the United Nations. (n.d.). *Key facts on food loss and waste you should know!* Retrieved from <http://www.fao.org/save-food/resources/keyfindings/en/>
- Food and Agriculture Organization of the United Nations. (2011). *Global food losses and food waste: extent, causes and prevention*. Rome: Food and Agriculture Organization of the United Nations.
- Food and Agriculture Organization of the United Nations. (2013). *Food Wastage Footprint: Impacts on Natural Resources. Summary Report* Retrieved from <http://www.fao.org/docrep/018/i3347e/i3347e.pdf>
- Food and Agriculture Organization of the United Nations, International Fund for Agriculture Development, & World Food Programme. (2014). *The State of Food Insecurity in the World 2014. Strengthening the enabling environment for food security and nutrition*. Rome, Food and Agriculture Organization of the United Nations
- Forbes. (n.d.). *America's Largest Private Companies*. Retrieved from <https://www.forbes.com/largest-private-companies/list/#tab:rank>
- Frandsen, J. (2017, May 16). Here's how states are working to curb food waste. *Public Broadcasting Service (PBS)*. Retrieved from <https://www.pbs.org/newshour/nation/heres-states-working-curb-food-waste>
- Godoy, M. (2014, December 9). *In Europe, Ugly Sells In The Produce Aisle*. Retrieved from <https://www.npr.org/sections/thesalt/2014/12/09/369613561/in-europe-ugly-sells-in-the-produce-aisle>
- Greenberg, S., Carpendale, S., Marquardt, N., & Buxton, B. (2011, December 28). *Sketching User Experiences: The Workbook*. Elsevier: Morgan Kaufmann.
- Grossman, E. (2014, October 13). *When it comes to food packaging, what we don't know could hurt us*. Retrieved from <https://ensia.com/features/when-it-comes-to-food-packaging-what-we-dont-know-could-hurt-us/>
- Gunders, D. (2012, August). *Wasted: How America is losing Up to 40 Percent of Its Food from Farm to Fork to Landfill*. Retrieved from Natural Resources Defense Council Website: <https://www.nrdc.org/sites/default/files/wasted-food-IP.pdf>
- H-E-B. (n.d.). Education. Retrieved from <https://www.heb.com/static-page/Education>
- H-E-B. (n.d.). H-E-B Organics. Retrieved from <https://www.heb.com/static-page/H-E-B-Organics>
- H-E-B. (n.d.). Our Story. Retrieved from <https://www.heb.com/static-page/article-template/Our-Story>

- H-E-B. (n.d.). Our History. Retrieved from <https://www.heb.com/static-page/article-template/Our-History>
- H-E-B. (n.d.). Reduce, Reuse, Recycle. Retrieved from <https://www.heb.com/static-page/article-template/Reduce-Reuse-Recycle>
- H-E-B. (2017, August 27). *H-E-B Donates \$100,000 to Hurricane Harvey Relief Efforts And Launches In-Store Tear Pad Campaign To Benefit Victims*. Retrieved from <https://www.heb.com/static-page/article-template/heb-hurricane-harvey-relief-efforts>
- H-E-B. (2018, July 23). *Finalists Announced for H-E-B Primo Picks Quest for Texas Best Contest*. Retrieved from <https://newsroom.heb.com/finalists-announced-for-h-e-b-primo-picks-quest-for-texas-best-contest/>
- Harvard Food Law Policy Clinic. (2016, May). *Consumer Perceptions of Date Labels: National Survey*. Retrieved from https://www.chlpi.org/wp-content/uploads/2013/12/Consumer-Perceptions-on-Date-Labels_May-2016.pdf
- Harvard Food Law Policy Clinic, & Racing Horse Productions. (n.d.). EXPIRED? Food Waste in America [Video]. Retrieved from <https://green.harvard.edu/tools-resources/video/expired-food-waste-america>
- Hoffman, B. (2014, April 11). The Shocking Cost of Food Waste. *Forbes*. Retrieved from <https://www.forbes.com/sites/bethhoffman/2014/04/11/the-shocking-cost-of-food-waste/#1345b81d694b>
- Jacobs, H. (2014, October 15). *Why Grocery Stores Like Trader Joe's Throw Out So Much Perfectly Good Food*. Retrieved from <https://www.businessinsider.com/why-grocery-stores-throw-out-so-much-food-2014-10>
- Jang, J. (2017, June 19). 혼밥족 겨냥한 극소포장 ‘한끼밥상’ 등장 [Launch minimized packaging, “Hankki Babsang”, targeting a single-person household]. Retrieved from <http://news.joins.com/article/21677266>
- Kleiner, J. D. (2010, June 15). *H-E-B*. Retrieved from <https://tshaonline.org/handbook/online/articles/dhh01>
- Leblanc, R. (2018, September 16). *What Is Reusable Packaging?* Retrieved from <https://www.thebalancesmb.com/what-is-reusable-packaging-2878094>
- Leman, T. (2012, October 2). *A Random Book about the Power of ANYone*. Riverside: Free Press.
- Lunsford, R., & Raven, J. (2015, July). *H-E-B's sustainable competitive advantage*. Retrieved from <http://www.aabri.com/manuscripts/152275.pdf>

- Marcel. (2014, June 12). *Intermarché - "Inglorious Fruits and Vegetables"* [Video]. Retrieved from https://www.youtube.com/watch?v=p2nSECWq_PE
- Marchat, A. (2017, October 6). H-E-B's Help End Hunger Campaign Raises \$734K For Texas Food Banks. *The Shelby Report*. Retrieved from <http://www.theshelbyreport.com/2017/10/06/heb-raises-734k-texas-food-banks/>
- Marsh, P. (2015, June 8). Food waste in Denmark down by 25 percent. *Copenhagen Post – Danish News in English*. Retrieved from <http://cphpost.dk/news/food-waste-in-denmark-down-by-25-percent.html>
- Market Force Information. (2017, May 9). New Market Force Information Study Finds Publix and Wegmans Are America's Favorite Grocery Stores. *Market Force Information*. Retrieved from <https://www.marketforce.com/2017-market-research-on-americas-favorite-grocery-chains>
- Moore, A. (2014, March 12). *H-E-B Launches New Line of affordable Organics*. Retrieved from <https://therivardreport.com/h-e-b-organics-launch/>
- Payton, M. (2016, February 23). Denmark opens first food waste supermarket selling surplus produce. *Independent*. Retrieved from <https://www.independent.co.uk/news/world/europe/denmark-food-waste-supermarket-we-food-copenhagen-surplus-produce-a6890621.html>
- Platner, H. (n.d.) An Introduction to Design Thinking PROCESS GUIDE. *Institute of Design at Stanford*. Retrieved from <https://dschool-old.stanford.edu/sandbox/groups/designresources/wiki/36873/attachments/74b3d/ModeGuideBOOTCAMP2010L.pdf>
- Redman, R. (2018, June 8). *Grocery retailers get high marks for personalization*. Retrieved from <https://www.supermarketnews.com/consumer-trends/grocery-retailers-get-high-marks-personalization>
- Rethink Food Waste through Economics and Data. (2016). *A Roadmap to Reduce U.S. Food Waste by 20 Percent* Retrieved from https://www.refed.com/downloads/ReFED_Report_2016.pdf
- Rikard. (2015, February). *The Psychology of Color: A Designer's Guide to Color Association & Meaning*. Retrieved from <https://zevendesign.com/color-association/>
- Sengupta, S. (2017, December 12). How Much Food Do We Waste? Probably More Than You Think. *New York Times*. Retrieved from <https://www.nytimes.com/2017/12/12/climate/food-waste-emissions.html>

- Statistics Korea. (2017, August 31). *2016 인구주택 총조사 [2016 Population and Housing Census]*. Korean Department of Population Census.
- Sutton, S. (2018, July 30). What's being renovated at H-E-B? San Angelo grocery store making meals simpler. *Go San Angelo*. Retrieved from <https://www.gosanangelo.com/story/news/local/2018/07/30/hebs-new-meal-simple-renovations-expensive-worthwhile/865337002/>
- Technomic. (2017, December 28). *Retailer prepared foods are increasingly a destination driver*. Retrieved from <https://www.technomic.com/newsroom/retailer-prepared-foods-are-increasingly-destination-driver>
- Thomas, D. (2018, September 26). Rankings show H-E-B not just biggest Texas retailer, but a national contender. *Austin American Statesman*. Retrieved from <https://www.statesman.com/news/20180816/rankings-show-h-e-b-not-just-biggest-texas-retailer-but-a-national-contender>
- United Nations. (n.d.). *About the Sustainable Development Goals* Retrieved from <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- Vogliano, C., & Brown, K.N. (2016). The State of America's Wasted Food and Opportunities to Make a Difference. *Journal of the Academy of Nutrition and Dietetics*, 116 7, 1199-207.
- Walfel, T. Z. (2009). *Prototyping: A practitioners guide*. Brooklyn, NY: Rosenfeld Media.
- What We Do. (n.d.). Retrieved from <https://www.grubtubs.com/what-we-do>
- World Food Programme. (2017, November 22). *8 Facts to Know About Food Waste and Hunger*. Retrieved from <https://www.wfpusa.org/articles/8-facts-to-know-about-food-waste-and-hunger/>