UNDERSTANDING THE EFFECTS OF SNACK FOOD PACKAGING LABELS ON CONSUMER DECISIONS IN PREPARATION FOR MANDATORY GMO LABELING

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ABSTRACT

There is a dual purpose of this paper. First, I will seek to understand the history and legal implications of genetic engineering technology as it applies to snack food package labeling by means of a literature review. Second, I will employ critical discourse analysis to explore snack food packaging by examining packaging labels, and the language used to convey health and nutritional information to consumers. Finally, I will draft recommendations for snack food companies regarding marketing best practices to target the snack food consumer and prepare to adopt the standards of the National Bioengineered Food Disclosure Standard (NBFDS) signed by President Obama in 2016, which gives the U.S. Secretary of Agriculture two years to publish a federal mandatory disclosure. The results of the 12-package analysis informed best practices for marketers as the new mandatory labeling law shifts the costs to the presence of genetically engineered ingredients, rather than absence. Companies and marketers can be ahead of the curve by focusing on holistic health and creating a positive buying experience; determining their niche within the snack food industry to identify a specific consumer audience (whether it be green consumers or a specific age demographic); and remembering the number one purchasing indicator that requires no label at all — taste.
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Chapter 1 The Issue

A walk down the snack food aisle is no longer a mindless task of crossing items from a grocery list. Perhaps you have noticed the always-evolving packaging design and content, alluring consumers with health-conscious labels — natural, organic, bioengineered, GMO, and the list goes on. Whether it be a testament to taste, packaging, health content, or company values, a consumer’s food purchasing behavior has become a symbol of endorsement and attribute of personal brand.

Each year, food companies create new and innovative labels to market their products and meet consumers’ calls for transparency (Kuchler, 2017). There were 21,435 new food and beverage product introductions in 2016 alone with “snacks” being the highest food category (see Figure 1). Additionally, “Genetically modified organism (GMO)-free” claims ranked among the top 10 claims for the first time in 2015 and have seen a rapid increase since. In 2016, 3,732 “GMO-free” products were introduced, upwards from 1,993 in 2014, 576 in 2012, and 297 in 2009 (Figure 2) (Martinez, 2017). This is evidence of consumers’ concern about the potential effects of genetic engineering on their health and a push for label information that buyers cannot verify themselves (Kuchler et al., 2017; Martinez, 2017).

The labeling of GMO products is a topic of timely significance given its pace of adoption. Following years of state attempts at standardization, President Barack Obama signed Public Law 114-214 on July 29, 2016, to amend the Agricultural Marketing Act of 1946 to establish a national disclosure standard for bioengineered foods (S. 764, 2016). What exactly does this mean for snack food companies? Is the mandatory implementation of a GMO label
enough to cease the “right to know” debate, or is there a parallel need for increased consumer education for understanding these labeling claims? (Kuchler, 2017)

This paper seeks to present the evolution of the food labeling debate with a focus on the recent federally-mandated label for “GMO.” The issue is presented beginning with the history of GMO crops and the first food labeling initiatives, and transitions into differentiation between voluntary and mandatory labels, as well as roles in the global debate — from farmers to Congress. A total of 12 snack food packaging labels were examined in a discourse analysis to reveal the impacts of GMO labeling on the snack food industry and its consumers.

![Figure 1. New Food and Beverage Product Introductions, 2008-16](Source: Martinez, 2017)
### Number of new product introductions in the top 10 product claim categories for 2009-16

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kosher</td>
<td>4,159</td>
<td>6,164</td>
<td>5,606</td>
<td>5,386</td>
<td>7,570</td>
<td>7,942</td>
<td>7,423</td>
<td>8,985</td>
</tr>
<tr>
<td>Low/no/reduced allergen</td>
<td>1,325</td>
<td>2,215</td>
<td>2,228</td>
<td>2,250</td>
<td>3,930</td>
<td>4,828</td>
<td>4,914</td>
<td>6,552</td>
</tr>
<tr>
<td>Gluten free</td>
<td>1,121</td>
<td>1,942</td>
<td>1,994</td>
<td>2,000</td>
<td>3,609</td>
<td>4,550</td>
<td>4,534</td>
<td>6,123</td>
</tr>
<tr>
<td>Ethical-environmentally-friendly package</td>
<td>1,329</td>
<td>2,892</td>
<td>2,806</td>
<td>2,903</td>
<td>4,254</td>
<td>4,268</td>
<td>4,239</td>
<td>5,056</td>
</tr>
<tr>
<td>No additives/preservatives</td>
<td>2,068</td>
<td>2,993</td>
<td>2,647</td>
<td>2,524</td>
<td>3,544</td>
<td>3,549</td>
<td>3,471</td>
<td>4,591</td>
</tr>
<tr>
<td>Social media</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>808</td>
<td>2,118</td>
<td>2,599</td>
<td>2,871</td>
<td>3,994</td>
</tr>
<tr>
<td>GMO free</td>
<td>297</td>
<td>340</td>
<td>550</td>
<td>567</td>
<td>1,352</td>
<td>1,993</td>
<td>2,685</td>
<td>3,732</td>
</tr>
<tr>
<td>Organic</td>
<td>1,445</td>
<td>1,548</td>
<td>1,332</td>
<td>1,279</td>
<td>2,097</td>
<td>2,084</td>
<td>2,313</td>
<td>3,011</td>
</tr>
<tr>
<td>Microwaveable</td>
<td>1,724</td>
<td>2,279</td>
<td>1,827</td>
<td>1,706</td>
<td>2,531</td>
<td>2,530</td>
<td>1,749</td>
<td>2,287</td>
</tr>
<tr>
<td>Ease of use</td>
<td>903</td>
<td>1,610</td>
<td>1,319</td>
<td>1,401</td>
<td>2,133</td>
<td>2,062</td>
<td>1,700</td>
<td>2,287</td>
</tr>
<tr>
<td>Total new product claims</td>
<td>32,300</td>
<td>47,303</td>
<td>45,090</td>
<td>44,374</td>
<td>64,133</td>
<td>67,001</td>
<td>63,320</td>
<td>79,779</td>
</tr>
</tbody>
</table>

*A new product may have multiple tags or claims.
Source: Mintel GNPD.

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**Figure 2. Top Ten Product Claim Categories, 2009-16**

Source: Martinez, 2017
Chapter 2 History of Genetic Modification

“Genetically Modified Organism” or “GMO” is a buzzword that has received significant attention in the food industry in recent years. But at its core is the basic concept of altering the genetics of organisms, a science that has existed in human history for over 30,000 years. While the fundamentals of genetics were unfamiliar to our ancestors, they still recognized the ability to influence the DNA of organisms through “selective breeding” or “artificial selection.” In fact, the earliest evidence of artificial selection dates to 7800 BCE in archaeological sites in Southwest Asia where scientists have found domestic varieties of wheat (Rangel, 2015). Today, the fundamentals of genetics serve as the foundation of the process of genetic engineering (Emma, 2010).

In his paper “Experiments on Plant Hybrids” published in 1866, Gregor Mendel outlined the principles of genetics and hypothesized that observable traits are based on units called genes. A gene is recognized as a section of DNA that encodes a specific RNA or protein. Mendel applied his knowledge of gene manipulation to agriculture by mating plants with high probability of a desired outcome. Other farmers followed suit and selectively bred their plants to propagate desirable traits through to its offspring (Emma, 2010); therefore, preserving the genes and mutations that aid in the survival of a species, in line with Darwin’s theory of artificial selection (Rangel, 2015).

Geneticists made another revolutionary advance when they began to cut and splice DNA molecules to combine different origins. This gave them the ability to move a gene from one organism to another of the same species, move a gene across species, or alter genes within an
organism (Emma, 2010). Herbert Boyer and Stanley Cohen used this gene manipulation to successfully devise the first genetically-engineered (GE) organism in 1973 (Rangel, 2015).

This breakthrough in genetic technology was met with resistance about the potentially detrimental effects on human health and the ecosystem. In efforts to mitigate concern, experts on the topic of GE technology, including scientists, lawyers and government officials alike, came together at the Asilomar Conference in 1975 to debate the future of GE experiments and establish guidelines for their safety and containment moving forward. The “unprecedented transparency and cooperation” among global governing bodies ushered in a new era of modern genetic modification. Of all the applications for genetic engineering that emerged, from oil spill mitigation to FDA-approved medication, the most controversial was food production (Rangel, 2015).

The first field experiments of genetically modified food crops began in 1987 (Rangel, 2015). This primary advancement raised crop yields, making them more aesthetically pleasing and easier to produce, and increased food availability (Emma, 2010; Rangel, 2015). After five years of health and environmental testing, Calgene Inc.’s Flavr Savr tomato became the first crop to be approved for commercial production by the United States Department of Agriculture in 1992. This specific genetic modification inhibited the production of a natural tomato protein increasing the overall firmness and shelf life of the crop (Rangel, 2015). The FDA conducted a review of the Flavr Savr tomato and found it to be “substantially equivalent” in nutritional value, composition, and safety compared to non-GMO tomatoes (Emma, 2010). Progress continued with the first pesticide-producing crop approved by the U.S. Environmental Protection Agency in 1995, followed by the commercial introduction of genetically engineered seed varieties in 1996 (Rangel, 2015).
Adoption rates for these crops proliferated in the years that followed as GM technology introduced benefits for farmers that might not be possible with traditional plant breeding, such as herbicide resistance, insect resistance, delayed ripening, viral resistance, fertility restoration, and male sterility (Emma, 2010; Wechsler, 2018). For example, about one-third of the corn produced in the United States contains Bt, Bacillus thuringiensis, a protein that is lethal to insects. Some consumers are skeptical that it may also be toxic to human health; though there have not been any scientifically proven negative health effects to date (Emma, 2010). These fears emerged in part from a widely publicized study in 1999 that found GM corn to be fatal to monarch butterflies. Although this data was later disproved, it set off fierce campaigns by Greenpeace and the Union of Concerned Scientists over the health implications of GE technology (Lyon, J., 2016). Given biotechnology is still young, time will tell whether long-term studies will yield threatening results that may have been omitted from the short-term effects that have been studied to date (Emma, 2010).

Currently, upwards of 90% of U.S. corn, upland cotton, soybean, canola, and sugar beets are produced with GE varieties (Wechsler, 2018). But as public awareness of GE foods has grown, so have the calls for regulation (Rangel, 2015).
Chapter 3 Front of Package Labeling

For consumers today, buying groceries has increasingly become a means of “voting with your dollar.” Purchasing decisions act as a consumer’s voice to impact the way food is produced, processed, transported, and sold — a voice that is currently inquiring for more detail. According to a study conducted by the Center for Agroecology and Sustainable Food Systems, only 15.8% of survey respondents believed they already knew enough about their food, while 59.8% stated they did not know enough. When questioned about the ease and access of this nutritional information, 59% agreed that it is difficult to find this information, and 81.3% selected product labels as the preferred format to obtain more information about their food (Howard, 2015).

How are manufacturers keeping up with this demand for knowledge? Many look to mandatory labeling requirements as the solution to provide the information that consumers lack. But like most public policies, a government mandate to make some information compulsory can be judged on whether it does more good than harm. For example, food suppliers may be more eager to provide information about the positive features of their product compared to the negative attributes. Under a mandatory labeling schema requiring all suppliers to provide the same types of information, fairness reigns, and if sales decline, companies have the ability to evaluate and improve a product’s nutritional content. Food labels can create a choice for consumers who are passionate about supporting specific agricultural production methods to do so, but not even mandatory labels will oblige every producer to follow such production methods (Kuchler et al., 2017).
In “Beyond Nutrition and Organic Labels — 30 Years of Experience With Intervening in Food Labels,” the Economic Research Service (ERS\(^1\)) identifies two underlying factors that justify the Government intervening and mandating labels of nutritional attributes: first, a market failure must be present — meaning that private sellers are failing to provide the information that would normally be expected. Second, for mandatory labels to correct a market failure, the benefits and public willingness to pay for the added knowledge must exceed the costs of providing those labels. Although some consumers prefer that GM information be provided, that fact alone is not enough to justify a mandatory label of GM foods (Kuchler et al., 2017).

**Public Versus Private**

With the increased number of food choices and labels, the U.S. government established the Food and Drug Administration (FDA), a regulatory agency “responsible for assuring that foods sold in the United States are safe, wholesome, and properly labeled” (Emma, 2010, p. 1). The FDA alongside Congress, the United States Department of Agriculture (USDA), the Environmental Protection Agency (EPA), and other governing bodies set food-labeling standards. The FDA retains the right to request changes or remove labels that do not meet its guidelines, but does not pre-approve labels. Thus, food manufacturers exercise some freedom and creativity in labeling to reach consumers and influence purchasing decisions (Emma, 2010).

\(^1\) ERS is a primary source of economic research and analysis from the U.S. Department of Agriculture, providing timely information on economic and policy issues related to agriculture, food, the environment, and rural America.
When it comes to making the choice to support labels, this freedom leaves an open door for either the private or public sector to step in. The ERS suggests four possible ways to organize a label claim (Kuchler, 2017):

1. The private sector can have sole responsibility: a for-profit company or nonprofit group (nongovernmental organization (NGO)) can establish standards for a food attribute. Then, companies and NGOs can set up competing standards.

2. The public sector can have sole responsibility: the government can maintain the standards and format with which information should be presented and then enforce agreed-upon guidelines. Such was the case of the Nutrition Facts label for which the government mandated labels for most processed foods.

3. A balance of public and private is possible. Take the USDA National Organic Program (NOP) for example: the program sets standards and accredits other organizations (State governments and NGOs) as certifiers. NOP trusts these organizations to certify farms and food manufacturers that meet the organic standards.

4. Federal regulatory agencies can directly enforce the use of labels through judicial action (reviews, fines, and recalls of products) regardless of whether other controls for labels are in public or private hands.

**Labeling, Monitoring, and Enforcing**

Before a label claim can be deemed credible and understandable to consumers and companies, a standard must be established with agreed-upon quality and meaning. Clear standards set expectations for a product’s quality and communicate credible attributes with the consumer. As in the case of the GMO label, if there is no universally agreed upon definition of genetically modified organisms or acceptable
threshold of GMO content, then it is open to interpretation by producers and marketers, and nearly anything could be labeled as “non-GMO.” This leaves consumers to mistakenly believe that all standards are alike. But reaching agreement on a universal definition or threshold can be the main difficulty — what plant changes are “breeding” and which are GMO? Is 0.9 percent GMO content or less acceptable to certify the label “made without genetically modified organisms,” or does that label imply a threshold of zero? When companies cannot negotiate on these terms, or if private firms have established multiple definitions of the same label, the Federal Government may step in. The government can alter market outcomes by intervening, setting standards, and mandating that specific information be provided on a label, but does not always regulate that all manufacturers relay this information. This process can be time consuming and lead to less product innovation; hence why product standards can also be set by individual firms, industry groups, third parties, and the public sector. Examples of common process-based and product-based claims are displayed in Figure 3 (Kuchler et al., 2017).

The government also delineates whether label claims need public sector or private sector confirmation, and can verify directly or qualify third-party organizations to do so on its behalf. Once a standard has been set, there must be a regulating body to judge whether the standards have been upheld. Some testing and verification can be relatively simple, such as the testing of plant-based products grown with or without GE seeds. While others are more complicated — for example, testing to certify the USDA Organic Seal requires auditors to visit farms and food manufacturing plants to conduct pesticide residue tests and look for evidence that pesticides were not used (Kuchler et al., 2017).

After a label has been clearly established and verified, it must be enforced. Proper enforcement may dissuade companies whose products do not meet the standard or definition from listing product claims for the standard in fear of being forced to remove their claims, relabel the product, or issue a recall. Similar to standard setting and verification, various types of entities are accountable for enforcing label claims. The public sector handles enforcing many credence standards regarding safety, nutrition, and quality. Specifically, the FDA and FSIS (Food Safety and Inspective Service) also enforce a universal
standard that labels are credible and not misleading. In the private sector, verified standards are enforced by the third party; for example, the Non-GMO Project (further discussed under Voluntary Food Labeling) regularly tests the presence and levels of GE grain for verification and enforcement (Kuchler et al., 2017).

### Figure 3. Common Label Claims about Food Production

Source: Kuchler et al., 2017

<table>
<thead>
<tr>
<th>Label</th>
<th>Major crop production requirements</th>
<th>Major animal production requirements</th>
<th>Major food manufacturing requirements</th>
<th>Commonly labeled products</th>
<th>Thrd-party verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDA Organic</td>
<td>Exclude synthetic pesticides, fertilizers</td>
<td>Exclude antibiotics, hormones, and GE inputs</td>
<td>Have no artificial ingredients, colors</td>
<td>Produce</td>
<td>USDA regulation mandates annual inspection and certification by USDA-accredited certifiers</td>
</tr>
<tr>
<td></td>
<td>Exclude GE inputs</td>
<td>Require paste for grazing (ruminants)</td>
<td>Prevent organic and conventional mixing</td>
<td>Dairy, meat, and eggs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Build soil organic matter</td>
<td>Require outdoor access (poultry)</td>
<td>Include only USDA-approved inputs</td>
<td>Package food</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotate crops</td>
<td>Do not use activity</td>
<td></td>
<td>Beverages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enhance biodiversity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grassfed</td>
<td>NA</td>
<td>Feed grass and forage only after weaning</td>
<td>NA</td>
<td>Animal products</td>
<td>Many products have third-party verification from private groups</td>
</tr>
<tr>
<td>Humanely raised</td>
<td>NA</td>
<td>No consistent requirements across labels</td>
<td>NA</td>
<td>Animal products</td>
<td>Many products have third-party verification from USDA or private groups</td>
</tr>
<tr>
<td>Locally grown(^1,2)</td>
<td>NA</td>
<td>NA</td>
<td>Produce</td>
<td>Dairy, meat, and eggs</td>
<td>Some grocers display signage on farm location, and some markets are farmer-only—but most products not third-party verified</td>
</tr>
<tr>
<td>Natural</td>
<td>NA</td>
<td>NA</td>
<td>Produce</td>
<td>Dairy, meat, and eggs</td>
<td>Most products not third-party verified</td>
</tr>
<tr>
<td>Non-GE</td>
<td>Exclude GE inputs</td>
<td>Exclude GE inputs</td>
<td>Produce</td>
<td>Dairy, meat, and eggs</td>
<td>Many products have third-party verification from private groups or USDA</td>
</tr>
<tr>
<td>Raised eggs free</td>
<td>NA</td>
<td>Egg-laying hens not caged</td>
<td>NA</td>
<td>Eggs</td>
<td>Many products have third-party verification from USDA or private groups</td>
</tr>
<tr>
<td>Raised without antibiotics ever</td>
<td>NA</td>
<td>Exclude all antibiotics</td>
<td>NA</td>
<td>Animal products</td>
<td>Many products have third-party verification from USDA or private groups</td>
</tr>
</tbody>
</table>

**Note:** GE = genetically engineered.

\(^1\) Definition of a locally grown product vary and may specify maximum miles to market, such as 100 miles, or production within same region, state, or county.

\(^2\) U.S. law requires many food products to display their country of origin.

Source: Compiled by USDA, Economic Research Service.
Legislative History

Whether it be through color, shape, or design, food labels are constantly seeking consumer attention. The government officially took a stake in regulating food labels in 1938 with the passage of the Food, Drug, and Cosmetic Act (FDCA). Section 403 of this act outlines that the food label must include four criteria: the name of the food, the ingredients used to make the food, net weight of the food, and the name and address of the manufacturer. It also reserved the right for the FDA to require more information on food labels to help consumers make food choices, such as declaring the presence of gluten as a warning to consumers with celiac disease. In 1990, Congress amended the FDCA to include the nutritional information we consult on food packaging today through the Nutritional Facts label (Emma, 2010).

Before the Nutrition Labeling and Education Act of 1990 (NLEA), it was common knowledge that Americans’ diets were poor quality. Packaged foods were required to disclose these four components, but nutrition information was only required for products that made a nutrition claim, or were nutritionally strengthened with vitamins, minerals, or protein. On the select products with nutrition information, many consumers found it inconsistent and difficult to understand. The NLEA sought to not only enhance Americans’ diets, but also to standardize information about nutritional content on the back of almost every food package through the Nutritional Facts label. The label regulations applied to about 90% of processed food sold in the United States at the time (Kuchler et al., 2017).

The stated objectives of NLEA were to lessen consumer confusion about labels, help consumers make more informed food decisions, and incentivize manufacturers to improve the nutritional quality of foods (Emma, 2010; Kuchler et al., 2017). The nutrients included on the Nutrition Facts label were set by

\[2\] Originally, the convention was called the Nutrition Facts panel, but current convention is to refer to it as the Nutrition Facts label (Kuchler et al., 2017).
law, and the FDA continues to define serving sizes for manufacturers to calculate the amount of each nutrient per serving as new products are introduced into the market (Kuchler et al., 2017).

Despite NLEA’s intent to increase nutritional competence amongst consumers, Pelletier (et al., 2004) described that just because the label itself is present and shares nutritional information, does not mean that consumers are making informed decisions about their eating habits. Specifically, he examined consumers’ understanding of the distinction between serving size and package size given that the Nutrition Facts label is based on serving size; however, most snack foods are sold in packages with numerous servings. The majority of buyers in this study were in fact under the notion that they were consuming a single serving per package; thus, a factor that could be heightening the obesity epidemic (Pelletier, Chang, Delzell, & McCall, 2004).

This call for increased nutritional literacy was also concurrent with Blitstein and Evans’ (2006) findings that 53% of sampled consumers consistently consulted NFP labels for making food purchasing decisions. Additionally, in studying the relationship between NFP use and five presumed links to obesity — genetic influence, lack of willpower, lack of knowledge, societal constraints, and the high cost of health-promoting food — only the belief that obesity is caused by lack of knowledge required to maintain a healthy lifestyle was associated with the consistent use of the NFP (Blitstein & Evans, 2006).

More than 20 years after mandating the first label, the FDA is currently in the process of updating the label, with the stated goal of helping “people make informed decisions about the foods they eat and feed their families” through emphasis on calories and servings (Kuchler et al., 2017, p. 21). This act was initiated in a time when obesity was on the rise given U.S. consumers’ overall poor diets, and much can be said the same about today. The NLEA forged the way for the industry’s outpouring of front-of-package health- and nutrition-related claims, and we continue to see the introduction of new labels as credible means of promoting the health attributes of food (Kuchler et al., 2017).
Chapter 4 Voluntary Food Labeling Policies

Although government institutions regulate the labeling of consumer goods in the United States, manufacturers have a fair amount of freedom, not only in product design and image, but also in the voluntary labeling of foods with or without GMO ingredients (Emma, 2010). In the absence of mandatory GMO labels, voluntary labels claiming foods are non-genetically engineered have emerged as a market solution over the last decade, and are likely to continue increasing in response to consumer demand and added product value. By August 2016, manufacturers of nearly 39,000 products had pursued third-party verification of conformance with this standard, according to Non-GMO Project Verified (Kuchler, 2017, p. 53). While these voluntary labels show improvement in terms of information provided, Kuchler et al. (2017, p. 53) asserts that the “compact labels conceal the complexity of the standard they represent,” and survey results illustrate gaps in consumers’ knowledge about GE and GMO.

Noticing this trend, in January 2001, the FDA published Guidance for Industry: Voluntary Labeling Indicating Whether Foods Have or Have Not Been Derived from Genetically Engineered Plants to assist manufacturers who wish to voluntarily label their plant-derived products or ingredients. The FDA’s main concern in this publication was that all voluntary labeling be truthful and not misleading (Kuchler et al., 2017). Although it was issued for the purpose of eliciting comment, this document represented FDA policy and set the framework for voluntary labeling (“Guidance for Industry,” 2015); however, it is important to recall that the FDA does not establish the standards that the labels must meet, but does have the authority to intervene once labels are on the market (Emma, 2010).

One of the FDA’s central areas of interest is the labeling terminology used to make a clear and accurate statement concerning the use of biotechnology in the production of a food or its ingredients. The agency recommends statements such as, “not bioengineered,” “not genetically engineered,” or “not genetically modified through the use of modern biotechnology,” rather than simply “not genetically modified” or use of the acronym “GMO.” The FDA’s longstanding position has been that the term “genetic modification” has been used widely to signify the alteration of the genotype of a plant using any
technique, new or traditional. Since the term could apply to most cultivated food crops, since they are product of selective breeding, FDA urges that the terms bioengineering, genetic engineering, or modern biotechnology be used in conjunction with claims using “genetically modified” (Kuchler et al., 2017).

In light of potential confusion, FDA also advocates against the term “free,” commonly used in “GMO free” or “non-GMO,” which conveys zero or total absence unless a regulatory definition has been implemented. Additionally, the “O” in the acronym “GMO” refers to the word “organism,” which may be misleading since most foods do not contain entire organisms, and it may be interpreted that the food was not derived from a genetically engineered organism, such as a plant that has been genetically engineered. For example, on a product made largely of flour derived from genetically engineered corn and a small amount of non-genetically engineered soybean oil, including a claim that the product “does not contain bioengineered soybean oil” could be deceptive to consumers that think the entire product, or large portion of it, is free of bioengineered ingredients (Kuchler et al., 2017).

**Non-GMO Project Verified**

The most common voluntary label that firms use to communicate their products are non-GE is the “Non-GMO Project Verified” label. Started by two grocery stores (one in the United States and one in Canada) in 2005, the Non-GMO Project (NGP) establishes a voluntary standard for GE content in fruits and vegetables, processed food ingredients, and animal feeds that have GE varieties. It is a good chance you may have seen the blue and green NGP label bearing the image of a butterfly on your food products; this nonprofit organization certifies upwards of 39,000 products as non-GE every year — equating to about three percent of total products that are collectively worth over $19 billion (Kuchler et al., 2017).

The Non-GMO Project is the only product verification program of its kind to provide third-party verification to non-GMO food and products in North America. According to the Project’s website (“Product Verification”, 2016), the NGP prides itself on being, “the pioneer and established market leader
for GMO avoidance.” To become NGP Verified, products are required to meet a threshold of no more than about 0.9 percent GE content, by weight, which is similar but not identical to the EU’s standard for mandatory labeling of processed foods made with GE ingredients (Kuchler et al., 2017). Companies collaborate with third-party technical administrators to get their products verified. A list of these independent companies can be found on NGP’s website for companies to reach out to begin their product evaluation (“Product Verification”, 2016).

To ensure that non-GE ingredients are used, traceability and segregation of inputs are evaluated in the verification process. For those crops that also exist in GE varieties, including alfalfa, canola, corn, cotton, papaya, soy, sugar, beets, apples, potatoes, squash, animal-derived ingredients, and production inputs, NGP houses on a “risk list.” Products composed of at-risk ingredients that account for at least five percent of the product’s dry finished weight, require testing of either the ingredients or finished product to become NGP Verified (Kuchler et al., 2017).

The NGP Verified label is a registered trademark in the United States and Canada only; so, while it is not likely to present leverage in terms of the export market, manufacturers have to balance this with consumer demand and driving sales (Kuchler et al., 2017; Rock, 2014). A 2014 Consumer Report found that “80% seek out non-GMO products, with 56% saying non-GMO was key to brand buying.” Additionally, annual sales of Non-GMO Verified products surpass $19.2 billion (“Product Verification”, 2016).

**Effect of Front-of-Package Cues on Consumer Decisions**

Discerning healthful packaged food can be a daunting task for consumers given the more than 40,000 different offerings in the typical supermarket. Despite attempts to “shop the parameter,” consumers wander inside where the snack foods lie and marketers work their magic. In contrast to the NFP included on the back or side of most packaged foods, a front of package label, like the Non-GMO
Project Verified butterfly, offers consumers a single metric of nutrition information that is presumed to simplify effort and time to process (Newman, Howlett, & Burton, 2016).

Previous research has shown that available cue information helps form consumers’ opinions on products, as does the ease with which they can process the information. A 2016 study in the Journal of Consumer Report assessed the effects of front-of-package cue types (objective vs. evaluative) and processing context (comparative vs. noncomparative) on consumers’ intentions to purchase healthy food products. Objective cues provide specific, quantitative nutrition information about calories and other crucial nutrients (saturated fats, sodium, sugar) taken directly from the NFP. Evaluative cues provide interpretive information in efforts to assist consumers in evaluating the overall product and healthfulness, such as low or high fat, low or high calories, etc. These cues were compared in the contexts of comparative processing, during which consumers are evaluating a product relative to other options, and noncomparative processing, during which consumers are evaluating a single product in isolation (Newman et al., 2016).

Newman et al. (2016) found that objective cues positively influence healthfulness evaluations and purchase decisions more strongly in noncomparative settings than in comparative, and the opposite for evaluative cues, showing higher fluency and healthy intentions in comparative settings for a set of products rather than noncomparative. The authors recommended that policymakers consider the implementation of a standardized evaluative front-of-package cue to help consumers better distinguish healthy products in these comparative processing settings when the NFP is less referenced (Newman et al., 2016).

Under the current voluntary labeling system, consumers struggle understanding the difference between the diversified claims. Some packages are adorned with multiple front-of-package labels; some with quantitative data informing consumers exactly how many calories are in the bag; while others only have a Nutrition Facts panel on the back listing one serving size that needs to be multiplied by the number of servings in the bag for a complete picture. Even the NGP Verified label does not resolve all consumer
confusion as it is on some products for which no GE versions yet exist (for example, peanut butter made from 100% peanuts,) and it may lead consumers to incorrectly assume that competitors’ products not displaying NGP Verified labels are GE. While the FDA and USDA have a legal mandate to ensure voluntary product label claims are clear and truthful, they are not responsible for consumer education (Kuchler et al., 2017).

Recognizing this need, in 2010 the FDA established an initiative to review front-of-package labels, and further understand the extent to which consumers notice, use, and understand these nutrition symbols (Nestle & Ludwig, 2010; Turner, M. M., Skubisz, C., Pandya, S. P., Silverman, M., & Austin, L. L., 2014). In response, Turner et al. (2014) conducted a study that used eye-tracking technology to gauge consumers’ visual attention to nutrition labels and front-of-package cues. Data showed that consumers motivated to buy healthful food products spent more time looking at all available nutrition information, including the nutrition facts labels and front-of-package symbols, evidenced by longer gaze time. On the other hand, consumers motivated by taste spent less time looking at the available nutrition information overall; though, relatively more time examining the front-of-packages symbols and less time examining the nutrition facts labels, compared to their health-conscious counterparts (Turner et al., 2014).

With GE labels aside, at no other point in U.S. history have food products included so many symbols and statements declaring nutrition and health benefits. In their study “Front-of-package food labels, Public health or propaganda?” Nestle and Ludwig (2010, p. 771) suggest, “Front of package labels may so thoroughly mislead the public that another option deserves consideration — eliminate all nutrition and health claims from the front of processed food packages while strengthening the Nutrition Facts Panel.”

Not only can manufacturers manipulate snack food ingredients by replacing fat or sugar with refined starch to yield higher rating scores with little enhanced nutritional quality, but the selectivity of front-of-package labels also ignores potentially unhealthful contents (i.e. the sugar or salt content in a prepared breakfast cereal.) The aura of healthfulness of front of package labels, misinterpretation of the
Nutrition Facts Panel, and possibility of marketing manipulation might encourage consumption of products of meager nutritional quality in paradox to the labels’ purpose. Nestle and Ludwig (2010) conclude that unless the FDA specifically governs acceptable claims for each food product, food companies’ desire to sell more products will undermine the educational purpose of labeling.

Certainly, understanding the manufacturers’ perspective and labeling freedoms is one step towards making health-conscious purchasing decisions, but there are many other conflicting thoughts that may ultimately lead a consumer to select one product over another. In the 2004 British Food Journal, Silayoi and Speece examined packaging and purchasing decisions from the consumers’ perspective through focus groups that focused on the impact of involvement level and time pressure. As the packaging becomes a primary vehicle for communication and branding, they had two objectives: 1) evaluate the consumer experience with purchasing packaged food products and 2) understand consumer outlook on how packaging plays into purchasing decisions (Silayoi, & Speece, 2004).

Results of the focus groups indicated that consumers generally desired more information for many products, but also wanted that information to be precisely communicated; scenarios of nutritional information being “too confusing” or “too complicated to understand” would dissuade consumers from purchasing the product. The increased tendency to evaluate food labels, especially with packaged food products, which consumers deem as “higher involvement,” cause conflict between time pressured shopping, and desire to fully read and understand all food product labels. Visual elements, graphics, size, and shape are more likely to influence choice in a low involvement situation and when product quality is hard to determine; thus, there is pressure for innovation in packaging technology to respond to consumer sophistication with products that are efficiently produced, environmentally friendly, and aligned with a consumer’s lifestyle (Silayoi, & Speece, 2004). Kuchler et. al. explained that there is no easy answer to finding this consumer balance:

There are fundamental tradeoffs in how information is presented to consumers. If it is presented simply, then important nuance or complexity may be missed. On the other hand, if standards and
labels attempt to convey complexity, then consumers may just be confused. Policymakers and
marketers will need to consider these tradeoffs in the future when developing new process-based
labels (2017, p. 70).
Chapter 5 Mandatory Food Labeling Policies

The Federal Role in Labeling

With the freedom of choice proving to be a challenge, the alternative to voluntary labeling is mandatory labeling of foods that contain GE ingredients. This form of GE labeling is mandatory under federal law as of 2016. Since nutrition information has proven to be misinterpreted or unclear, the government has attempted to assist buyers in making rational and informed decisions (Kuchler et al., 2017).

Under mandatory labeling, food products are required to carry labels that disclose the possibility that they may contain GE ingredients; hence consumers can assume items are GE unless proven otherwise. This is a vast contrast from voluntary non-GE labeling which requires no food companies to apply labels, whether their product contains GE material or not; thus, consumers assume negative characteristics from the absence of a label claim on some products. This shifts the labeling costs to the presence of GE ingredients, rather than absence. Kuchler et al. explains these economic implications:

When a label is voluntary, producers will undertake the costs of verifying product attributes only if they expect the process will lead to increased profit. In contrast, with a mandatory label, all food suppliers must reveal the same amount of information, some of which could reduce consumer demand for those products. Suppliers have to include negative information on the Nutrition Facts label (2017, p. 67).

Public Awareness of GMOs

In review, “genetically modified” encapsulates any food that contains at least one ingredient coming from a plant with genetic composition; thus, the majority of processed foods in the U.S. contain at least one genetically modified ingredient. Yet, just 11% of Americans estimate that most of the food they
consume has GM ingredients. This gap in public perception of how much GM food they eat is used as a benchmark for the public’s familiarity with GM foods — the other 48% of people who say they do not eat GM foods (or do so infrequently) must be largely unaware that GM ingredients affect much of today’s food supply (Funk & Kennedy, 2016).

Despite flourishing use of genetically modified crops over the past 20 years, most Americans state they know minimal about GM foods and hold varied views on the health effects. Almost half of Americans (48%) believe health effects of GM foods are no different than other foods, with another 39% who believe GM foods are worse for one’s health, and remaining 10% who believe these foods are better for one’s health. According to a 2016 Pew Research study, this lack of familiarity has led people to have “soft” views on the topic, making their opinions more likely to change over time and to opt for a neutral position about overall healthiness of GM foods (Funk & Kennedy, 2016).

This survey also gauged biological, political, and educational factors on one’s engagement in the GMO debate. Findings indicated that younger adults more concerned about the issue regard GM foods as a health risk (48% of those ages 18-29), as well as women who are more likely than men to address threatening qualities. Educational and political backgrounds were modestly linked with beliefs about GM foods, indicating that Republicans and Democrats hold comparable views on the effects of eating GM foods. Despite what may seem as an inescapable buzzword to some today, only 16% of U.S. adults said they care a great deal about the issue of GM foods at the time of the study (the remaining 37% care some, 31% do not care too much, and 15% do not care at all.) Those with high science knowledge are more optimistic that GM foods will bring benefits to society, such as increasing the global food supply, and are more critical of the media’s coverage of the topic. Other stakeholder groups share varied opinions (as displayed below) of the long-term effects that are yet to be seen (Funk & Kennedy, 2016).
Policy Attempts

Prior to the signing of Public Law 114-214 by President Obama in 2016, independent states and advocacy groups made various attempts to implement the food labeling policies that they believed were lacking. While some were concerned about the biosafety associated with GMO products (i.e. allergens, toxins, environmental impacts), others supported GMO products for their advantages, such as decreased insecticide use and increased crop yields. This lack of consensus amongst the U.S. population was detrimental to many of these individual labeling initiatives (Emma, 2010).

Congress reviewed bills proposing labeling products and ingredients containing GMOs with many failed attempts. For example, the Genetically Engineered Food Right to Know Act was proposed to the House of Representatives in May 2006. The act sought “to amend the Federal Food, Drug, and Cosmetic Act, the Federal Meat Inspection Act, and the Poultry Products Inspection Act to require that
food that contains a genetically engineered material, or that is produced with a genetically engineered material, be labeled accordingly” (Emma, 2010, p. 4). It proposed specific labeling requirements and periodic testing of foods by the FDA, but never became law (Emma, 2010).

By 2016, more than 30 states had proposed legislation that would call for mandatory labeling of products containing GE ingredients (Kuchler et al., 2017). Vermont was the first state in the nation to require mandatory GE labeling (Chokshi, 2014). The law was passed in 2014 and went into effect on July 1, 2016, during a time when more than a dozen other states were in the process of considering mandatory labeling laws as depicted in Figure 5 (Chokshi, 2014; Gillam, 2014). Vermont went so far as to establish a “food fight fund” to take online donations to defend from the litigation expected, and later filed, by food industry players to impede the law. The Biotechnology Industry Organization (BIO), a trade group whose members include Monsanto Co. and Dow AgroSciences, and the Grocery Manufacturers Association were just two organizations who spoke out against the Vermont legislation and in support of federal control. “Scientific bodies and regulatory officials around the world recognize that foods made from genetically modified (GM) crops are as safe as their non-GM counterparts,” said Cathleen Enright, executive vice president of BIO. “GM crops have enabled farmers to produce more on less land with fewer pesticide applications, less water and reduce on-farm fuel use” (Gillam, 2014, para. 8). Four states passed similar laws (Kuchler et al., 2017).
Recent Developments in Federal Labeling Policy

In response to this trend toward state-level mandatory GE labeling policies, which would pose economic challenges for production, manufacturing, and distribution across varying states, President Barack Obama signed the National Bioengineered Food Disclosure Standard (NBFDS) on July 29, 2016, (Kuchler et al., 2017). Explicitly stated, it is “a bill to amend the Agricultural Marketing Act of 1946 to require the Secretary of Agriculture to establish a national disclosure standard for bioengineered foods, and for other purposes” (S. 764, 2016). The NBFDS preempts state labeling laws in favor of a national, uniform bill and gives the U.S. Secretary of Agriculture two years to publish a federal mandatory disclosure standard for GE foods, including requirements to carry out the standard (Kuchler et al., 2017; McMahon, 2017). This “disclosure” is defined as a text label, symbol, or electronic or digital link (for
example, a quick response (QR) code) that would take consumers to the required nutritional details (Kuchler et al., 2017).

As the U.S. Department of Agriculture works to develop the explicit labeling system, companies are looking at these three methods of “disclosure” as it applies to their products: text label, symbol, and digital link/smart label. Adding text to the nutritional facts panel was one method that some companies including General Mills began to comply with the now-negated Vermont law to offset quantitative confusion with phrases like, “partially produced with genetic engineering,” that can be found on the side panel of Honey Nut Cheerios. Symbols are also already widely used by companies to advertise that they do not use GMO ingredients. The law permits them to continue using recognizable symbols, such as the Non-GMO Project butterfly. The new labeling technique that this law suggests is the use of smart labels that would electronically disclose product information by way of a code that customers can scan or 800 number that they can call. While the convenience and unlimited space play in favor of digital labeling, others argue that the extra product information will mislead consumers to believe they are dangerous when in fact scientific studies suggest no known health risks to GMO ingredients. Monsanto, the seed giant most associated by the public with GMOs, is in favor of smart labels. Robert Fraley, vice president of Monsanto, said, “[Cell phone smart labels are] the way you can guarantee complete insight into everything in that package” (Ashton, 2016, para. 20).

In a similar vein, one outcome of the digital revolution has been the advent of various new information platforms, providing details about the healthfulness of foods and diet advice. With minimal regulatory constraints, these new information platforms compete with information on food packaging for consumers’ attention; thus, it is possible that the digitalization of the food industry will cause mandatory labels to lose the power they have (Kuchler et al., 2017, p. 26).

The USDA is required to enforce the law and establish a threshold for how much GE material can be in a food product for it to be considered GE; however, the penalties will not include fines or recalls. States can adopt language from the Federal law into their State laws and distinguish different enforcement
strategies based solely on the outlines of the NBFDS. All state-level disclosure requirements must identically mirror the federal disclosure requirement. The new law does not define non-GE and similar claims (Kuchler et al., 2017).

Critics of the law point out that after knocking down every GMO labeling bill introduced for seven years, Congress passed this legislation in roughly three weeks (Daley, 2016). “Government-inspired credibility may not always make a label successful,” Kuchler et al. (2017, p. 68) said. “Once a single mandatory federally-set standard is achieved, it does not automatically result in improved consumer understanding.” Given that the new GE disclosure standard will likely provide different information from voluntary labeling of non-GE foods, the demand for a voluntary non-GE label will likely perpetuate for consumers to be able to identify foods that are verified not to contain GE ingredients (Kuchler et al., 2017).

It remains to be seen how the new law will be adopted and received by companies and consumers alike (Kuchler et al., 2017). Although the bill calls out one type of genetic modification, “in vitro recombinant deoxyribonucleic acid (DNA) techniques” (Daley, 2016, para. 14), will it include new advancements in crop sciences, such as CRISPR, a gene editing technique in which certain genes are cut out and added to the DNA? Will highly refined oils and products like high-fructose corn syrup, which have all the genetic materials removed from them, be labeled as GMO? Have QR codes already fallen out of fashion, or will they help spur deeper discussion of GMOs? These questions remain to be answered (Daley, 2016).
Chapter 6 Sides of the Debate

Specifically related to the mandatory GE labeling legislation, proponents claim that 1) consumers have a right to know whether the foods they purchase were produced using genetic engineering, and 2) mandated labels would strengthen the variety of choices available to consumers. However, as Kuchler et al. (2017, p. 52) points out, these arguments are only relevant, if labels are effective – “if they provide information that is credible, truthful, and understandable to their users.” Activists are particularly concerned with the provision that allows smart labels, which may lead to inequities between consumers who have cell phone access and connection in the grocery store. “A third of Americans do not own a smartphone and so would not be able to scan the code. It puts up a barrier to clear information,” said Rebecca Spector, West Coast Director for the advocacy group, Center for Food Safety. “That’s not clear labeling” (Ashton, 2016, para. 24). Just 16% of consumers polled by The Mellman Group (“Voters Want”, 2015) reported that they ever scanned a QR code to get information and only three percent reported they do so regularly.

Information conveyed via QR code requires use of smartphone applications and broadband Internet access. A recent Pew Research study (2017) found that over 75% of all Americans own a smartphone, and most live in areas with sufficient broadband access to scan a digital link, but many consumers experience technical challenges using specific software applications for scanning digital links (Kuchler et al., 2017). “It’s a loophole that would allow food manufacturers to put an obscure symbol and Quick Response Code (QR) on their packaging instead of spelling out the fact that it is a GMO product,” said Jason Daley of Smithsonian.com (Daley, 2016, para. 6).

On the other hand are those like Jonathan Adler, Professor of Law and Director of the Center for Business Law & Regulation at the Case Western Reserve University School of Law, who argues that “mandatory GMO content labels are unscientific, unnecessary, and likely unconstitutional” (Adler, 2016, p. 26). Government may compel speech about products or services sold where it has sufficient governmental interest, but this requires more than consumer curiosity, which is driving legal decision in
this case. He outlines four reasons why consumer right to know is not adequate to enforce commercial speech if such speech is to continue to receive First Amendment protection: 1) Consumer right to know has no noticeable limits, and there is no end to the disclosures that can be mandated; 2) Mandating disclosure is not an objective solution: requiring commercial speech can force producers to circulate perspectives that they do not share. Although the label itself contains factually-valid information, the GMO-free label insinuates to consumers that this is a product characteristic that should be accounted for in purchasing decisions; 3) Given that this label is debated in the political sphere, a federal mandate gives voice to a politically determined set of values and stigmatizes individual producers’ otherwise legal products and production styles; 4) Lastly, allowing the right to know to serve as justification encourages government intrusion into political debates concerning interests of the First Amendment (Adler, 2016).

“There is nothing inherently misleading about failing to disclose every bit of information a consumer might find to be of interest,” Adler said (2016, p. 30). “Infinite disclosure is neither possible nor desirable.” Consumers are interested in infinite range of characteristics, many of which have no tangible effect on their physical or financial well-being. But that is where the market steps in — to gauge consumer preference change over time and urge the disclosure of information that consumers desire. In the eyes of Adler (2016, p. 33) and others against GMO labeling, consumers concerned about GMO content are “fully able to obtain products that meet their preferences”; thus, there is no substantial interest that can justify the imposition of a mandatory labeling requirement. One simple tactic for consumers who wish to avoid GMOs is to do so by purchasing products labeled “USDA Organic.” Federal regulations state that only foods that are made without GMO ingredients are entitled to that label (Adler, 2016).

Amid debate over safety and environmental impacts, 50 scientists and agriculture experts with the National Academies of Science analyzed over 900 studies to compile what they say is the “most up-to-date information on GE crops” (Daley, 2016, para. 4). Consistent with previous studies, they found that GE crops are safe to eat. There is no greater increase in cancer, allergies, or stomach problems in GE-consuming populations compared to not; nor have any effects of GE foods been found in animal toxicity.
tests or health of GE-consuming livestock. That said, the experts urge continued research for long-term health implications that have perhaps yet to be identified. Additionally, they asserted that contrary to popular belief, genetic engineering does not improve crop yields. The exception in a few cases is when insect and pest presence is high, but overall crop yield has not surpassed growth with the addition of genetic technology. As new molecular tools like CRISPR become available, our current knowledge of GE continues to be challenged. “Not all issues can be answered by science alone,” the report states (Daley, 2016, para. 13). The conversation is not just about whether GE crops are safe or harmful; it considers legal, economic, social, cultural, and individual factors that affect who should use GE crops, how they should be made available, and what the public should know. “I sincerely hope that this study expands the conversation beyond technological determinism and the tired, old, two-sides-to-every-argument approach to discussing GE crops,” Leland Glenna, a member of the report committee and Associate Professor at Pennsylvania State University, told IFLScience. “It is common for GE crops to be portrayed either as solutions to social and economic problems, or as causes of them” (Daley, 2016, para. 14).

Stakeholder Groups

From farmers and supermarkets, to agribusiness and U.S. trade partners, many stakeholder groups have weighed in on the GE debate.

Farmers

With 185.1 million hectares covered by genetically modified crops worldwide, farmers are arguably the primary stakeholder group affected by the labeling debate (Emma, 2010; Jones, 2016). ISAAA (International Service for the Acquisition of Agri-biotech Applications) studies report that global hectarage of biotech crops has increased approximately 110-fold from 1.7 million hectares in 1996 to
185.1 million hectares in 2016. Of the 185.1 million hectares, biotech crops spanned across 26 countries, including 19 developing and 7 industrial countries, making biotech crops the fastest adopted crop technology in recent times. The United States remained as the leader in the global commercialization of biotech crops since 1996 with 72.9 million hectares planted to major biotech crops in 2016. The top crops included maize (35.05 million hectares), soybean (31.84 million hectares), and cotton (3.70 million hectares) (Jones, 2016).

The expanded use of herbicide-resistant plants, specifically glyphosate, has minimized tillage practices, and in turn, has decreased the emission of greenhouse gases from the soil and tractors (Emma, 2010). Due to the economic benefits of genetically modified crops — the global value of the biotech seed market was $15.8 billion in 2016 — this stakeholder group is largely against the labeling of GMO and non-GMO foods (Emma, 2010; Jones, 2016). Farmers worry that such labeling would diminish the demand for GM crops (Emma, 2010).

**Organic Farmers**

Organic farmers form their own category as the industry continues to expand at a rapid rate, with 24,650 certified organic operations in the United States and 37,032 around the world, as of April 2017, according to the USDA (“United States Department of Agriculture”, 2017). Organic certification is an “opt-in” voluntary standard managed through a public-private partnership, in which the USDA accredits approximately 80 business and State governments that directly certify organic farms and businesses on its behalf (“United States Department of Agriculture”, 2017). Under the standards of the USDA’s National Organic Program, an agricultural product can be labeled “organic” or “100% organic” if it contains 95% organic ingredients, and a processed product can be identified as “made with organic ingredients” if it is made from at least 70% organic ingredients (Emma, 2010).
In contrast to their peers, organic farmers are primarily opposed to the use of genetic modification based on cross-pollination, in fear of GM elements contaminating the organic food, and environmental concerns, in line with the belief that genetic engineering is unnatural and detrimental to natural resources. On one hand, organic farmers could be expected to support labeling GMO and non-GMO because it may create a negative connotation for such products and increase demand for organic products; but the availability of foods labeled with no genetically modified components could also have the opposite effect and compete with organically produced food (Emma, 2010).

Agribusiness

The term “agribusiness” refers to “all the activities that take place in the production, manufacturing, distribution, wholesale and retail sales of an agricultural commodity” (Emma, 2010, p. 10). According to the USDA Economic Research Service (ERS), agriculture, food, and related industries provided $992 billion to the U.S. gross domestic product (GDP) in 2015, a 5.5 percent share. The yield of America’s farms amounted for $136.7 billion of this sum — about one percent of GDP; though, the cumulative contribution of the agriculture sector to GDP is larger than this because of sectors that rely on agricultural inputs to add economic value, including forestry, fishing, and related activities; food, beverages, and tobacco products; textiles, apparel, and leather products; and food service, eating and drinking places (Morrison, R. M. & Melton, A., 2018). The Food and Agricultural Organization of the United Nations (FAO) categorizes that agribusiness brings “farm to fork,” and can have significant impact on U.S. food supply and economy with strict guidelines for companies to assure consumer safety, product quality, and environmental protection (Emma, 2010).

One of the major players in the seed business is Monsanto, a company founded in 1901 in the United States when it launched the production of saccharine. Now, Monsanto is a global agribusiness company that produces genetically altered seed with traits such as yield potential, herbicide resistance,
insect resistance, and drought tolerance (Emma, 2010). The company’s mission states, “We develop products and tools to help farmers around the world grow crops while using energy, water, and land more efficiently. We believe innovation has the potential to bring humanity’s needs in balance with the resources of our planet” (“Financial Highlights”, 2017).

With more than 20,000 employees around the world, Monsanto is dedicated to providing farmers with sustainable agriculture solutions to feed the increasing global population. In 1960, each American farmer fed around 25 people; today, one farmer feeds an average of 155 people. The company boasted net sales of $14.6 billion in 2017 (up eight percent from 2016) and net income of $2.26 billion (a 69% increase from the year prior) (“Financial Highlights”, 2017).

Created in 2000, Syngenta is another global agribusiness company achieving success through the production of seed and crop protection (Emma, 2010). According to its website, the company works to “apply world-class science and the most productive research and development in the industry to achieve a step change in agricultural productivity.” Like Monsanto, Syngenta reports significant profits with 2017 sales totaling $12.65 billion (“Syngenta Corporate Home”, 2018).

The success of agribusinesses like Monsanto and Syngenta has been met with some resistance because of their market power, resulting in part from the monopoly positions forged by seed patenting. For example, the Organic Consumers Association launched the “Millions against Monsanto” campaign, and the transnational NGO Greenpeace has targeted the company stating that, “Monsanto is putting GE foods on the market without concern for the potential health or environmental risks” (Emma, 2010, p. 10).

When it comes to labeling, Monsanto, Syngenta and other agribusiness companies do not show support. They assert their products are just as safe as non-GMO products, and support labeling only if the ingredients pose a public health concern or contain an allergen (Emma, 2010).
### Supermarkets

GMO products can be found at nearly all grocery stores in the U.S. and can be pervasive to the everyday consumer — more than 70% of packaged foods in the U.S. contain GMO ingredients or ingredients derived from GMOs ("What are GMOs?", 2018). Even though supermarkets were largely unaware of whether they were selling GM products in the early 2000s (Emma, 2010), recently some stores have taken a stance and brought non-GMO food offerings into their realm of responsibility ("Supermarkets & GE Food", 2018).

The Non-GMO Project aspires for retail support, requesting that supermarkets endorse the Project and participate in their Registered Retailer Program, which comes with monthly newsletters on the changing landscape of GMO, and the Non-GMO Project Verified mark for digital and print advertising. As of June 2018, there were 14,170 registered retailer locations across the U.S. and Canada, including Whole Foods Market and Safeway. Many large supermarkets, such as Walmart, Wegman’s, Kroger, and Publix, have not endorsed the Project in this capacity ("Participating Retailers", 2016).

In addition, some retailers like Trader Joe’s and Whole Foods have dedicated themselves to offering non-GMO store brands. By making this commitment with their brands, there is no question from consumers that foods with the Trader Joe’s or Whole Foods label are non-GMO\(^3\) ("Product Information", 2018; "What are GMOs?", 2018). Whole Foods released a statement on GM foods on its website:

> At Whole Foods Market, we believe you have the right to choose what’s in your food, and we are committed to GMO (genetically modified organism) transparency. Currently, we offer thousands of products in our stores that have met requirements for an organic (thus non-GMO) or non-

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\(^3\) This does not guarantee that all animal products (meat, dairy, some fish) that hold the label are raised on only non-GMO feed unless they are organic; all organic products by definition are non-GMO ("Product Information", 2018).
GMO-verified label. As always, our goal is to provide our customers with information to make informed choices (“What are GMOs?”, 2018).

**Large Companies**

For marketers, label information can help connect production of foods to consumer preferences (Kuchler et al., 2017), but this customization comes at a premium for large companies with nationwide retail and distribution. Over the past five years, large food companies have been spending tens of millions of dollars contending state GMO-labeling initiatives (Ashton, 2016); for example, adversaries of the 2012 California initiative, that would have made CA the first state to require companies to label all foods with genetically modified ingredients, collectively spent more than $44 million to defeat it. Companies like Monsanto and The Hershey Co. poured money into the debate (Almendrala, 2012). The trend reversed in 2014 when Vermont passed its own GMO labeling law, urging companies like General Mills to begin calling for nationwide law to avoid state-by-state requirements that would be costly for national distribution (Ashton, 2016).

**U.S. Government**

“The Federal Government has been involved in labeling in many ways: standard setting and product definitions, verification, and enforcement. Each such involvement results in tradeoffs rather than a solution,” Kuchler et al. (2017, p. 66-67) asserts: a testament to the slow, costly process it has been to create a single, national standard given the vast number of stakeholders involved and lack of consensus as to how to move forward. As previously mentioned, the FDA and USDA has been the drivers and primary regulatory bodies involved in food labeling. Although Congress has mandated labeling regulations, it may delegate responsibility and enforcement to the FDA (Emma, 2010).
U.S. Trading Partners

The United States joined The World Trade Organization (WTO) upon the founding of the organization on January 1, 1995, with a goal to “help producers of goods and services, exporters, and importers conduct their business” (Emma, 2010, p. 11). Currently, the U.S. trades thousands of food products with member countries and serves as the center of operations for multiple global food manufacturers. Given the differing government legislation and public demands, WTO member countries have their own labeling policies for food products. Some contend for an international, harmonized label to standardize product quality, enhance global communication, and dismiss trade barriers, but history has resisted (Emma, 2010). On one hand is the mandatory country-of-origin labeling (COOL) debate, in which Canada and Mexico argued that COOL was a barrier to livestock trade and WTO agreed; thus, ruling the mandatory COOL for beef and pork breached WTO agreements. On the other hand, in the case of the National Organic Program (NOP) label, organic standards were thought to disrupt interstate trading early on, as one state’s definition and certification may not match another’s; but the introduction of a national organic standard ushered opportunity for instate commerce and international trade to succeed (Kuchler et al., 2017).

The question still exists as to whether mandatory labeling of genetically modified foods will provoke complaints from U.S. trading partners and WTO (Kuchler et al., 2017); the question of whether such legislation may diminish barriers and open markets even outside of the European Union, or increase postharvest costs of separating GM and non-GM products to the extent that it interferes with global demand and economic profitability of foods containing GMOs (Emma, 2010).

Health Advocates and Environmentalists

Health advocates fall on both sides of the debate: those that believe GMO products should be removed due to potentially negative (though scientifically unproven) health effects, and then those that
find GMO products necessary to increase global food supply, reduce poverty, hunger, and malnutrition. The former group considers that food producers and the government have an ethical obligation to label food products that contain GM material; even if GM foods only pose a small risk presently, it is not a risk they are willing to take. Some members of this group also assume that because pest-resistant genetically modified crops are toxic to insects, they may also carry that toxicity to humans. The latter group postulates that, “money should not be spent on giving high-income individuals, such as those in the United States, the right to choose GM or non-GM foods when resource-poor individuals, especially those in the developing world, face the choice of whether they eat GM foods or suffer from malnutrition,” as Emma states (Emma, 2010, p. 12).

Environmentalists are similarly divided on the issue. One group believes in the benefits of biotechnology to decrease pesticide use and greenhouse gas emission. In 2006, biotechnology reduced pesticide use, known to kill innocent insects and damage the natural ecosystem, by 55,000 tons. Other argue that the use of genetic engineering promotes environmentally destructive monocultures and contamination of organic crops with genetic material (Emma, 2010). Some environmentalists have nicknamed the new law “the DARK Act,” symbolizing the phrase, “Denying Americans the Right to Know.” They view it as a one-off for manufacturers to use a QR code or 1-800 number that send consumers searching for more information, rather than requiring candid labels (Lyon, J., 2016).
Chapter 7 Public Opinion

Attitudes about Food and Biotechnology

The food industry has been revolutionized over the past 50 years. One of the contributing trends surrounding biotechnology and its implications for food production can be traced to the late 1990s when the first food-related crops containing gene modifications were commercialized. Decades later, the Public Opinion Quarterly examined consumer attitudes finding a general, but not consistent, decline in confidence that the government can ensure the safety of the food supply, decline in confidence that food in restaurants and grocery stores is safe, decline in belief that packaged-food companies are doing a good job, and heightened sensitivity to the negative effects of GMO foods. Yet, the 2017 report found that fewer people were paying attention to biotechnology-related news or information on food packaging, but increasingly to food warning and nutritional recommendations (Runge, Brossard, Scheufele, Rose, & Larson, 2017).

The increased awareness of food-related biotechnology coupled with the decreased trust in food-related institutions has inspired the public to reevaluate its ways of thinking about food. According to the trends report on biotechnology in 2001 (via Public Trends Quarterly), five years after the first genetically modified seeds were commercialized in the U.S., public opinion and newspaper coverage shifted from a more optimistic approach, with pros outweighing the cons, to a more cautious approach centered on the negative consequences of biotechnology. According to Runge et.al. (2017), Figure 6 displays this shift with a decrease in those “not concerned at all” about genetically modified foods, and increase in those “somewhat concerned” and “very concerned” from 2001 to 2013.
Green Consumers

Not only have companies been challenged to balance all stakeholder interests and stay informed on state and nationwide legislation attempts, but they are also dealing with a new niche of consumers, coined as “green” consumers: young, educated, and environmentally conscious. Green consumers are proponents of the GM mandatory labeling debate and understanding the characteristics of this group can advise marketers on best practices to reach them (“Green Marketing”, 2009).

According to a 2016 Pew Research Center comparison across generations, younger adults are more likely than older adults to believe organic foods are better for their health and GM foods are worse for their health. Almost half of young adults (age 18-29) say foods with GM ingredients are worse for one’s health than foods with no GM ingredients; only 29% of those age 65 and up think GM foods are worse for their health. Younger generations have stronger opinions about the effects of genetic technology, both negative and positive. They are more likely to believe GM foods will lead to harm for the population as a whole: 21% of young adults agreed that, “GM foods will lead to health problems for population” versus eight percent of the older generation. They are also more likely to say that GM foods will create problems for the environment — 25% young adults versus nine percent of seniors (Hefferson & Anderson, 2016).
On the other hand, younger Americans are also more apt to see the benefits of GM foods: 30% of young adults agreed with the statements, “GM is very likely to help make food affordable,” and “GM is very likely to improve global food supply.” This food-conscious mindset of green consumers can be attributed to generational differences in eating habits, with a greater number of young adults following a vegan or vegetarian diet, and lesser variation in buying and eating behaviors, among other influences. At the time of the study, 47% of adults younger than 50 bought food labeled GMO-free in the past month, compared to 41% of those 50 and over (Hefferon & Anderson, 2016).

But where is this motivation for young Americans to buy “green” coming from? Given the harmful environmental effects produced by pollution, overpopulation, and depletion of natural resources, scholars and public officials alike have made calls to urge people to engage in pro-environmental behaviors. One answer to these calls involves our behavior as consumers. Whereas previous generations contributed status to preferences for luxury and self-indulgence, today’s consumers have displayed a new mentality surrounding status: to shy away from luxury and choose self-sacrifice through food purchases (Griskevicius, Tybur, & Bergh, 2010).

In 2010, Griskevicius et al. sought to examine how status motivates the desire for green products, and what a person can communicate about him or herself by going green. Research has shown that one’s willingness to incur the cost of owning a green product that benefits society and the environment, but may be inferior for personal use, increases his/her status in that group and the likelihood that they will be selected as the leader. This series of experiments supported predictions and showed that status motives in fact led people to select prosocial green products over more lavish, equally priced non-green products. While this reputational benefit was evident when shopping in public, the priorities shifted in private, and status motives were driven toward self-indulgence rather than self-sacrifice (Griskevicius et al., 2010). If initiatives are successful in making green products more cost-effective, perhaps purchasing will increase as products become more widely available to a larger consumer market; or perhaps decrease with a loss of the status association that inspired the initial consumer decisions described in this study?
Green is not only a buzzword being used to describe a niche of consumers and purchasing decisions, but also is being embedded into the minds of marketers who are implementing green tactics into business. In a 2009 market study of practitioners, 80% of respondents stated they expected to spend more on green marketing in the future, and 50% of management agreed that control of the sustainability program was in the hands of the marketers. Generally, smaller firms have invested more and believe in the effectiveness of green marketing than large companies ("Green Marketing", 2009).
Chapter 8 Impact on the Snack Food Industry

In supply and demand fashion, the public’s increasing concern about the healthfulness of food, including agricultural and food production, has required producers to add a lot of information about health and production methods on food packaging. Still, much is missing in terms of information reliability and nutritional literacy. Label claims can lack credibility and truthfulness, and insinuate negative, yet unproven health effects; thus, impairing consumers’ capacity to make informed dietary choices (Kuchler et al., 2017).

Key to understanding where the snack food industry is headed, is first understanding where the industry is now with five macro trends driving snack consumption. One, snack food companies offer abundant and blurry choices given that snacking serves various roles for consumers — from celebrating a special occasion with a treat, to meeting daily nutritional goals and simply providing energy. Protein has grown to be a key driver of purchase for many, and Gluten Free has helped distinguish exclusive brands (like Glutino) and adapt existing ones (like Utz Gluten Free pretzel line) (Wyatt, 2017).

Second is holistic health, a new consumer-based definition of health and wellness that drives growth. Exercise, diet, and food and beverage are three core components of one’s lifestyle, playing an increasingly important role in taking care of overall health. Key to the food and beverage area is transparency: consumers are equally concerned with what is not in their foods as what is in it and where it came from. Over half of consumers state that the product label and packaging influence their snack decision (60.3% for age 18-24; 62% for 25-35). Communicating benefits, through transparent packaging, ingredient simplicity, claims and certifications, is winning with consumers. For example, Rice Crackers, a brand that discloses nutritional information like certified gluten-free and Non-GMO Project Verified, saw $52.2 million in sales, up almost eight percent in 2017. That said, when it comes to snack foods, taste remains the outstanding factor. 90.6% of consumers select snacks based on tastes they enjoy (Wyatt, 2017).
The third trend influencing snack consumption is personalization of contact and communication. It has become increasingly difficult to foster genuine connection with the information overload on today’s consumers. In 1970, consumers viewed an average of 500 ads daily; in 2016, consumers viewed 5,000. Food and beverage providers are leveraging digital mediums to establish 1:1 relationships with consumers and focusing on target markets, such as households in the 36-55 age range, who have been identified as being 1.5 times more likely to buy salty snacks (Wyatt, 2017).

Fourth, eCommerce legitimacy is “at the center of a consumer buying revolution,” according to the industry report. In 2017, digital was expected to influence 77% of all retail sales with 76% of all shopping trips beginning online. Currently, e-commerce sales for snacking have a small base, but strong dollar trend, credited for $183 million of salty snack sales (up 35%) and $18 million for popcorn (up 12%). In 2016, salty snacks contributed two percent of the country's total e-commerce, a number that is expected to reach $2.7 billion (to contribute 22%) in 2022 for all multioutlet and convenience store purchases (Wyatt, 2017).

Lastly, the innovation in treating and feeding America is putting food companies against each other. The “bites” trend alone is selling over $100 million in sales with brands like BarkTHINS and Snappers leading the pack. It is these marketing tactics — innovative packaging, consumer personalization, ingredient disclosure, clear communication, and e-commerce strategy — that will continue to drive the snack food industry forward in 2018 and beyond (Wyatt, 2017).
Chapter 9 Summary

We are amid a food marketing revolution as products include more symbols and statements declaring nutrition and health benefits than they have at any other point in U.S. history (Nestle & Turner, 2010). One such label being the GMO/non-GMO claim — currently in transition from voluntary to mandatory as result of the National Bioengineered Food Disclosure Standard (NBFDS) signed into law by President Obama on July 29, 2016 (Kuchler et al., 2017).

Below is a timeline of the major milestones that brought the genetic engineering of food to federal attention:

- 1906: The Food and Drug Administration (FDA) was established on June 30, 1906, as the regulatory agency charged with overseeing the safety and labeling of food. The FDA can request changes or remove labels that do not meet standards, but does not pre-approve labels (Emma, 2010).
- 1938: The Food, Drug, and Cosmetic Act (FDCA) becomes law and outlines the four criteria of a food label (Emma, 2010).
- 1990: Congress amended the FDCA to include the nutritional information found on the Nutritional Facts label, known as the Nutrition Facts Panel (NFP) today (Emma, 2010).
- 1990: The Nutrition Labeling and Education Act (NLEA) was passed with the objectives to lessen consumer confusion about labels, help consumers make more informed food decisions, and incentivize manufacturers to improve the nutritional quality of foods (Emma, 2010; Kuchler et al., 2017).
- 2005: The Non-GMO Project (NGP) was started by two grocery stores and established a voluntary standard for GE content. By August 2016, manufacturers of nearly 39,000 products had pursued third-party verification of conformance with this standard, according to Non-GMO Project Verified (Kuchler et al., 2017).
2006: The Genetically Engineered Food Right to Know Act was proposed to the House of Representatives, suggesting specific labeling requirements and periodic testing of foods by the FDA, but never became law. If the House could not agree, perhaps the states could (Emma, 2010).

2016: By this time ten years later, more than 30 states had proposed legislation that would call for mandatory labeling of products containing GE ingredients (Kuchler et al., 2017). Vermont passed a law in 2014 (that went into effect on July 1, 2016) to become the first state to require mandatory GE labeling in the U.S. (Chokshi, 2014)

2016: On July 29, 2016, President Obama signed the National Bioengineered Food Disclosure Standard (NBFDS) to amend the Agricultural Marketing Act of 1946, shifting the labeling costs from the absence of GE ingredients to the presence of GE ingredients. This law calls on the Secretary of Agriculture to establish a national disclosure standard for bioengineered foods within two years, and the USDA to enforce the law and establish a threshold for how much GE material can be in a food product for it to be considered GE (Kuchler et al., 2017).

Although some consumers have concerns about the safety of GE foods, the research to date shows no negative impacts from consuming these products (Daley, 2016). Younger adults (ages 18-29) are more concerned about the issue regarding GM food as a health risk, as well as more women than men (Funk, & Kennedy, 2016). Stakeholders remain divided on the issue: Proponents of mandatory GMO labeling include organic farmers who compete in the market with GM products and consumers who assume negative health effects, although not yet proven. Opponents of mandatory legislation include the larger global farmer population who currently manages 185.1 million hectares of biotech crops, and environmentalists who acknowledge the link between GMO products and increase in global food supply (Emma, 2010).
Chapter 10 Method

The literature review brings to light that food labeling is a political process that involves government agencies, food manufacturers, and consumer rights groups. This study will employ critical discourse analysis to explore snack food packaging by examining packaging labels and the language used to convey health and nutritional information to consumers. According to Hoover’s, the U.S. snack food industry has annual sales of $38 billion produced by 650 companies (Hoover’s Inc., 2018). Clough (2015) argues that food labeling is an ethical issue, and some consumer advocates contend that voluntary labeling serves an elitist purpose wherein manufacturers charge more for foods labeled as organic or natural, and this places consumers with less disposable income at a disadvantage because of the cost of so-called natural snack products.

Critical discourse analysis traces its roots to French philosopher Michel Foucault (2005/1989). Foucault articulated the role of language as a means of expressing the relationship between power and knowledge, and how that power controls the dominant narrative. His work can be applied to the politics of food labeling, and how that narrative is played out in food packaging and the impact on consumers. Van Dijk (2003) also articulated the relationship between discourse and power. This study follows the work of Fairclough and Wodak (1997), and examines how the discourse of snack food packaging provides interpretation and explanation for consumers. To apply their approach, this study will examine: 1) credentialing organizations referenced on packaging (e.g., nongmoproject.org); 2) the descriptors or adjectives (e.g., dairy free, gluten free, preservative free); 3) statements by the manufacturer about the product (e.g., Skinny Pop: “We believe in snacking without compromise. To use that means using the fewest, cleanest and simplest ingredients to bring you the best tasting popcorn. — That’s the Skinny!”); and 4) nutrition facts (e.g., this is the nutrition label that indicates calories, saturated and trans-fat content, sodium, cholesterol, carbohydrate, dietary fiber, protein, and vitamin content). Finally, this study will review the governmental regulations about labeling and compare those directives with what was found in this discourse analysis of snack food packaging labels.
This analysis will focus on snack food packaging based on snack foods available for purchase in 2018. The analysis will focus on packaging of major food manufacturers, such as Frito Lay and Utz, as well as smaller manufacturers, such as Pretzel Crisps and SkinnyPop. D&B and Hoover’s were used to identify and select snack food companies for this study. The primary goal was to identify and compare larger snack food manufacturers with smaller, greener manufacturers. A total of 12 snack food packaging labels were analyzed.
Chapter 11 Analysis and Findings

This section provides the analysis of snack food packaging labels. Following a descriptive analysis of each packaging label, I will then provide an analysis and synthesis of the differences in packaging based on 1) credentialing organizations; 2) the descriptors or adjectives; 3) manufacturers’ statements; and 4) nutrition facts. The last section of the analysis will explore new governmental regulations with content and compare those directives with what was found in this analysis of packaging labels. Recommendations for manufacturers will be discussed.

Analysis of the Packaging Labels

Utz Select Toasted Sesame Pretzels

The first snack package I examined is pretzels. In examining the Utz package, the front packaging included the product name, “Select Roasted Sesame Flavored Pretzels.” The front package includes calories, saturated fat, sodium, and sugar content for a one-ounce serving. The back of the packaging includes detailed nutrition facts as well as the specific ingredients. No information is provided on GE contents.

The back of the package includes a description of the product describing the pretzels as: “A delectable combination of toasted sesame and pretzel in a light, crunchy stick. With only 2 grams of fat per serving, it’s a guilt-free snacking option! Made with premium ingredients.”

Snack Factory Pretzel Crisps Original

The Snack Factory Pretzel Crisps line prides itself on encouraging consumers to “Rethink Your Pretzel!” This slogan is adorned on each package, along with a description of the product, “thin, crunchy
pretzel crackers,” regardless of flavor. In this case, the Original Flavor front of package label also includes the Non-GMO Project Verification butterfly logo and four serving size icons in the bottom left corner: number of calories, saturated fat, sodium, and sugars. On the back of the package, the label calls out four “better for you” attributes in the header of its design, including 0g Trans Fat, 0g Saturated Fat, 0mg Cholesterol, and 110 Calories. The back-right sides include the Nutrition Facts Panel, and left side includes a product description:

Pretzel Crisps are a modern twist on an old favorite. They’re the best part of the pretzel—all the flavor and crunch you love—but lighter, crispier, and more versatile than ever before. Whether you like them plain, dipped, or paired with your favorite toppings, we’re sure you’ll enjoy the wholesome snack as much as we do.

In contrast to the Utz Sesame Pretzels package with a generic description of the product and “premium ingredients,” the Pretzel Crisps brand focuses on its versatility as a snack, and how it can complement dips and spreads. In fact, under the description, the back of the Pretzel Crisps package includes a “10 Second Appetizer” for consumers to make with the product — another market-driven trend to increase profits. The Original flavor also has an Organic Original Pretzel Crisps counterpart.

**Snyder’s Sourdough Hard Pretzels**

Decorated with a front of package label that reads “America’s Favorite Sourdough Pretzels,” Snyder’s of Hanover Sourdough Hard Pretzels was the next product I examined. The front of the package also included the Non-GMO butterfly logo, like the Pretzel Crisps, and serving size icons, similar to both the Pretzel Crisps and Utz Sesame Pretzels. On the back, the package included a Nutrition Facts Panel and description of the product that took up the entirety of the back-right side:

Just what you expect from a Snyder’s of Hanover Sourdough Hard Pretzel. Perfect on their own or with cheese or hummus for a tasty snack - so many ways to enjoy!
Starting with a century old family recipe and only the finest ingredients, each pretzel is slow baked to perfection. With so many Snyder’s of Hanover varieties and flavors to choose from, the only question is which is your favorite? Tell us at www.snydersofhanover.com.

None of these three pretzel packages included GE information aside from the Non-GMO Project included on the front of the Pretzel Crisps and Snyder’s Sourdough Hard Pretzels.

**Quinn Classic Sea Salt Pretzels**

Quinn breaks the traditional mold and targets the green consumer with this facts-up-front, modern packaging. The front of the Classic Sea Salt Pretzels bag calls out four nutritional attributes in a bold blue design: naturally gluten-free, whole grain, non-GMO ingredients, and ancient grain. In contrast to the aforementioned pretzel brands, Quinn was the only one to denote non-GMO in a way other than the Non-GMO Project logo. The footer highlights Farm-to-Bag, one of the defining attributes of Quinn’s brand. The back of the package further explains that with the batch number printed on the bag, consumers can visit the company’s website to locate where every ingredient came from.

In addition to Farm-to-Bag, the back describes the brand’s two other pillars: Real Ingredients and Crazy Delicious. Ingredients icons denote “Honey from Brazil wildflower blossom” and “Kansas Grown Sorghum ancient whole grain” — a marketing tactic striving to answer green consumers’ calls for transparency. Although Turner et al.’s (2014) work showed that health-conscious consumers pay more attention to the front-of-package symbols than consumers that use taste as the determining factor, Quinn does not want taste to be a sacrifice. Their pretzel bag suggests, “It turns out that when you use better ingredients and obsess over how it’s made, snacks just taste better!”

The back of the package also includes the Nutrition Facts Panel; gluten-free, corn-free, and dairy-free icons; and the brand story that shares Snyder’s family theme:
Pretzels reimagined: When my son Quinn was born I set out on a mission to reimagine classic snacks. My recipe is simple; only use real ingredients, show people where they come from, and above all, it has to be crazy delicious.

**Skinny Pop Sea Salt and Pepper Popcorn**

The Skinny Pop Sea Salt and Pepper Popcorn package includes “pure popped perfection” on the front label as well as the calories, saturated fat, sodium, and sugar content. This information is at the top of the package in contrast to the Utz package where the information is located in the lower third of the package. The front of the package includes the number of calories per cup as well as graphics stating non-GMO, No Artificial Ingredients, and Gluten Free. The back of the package includes a list of descriptors under a No Artificial Ingredients graphic. Those descriptors are: “Non-GMO, Gluten Free, Dairy Free, Peanut Free, Tree Nut Free, Preservative Free, No Artificial Flavors, Zero Trans Fats, A Good Source of Fiber, and Delicious.”

The package includes the standard Nutrition Facts label. The right, back side of the package includes the statement:

Sea Salted to Perfection. We believe in snacking without compromise. Each Sea Salt & Pepper bag is lightly sea salted with just the right amount of black pepper and uses the fewest, cleanest and simplest ingredients possible to bring you the best tasting popcorn.

— That’s the Skinny!

The back of the package also includes five seals on the left side. Those include a certified gluten free mark, a non-GMO Verified mark, a Kosher mark, a certified vegan mark, and a whole grain mark.
Good Health Half Naked Popcorn with Hint of Olive Oil

Good Health uses the psychology of colors and front-of-package cues to its advantage in its product packaging. Looking at the Half Naked Popcorn with Hint of Olive Oil design specifically, the front of the package uses a callout box in the top right-hand corner to note how calories per cup of popcorn with an arrow pointing to “more details on back.” In between the product name (Half Naked) and flavor (Hint of Olive Oil), in the middle of the bag, is another colored box noting, “26 grams of whole grains per serving.” The Non-GMO Project logo and Gluten Free are near the footer of the bag.

The back of the popcorn bag includes a list of product characteristics, including “Gluten Free, No Artificial Colors, No Hydrogenated Oils, No Preservations, 0g Trans Fat, Good Source of Dietary Fiber.” Most of the space is dedicated to the Nutrition Facts Panel and value statement that reads:

At Good Health, we believe the secret to a great “Lifeitude,” aka loving life to the fullest, is feeling good. And since nothing makes us happier than wholesome deliciousness, our Half Naked Popcorn is simply and lovingly air-popped, then topped with just a hint of olive oil to make it the lightest, most scrumptious popcorn possible. Absolutely irresistible with only 24 calories per cup so you can...Enjoy Being Good!

It is important to note that Utz Quality Foods, Inc. purchased Good Health in 2014, “aware that customers today are always looking for healthier snacking options,” according to Utz’s website (“Timeline”, 2018). The acquisition of Good Health into Utz’s portfolio was a move to capture the green consumers.

Annie’s Organic White Cheddar Popcorn

Annie’s Organic White Cheddar Popcorn is the only product included in this analysis to wear the USDA Organic seal, which can be found on all of Annie’s products from mac and cheese, to yogurt and popcorn. Aside from the Whole Grain stamp and “Made With Real Cheese” ribbon, the front packaging
utilizes text rather than symbols to highlight nutritional value. In a green text box on the front, the product includes three bullets under the heading “Made with Goodness!”

- No Artificial Flavors, Synthetic Colors or Preservatives
- Organic Cheese from Cows Raised without Antibiotics or Synthetic Hormones
- Certified Organic Ingredients Grown without Persistent Pesticides

The back of the Organic White Cheddar Popcorn plays off the brand’s appeal to children with an introduction to Bernie, Annie’s pet Dutch rabbit that represents “the simplicity, care and goodness in all of our products.” The packaging also includes a diagram of production, from growing organic corn and raising cows to produce organic milk for cheese, to make Annie’s snacks. In comparison to the other manufacturer product descriptions included in this analysis, Annie’s takes a similar approach to Quinn in the format of a letter to the consumer:

Dear Friend,

With two growing daughters, my husband Rob and I join all other parents in welcoming more snack choices. On our organic farm, we also strive for more choices by growing niche products and new varieties of popular summer vegetables that we sell at the local farmer’s market. Our loyal market friends have learned to expect and enjoy the unexpected from us.

Bye for now, Annie.

Although the package does not include a Non-GMO logo, all USDA Certified Organic products are required to be Non-GMO; hence the argument from opponents of mandatory labeling who encourage health-conscious consumers to take advantage of this existing system and easy way to avoid GMO ingredients without federal involvement (Adler, 2016).
Cape Cod Kettle Cooked Potato Chips Original

The first chip brand I analyzed was the Cape Cod Kettle Cooked Potato Chips Original flavor. In addition to the Non-GMO Project logo, the front of the package includes “40% Reduced Fat*” in a larger point font, followed by “than the leading brand of regular potato chips” underneath in a smaller point font. The asterisk refers to a very small note on the back of the package noting that, “The fat content has been reduced from 10 grams for the leading brand of regular potato chips to 6 grams per serving.” There is also a circle in the bottom left corner noting “No Artificial Colors, Flavors or Preservatives.” The standard serving size icons, similar to those included on three pretzel varieties and Skinny Pop packaging, were omitted from the Cape Cod package label.

Standard with previous back-of-package designs, the Cape Cod Kettle Cooked Chips included a product description and Nutrition Facts Panel. It also called out three attributes above the NFP in larger point font, including Non-GMO, Gluten Free, and No Artificial Preservatives. Cape Cod describes their Original Reduced Fat Chips as:

If our reduced fat potato chips taste remarkably similar to our original Cape Cod chips, that’s because they are! The recipe is surprisingly simple: just fresh potatoes, pure vegetable oil, and a sprinkling of salt. That’s why they pair so perfectly with your favorite sandwiches and dips. To top it off, we remove the excess oil and reduce the fat during our unique kettle cooking process. How that for ridiculously good?

Lay’s Classic Potato Chips

Lay’s was rated as the leading potato chip brand in the U.S. with a sales share of 29.6% in 2017 (“Market share”, 2018). Yet the classic yellow bag includes no front-of-package nutritional cues and no GE claims. There are three included on the back — No artificial flavors, No preservatives, and Gluten Free logo (see Figure 7). Much of the space on the back is dedicated to the Frito Lay logo and Nutrition
Facts Panel. Simplicity continued to be a theme in the product description, especially when comparing to the Snyder’s Sourdough Pretzels and other products included in this analysis: “It all starts with farm-grown potatoes—cooked and seasoned to perfection. So every LAYS potato chip is perfectly crispy and full of fresh potato taste. Happiness in Every Bite.”

![Gluten Free Logo](image)

**Figure 7. Gluten Free Logo**

Source: “Gluten Free Logo,” 2018

**Sun Chips Original**

Another variety of chips worth analysis is the Sun Chips brand. The design of the Original Sun Chips package is centered around being 100% Whole Grain, an attribute reinforced by the official Whole Grain Stamp (see Figure 8) in the bottom left-hand corner of the bag. Annie’s was the only other brand included in this analysis to publicize the stamp, while other brands like Quinn and Skinny just mentioned whole grain. The top left corner also includes a Heart Healthy symbol accompanied by small point font that reads, “Diets rich in whole grain foods and other plant foods, and low in saturated fat and cholesterol, may reduce the risk of heart disease.”

Above the Nutrition Facts Panel on the back are four yellow ingredient cues, including: 100% whole grain, heart health, no artificial flavors or preservatives, and 36% less fat than regular potato chips. There is no mention of GE ingredients or nutritional value in the product description on the back of the Sun Chips package:
At Sun Chips we believe being different is good. That’s why we created tasty, one-of-a-kind chips that take snacking from ho-hum to oh yeah! Today, we’re still making waves with our wavy unique shape and combination of whole grain and mouthwatering flavors. Everyone’s favorite whole grain chip. It’s slightly savory, slightly sweet and totally 100% original.

![Figure 8. Whole Grain Stamp](Source: “Canadian Stamp”)

**Pringles the Original**

The iconic red tin, that rates second to Lays with 9.6 percent sales share in 2017, dedicates its package label to marketing rather than nutritional attributes. There is no mention of Non-GMO, Gluten Free, trans fat, preservatives, or calorie count; instead the World Cup design aims to catch consumers’ attention. With no facts up front, the brand relies solely on the buyer’s nutritional knowledge and competency in understanding the Nutrition Facts Panel. This likely comes as no surprise to the consumers who argue, “If you’re buying Pringles, you’re most likely not interested in the NFP in the first place.”

**Beanito’s Black Bean Chips the Original**

Beanito’s does chips in a whole new way based on the core belief that “Beans are Better!” Using beans rather than corn or potatoes, gives the brand the opportunity to leverage nutritional attributes not traditionally found on chip packages, such as “4g Protein Per Serving” and “Good Source of Fiber.”
Then, it also includes familiar logos like Certified Gluten-Free and the Non-GMO Project verification in the bottom corner of the bag to add credibility behind a newer brand name.

The back of the Beanito’s bag repeats the protein and fiber cues, as well as the Gluten-Free, Non-GMO Project, and vegan logos. With a pyramid graphic of beans labeled Viva la Bean, the product description reads:

Pop open the biggest breakthrough in beans since...EVER! Beanitos are the BEAN REVOLUTION! In a world of blah snacks, there are chips made of corn, potato and other stuff...then there are Beanitos. We turned our favorite superfood, BEANS, into a delicious finger food with infinite snacking possibilities.

Every Beanitos snack is a lean bean PROTEIN machine, packed with delicious flavor and amazing goodies like FIBER. With all this tasty goodness, it may be hard to chew with such a big smile. You’re welcome.

This statement more closely resembles that of the Good Health and Sun Waves idealized language than the Cape Cod and Pretzel Crisps recipe-based and Quinn’s story-based messaging. Next to Beanito’s description is the product’s Nutrition Facts Panel.

**Overall Comparison**

The analysis of these 12 snack food packaging labels supports the USDA’s report on the 2017 State of the Snack Food Industry that taste remains the prevailing purchasing indicator for 90.6% of consumers (Wyatt, 2017). Although many companies opted into the voluntary Non-GMO Project label, including Annie’s, Beanito’s, Cape Cod, Good Health, Pretzel Crisps, Quinn, Snyder’s, and Skinny Pop (of the brands included in this analysis), when it comes to the product descriptions on the back of the packages, they are largely focused on taste and snacking experience, rather than healthfulness and manufacturing techniques. Quinn and Annie’s brand stories deviated from the rest in their personal
nature; though, it was evident Quinn was marketing to millennial and health-conscious consumers, while Annie’s was targeting parents on the search for healthy and fun snacking options for their kids.

To this point, on a scale of Skinny Pop to Pringles, snack food labels fall along a continuum based on the company’s brand values and key audience (i.e. whether they are marketing to green consumers). The Skinny Pop packaging provides a long list of descriptors from vegan to preservative free. Good Health compares in its nutritional cues, calling out Non-GMO, Gluten Free, No Artificial Colors, No Hydrogenated Oils, No Preservatives, 0g Trans Fat, and Dietary Fiber. Instead of following suit and utilizing nutritional symbols, Annie’s leans on the umbrella USDA Organic seal to imply its health benefits to consumers.

Turning to pretzel brands, the Pretzel Crisps and Quinn’s are the most informative in terms of front-of-package cues; yet, Pretzel Crisps takes a more traditional approach compared to Quinn’s interactive farm-to-bag experience. The Snyder’s packaging exhibits company history, while displaying the voluntary Non-GMO Project label. The Utz package has very basic information on the front of the package, and the back package mentions premium ingredients and guilt-free snacking.

Rather than advertising an array of nutritional benefits, some brands choose to market one or two key differentiating attributes; hence, Cape Cod’s focus on Reduced Fat, Sun Chips’ center on Whole Grain value, and Beanito’s protein push. Lay’s strong brand association in terms of colors, fonts, and logo are given priority space over nutritional information, and Pringle’s includes the minimum Nutritional Facts Panel for inquisitive consumers.

Through this analysis, it is evident that smaller niche snack food companies, such as Quinn, Pretzel Crisps, and Good Health, rely more heavily on objective cues, providing greater GMO and ingredient details. In contrast, snack food companies like Frito Lay, Snyder’s, and Utz, rely on their established company history and traditional recipes to compel consumers in a non-comparative setting to stick to what they know and love. It is also evidence that in this need-to-know consumer business, some snack food companies have actually gravitated to saying less on their packaging; hence, the Lay’s plain
front of package. Their thinking: the less information, the less that can be misconstrued. Perhaps this is a
knee-jerk reaction to the “all natural” labeling era, which resulted in millions of dollars of litigation costs
for snack food companies utilizing this claim without a substantial definition. None of the 12 packages
referenced genetic engineering or genetic technology; instead, if the snack food label included such
verbiage, it focused solely on Non-GMO.

Evidence of the century-long controversial legislative history surrounding the topic of genetic
engineering and food labeling can be found within these 12 package labels. To start, the one label
included on all 12 of the analyzed products was the Nutrition Facts Panel as mandated by the amended
FDCA. The degree to which companies supplement this information with additional front-of-package
cues varied. Some products, such as Pretzel Crisps and Utz Sesame Pretzels, used serving size icons to
save consumers the time and knowledge necessary to compute the calorie, saturated fat, sodium, and
sugar content per serving.

While the industry awaits the Department of Agriculture’s final implications in line with the
NBFDS, other snack food brands have opted in to voluntary standards. For example, Annie’s products
carry the USDA Organic seal, signifying to consumers that its ingredients are 95% or more certified
organic, and by definition, also GMO-free (Adler, 2016). USDA Organic and the Non-GMO Project are
two prominent, independent entities who have established labeling verification processes in the interim
before formal legislation. The NGP butterfly logo was widely found among the Pretzel Factory, Snyder’s,
Good Health, Skinny Pop, Cape Cod, and Beanito’s packaging. Skinny Pop was one of many companies
who also included front-of-package labels for gluten free, vegan, kosher, and other nutritional attributes
that could have potentially harmful health effects if otherwise not advertised. On the other hand, there
were labels like Pretzel Crisps’ “10 Second Appetizer” and Pringles’ prize giveaway that served
marketing purposes. Quinn showed its innovation as early adopters of the smart label, soon to be
mandated by the NBFDS; instead of using a QR code or 800 number, as the new law suggests, Quinn
refers consumers to its website for further information on where every ingredient comes from.
Chapter 12 Conclusion

This study examined how snack food packaging labels provide information for consumers to influence their purchasing choices. There was special focus on the history of genetic technology and GMO labeling in preparation for the implications of the National Bioengineered Food Disclosure Standard (NBFDS) signed by President Barack Obama in 2016, which gives the U.S. Secretary of Agriculture two years to publish a federal mandatory disclosure (Kuchler et al., 2017).

What seems like a relatively new issue in the minds of consumers, genetic technology has more than a century-long history that led to federal legislative action. Below is a timeline of the journey to the signing of the NBFDS:

- 1906: The Food and Drug Administration (FDA) was established on June 30, 1906, as the regulatory agency charged with overseeing the safety and labeling of food. The FDA can request changes or remove labels that do not meet standards, but does not pre-approve labels (Emma, 2010).
- 1938: The Food, Drug, and Cosmetic Act (FDCA) becomes law and outlines the four criteria of a food label (Emma, 2010).
- 1990: Congress amended the FDCA to include the nutritional information found on the Nutritional Facts label, known as the Nutrition Facts Panel (NFP) today (Emma, 2010).
- 1990: The Nutrition Labeling and Education Act (NLEA) was passed with the objectives to lessen consumer confusion about labels, help consumers make more informed food decisions, and incentivize manufacturers to improve the nutritional quality of foods (Emma, 2010; Kuchler et al., 2017).
- 2005: The Non-GMO Project (NGP) was started by two grocery stores and established a voluntary standard for GE content. By August 2016, manufacturers of nearly 39,000
products had pursued third-party verification of conformance with this standard, according to Non-GMO Project Verified (Kuchler et al., 2017).

- 2006: The Genetically Engineered Food Right to Know Act was proposed to the House of Representatives, suggesting specific labeling requirements and periodic testing of foods by the FDA, but never became law. If the U.S. House could not agree, perhaps states could take on this task (Emma, 2010).

- 2016: By this time 10 years later, more than 30 states had proposed legislation that would call for mandatory labeling of products containing GE ingredients (Kuchler et al., 2017). Vermont passed a law in 2014 (that went into effect on July 1, 2016) to become the first state to require mandatory GE labeling in the U.S. (Chokshi, 2014).

- 2016: On July 29, 2016, President Obama signed the National Bioengineered Food Disclosure Standard (NBFDS) to amend the Agricultural Marketing Act of 1946, shifting the labeling costs from the absence of GE ingredients to the presence of GE ingredients. This law calls on the U.S. Secretary of Agriculture to establish a national disclosure standard for bioengineered foods within two years, and the USDA to enforce the law and establish a threshold for how much GE material can be in a food product for it to be considered GE (Kuchler et al., 2017).

The analysis examined 12 snack food package labels by the following criteria: 1) credentialing organizations; 2) the descriptors or adjectives; 3) manufacturers’ statements; and 4) nutrition facts. As noted in the timeline above, in 1906, the U.S. government established the Food and Drug Administration (FDA), a regulatory agency “responsible for assuring that foods sold in the United States are safe, wholesome, and properly labeled” (Emma, 2010, p. 1). The FDA alongside Congress, the United States Department of Agriculture (USDA), the Environmental Protection Agency (EPA), and other governing bodies set food-labeling standards. The FDA retains the right to request changes or remove labels that do
not meet its guidelines, but does not pre-approve labels. Thus, food manufacturers exercise some freedom and creativity in labeling to reach consumers and influence purchasing decisions (Emma, 2010).

Hearing consumer calls for nutritional transparency, prior to federal legislation, independent agencies stepped up to establish label verification processes for companies to opt in to voluntary standards. The USDA Certified Organic and Non-GMO Project Verified seals are two notable voluntary labels that companies can obtain through third-party verification to add credibility to their brand, and communicate specific ingredients and production methods. The NGP butterfly logo was found on half of the packages analyzed in this study; not including the sole package, Annie’s Organic White Cheddar Popcorn, that carried the Certified Organic seal (implying, by definition of organic, that the product is also Non-GMO) (Adler, 2016).

Although widely recognized in the snack food industry, by no means are these the only two credentialing organizations. Other nutritional labels commonly found on snack food packages in this analysis were: Gluten Free in the form of the Certified Gluten Free logo found on the Beanito’s package or “Gluten Free” text included by Cape Cod, Good Health, and Lay’s; Whole Grain in the form of the official stamp on the Sun Chips and Annie’s packaging, and mentioned by Quinn, Skinny Pop, and Good Health; Kosher and Vegan as illustrated on the Skinny Pop packaging; and corn-free and dairy-free cues which Quinn chose to include. With an infinite array of front-of-package cues, companies must decide which labels are most desired by their consumer base, most aligned with their brand values, and ultimately, are most likely to attribute the most value to their product with limited space.

In addition to official nutritional verifications and logos, another key component of snack food packaging are the descriptors and adjectives used to sell the product. “Simple” and “simplicity” emerged as a similar theme across these 12 product labels regardless of snack — from popcorn, “...our Half Naked Popcorn is simply and lovingly air-popped”; to chips, “The recipe is surprisingly simple: just fresh potatoes, pure vegetable oil, and a sprinkling of salt. (Cape Cod)”; pretzels, “My recipe is simple. (Quinn)”; and even mascots, Annie’s pet Dutch rabbit that represents “the simplicity, care and goodness
in all of our products.” This theme is representative of the core purpose a snack serves: satisfying (in taste and quality) and enhancing a brief pause in one’s day (i.e., “guilt-free,” another adjective used on Utz’s packaging).

Although the activity of snacking has not changed, snacks are continually changing. It is common for newer brands to leverage a twist on traditional snack food products; for example, Pretzels Crisps’ mantra, “Rethink Your Pretzel,” and Quinn’s slogan, “Snacks Reimagined,” takes the classic pretzel snack, and markets it with new shape and new ingredients. The bites and crisps trend was identified in the State of the Snack Food Industry Report (Wyatt, 2017) as driving innovation, along with increased focus on protein snacks, which Beanito’s leverages in advertising itself as the “Protein Machine.” Additional buzzwords included on the snack food packages included “farm-to-bag,” “premium ingredients,” as well as “real ingredients,” “zero trans-fat,” “snacking without compromise,” and “farm-grown potatoes.”

Each of the 12 products included a manufacturer statement on the back of their packaging — some in the form of a product description and others in the form of a letter to the consumer. Regardless of form, across all labels, the statements focused on taste and the snacking experience, rather than healthfulness and manufacturing techniques. Inherently, this is not the first aspect of the product label that would catch a consumer’s attention, but it could be a selling point when in a comparative setting. Quinn and Annie’s brand stories deviated from the rest in their personal nature; though, it was evident Quinn was marketing to millennial and health-conscious consumers, while Annie’s was targeting parents on the search for healthy and fun snacking options for their kids. Other brands looked beyond their product to the potential snacking experience by offering recipe and pairing recommendations. For example, according to Snyder’s Sourdough Hard Pretzels package, “Perfect on their own or with cheese or hummus for a tasty snack.” Pretzel Crisps includes a “10 Second Appetizer” for consumers to make with the product — not just a convenient recipe, but also another market-driven trend to increase profits.

All 12 of the analyzed products included a Nutrition Facts Panel as mandated by the Federal Food, Drug, and Cosmetic Act (FDCA) (Emma, 2010). The degree to which companies supplemented
this information with additional front-of-package cues varied. Zero trans-fat, source of fiber, no artificial flavors, and no preservatives were all widely-applied nutritional cues found in various places across the packages — on both front and back, and in both written and symbol form depending on the company.

As the industry awaits the U.S. Secretary of Agriculture’s final standards of the NBFDS, snack food companies must prepare for one notable change: under voluntary Non-GMO labeling, no food companies are required to apply labels, whether their product contains GE material or not; thus, consumers assume negative characteristics from the absence of a label claim on some products. This law shifts the labeling costs to the presence of GE ingredients, rather than absence. In line with Foucault’s argument about knowledge and power, the snack food manufacturers want market share to increase revenue. They do not want to put potentially negative information on packaging that would decrease consumer demand of their product; this once was a choice, but will be no longer (Kuchler et al., 2017).

Snacking is no longer just about the product, but also consumers’ experiences as they process the information and decide which products they will “vote for with their dollars.” Snack food package labels strive to assist consumers in narrowing the 21,435 new food and beverage products down to one in the cart (Martinez, 2017). But in this overwhelming process, do the labels contradict a consumer’s understanding and lead to confusion regarding which labels to deem most important?

Even when the selection was narrowed to the 12 package labels analyzed in this study, I struggled determining which labels alone held enough weight to alter my purchasing decision. The official verification logos like the NGP Project logo had an inherent power to them in comparison to text cues that would just state “GMO-free,” but too many nutrition labels on one package made me question, “what’s left to make this product good?” As with most things in life, it is all about balance.

In their study, “Front-of-package food labels, Public health or propaganda?” Nestle and Ludwig (2010) suggest, “Front of package labels may so thoroughly mislead the public that another option deserves consideration — eliminate all nutrition and health claims from the front of processed food packages while strengthening the Nutrition Facts Panel” (Nestle & Ludwig, 2010, p. 771). Every new
nutrition and health claim is another piece of knowledge a consumer is required to have and then determine its value in their purchasing decision. For example, will I only buy products that have the NGP Project logo discrediting any non-GMO products that did not go through the third-party verification process? Hence, why labels are not the prevailing purchase determiner; when caught in confusion, the average consumer is going to go with what they know — taste.

When considering how to reach snack food audiences, companies should focus on holistic health — the whole consumer and his/her interaction with the environment. Consumers value transparency. They are as concerned about what is not in their foods as what is in it; they want to know the ingredients and where they came from, but in a simple way that does not add complexity to their already busy lifestyle; and they want to know the brand and connect with the brand values as it strengthens their own personal status.

The study done by Turner et al. (2014) on consumers’ visual attention to nutrition labels has key implications for health communicators and policy makers. Health-conscious shoppers will not simply be swayed by a front-of-package label because they also consider information on the nutrition facts label; however, consumers motivated by taste do pay attention to front-of-package symbols and use them as a basis to judge a product's healthfulness without referencing the nutrition facts (Turner et al., 2014). It is important for snack food companies to first, identify which of these audiences their products strive to reach, and second, adapt their labeling strategy to fit those consumers’ needs.

In summary, this study examined how snack food packaging labels provide information for consumers as they make purchasing choices. The results of the 12-package analysis informed best practices for marketers as the snack food industry prepares to adopt the standards of the NBDS, which shifts the labeling costs to the presence of GE ingredients, rather than absence. When faced with significant change, most organizations pay more attention to strategy and execution than they do to what their people are feeling and thinking when they’re asked to embrace a transformation, as noted by the Harvard Business Review (Schwartz, 2018). For snack food companies, not only do these “people”
include their employees’ understanding of the new law, but also their consumers. Companies and marketers can be ahead of the curve by focusing on holistic health and creating a positive buying experience; determining their position within the snack food niche to identify a specific consumer audience (whether it be green consumers or a specific age demographic); and remembering at the core of snack food purchases, consumers will always default to taste — so do not lose that.
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Penn State University, State College, PA | Brenda Walker, Director of Volunteer Programs
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Schreyer Honors College, State College, PA | Wade Bennett, Director of Strategic Communications
  • Develop storylines for SHC website as well as other digital and print communications
  • Coordinate and conduct interviews with SHC students, faculty, and alumni for news and story development; provide reporting and coverage of SHC events
Public Relations Intern (May-August 2016)
Tierney Communications, Harrisburg, PA | Natalie Buyny, Senior Account Executive
  • Developed yearlong all-encompassing communications campaign for the world's largest hand-rolled soft pretzel franchise, Auntie Anne's
  • Pitched stories and earned national media coverage in outlets, such as U.S. News & World Report

PUBLICATIONS/PRESENTATIONS:
  • Ending Childhood Cancer – Washington Monthly Magazine (Sept. 2016)
  • Multiple publications for Penn State News
  • HOBY 2018 Keynote Speaker

COMMUNITY SERVICE INVOLVEMENT:
Public Relations Director, Penn State Dance Marathon (April 2017-2018)
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