**ORIGINAL ARTICLE**

# Efforts in adopting the ultra-processed food and soft drinks labeling legislation in a COVID-19 environment: The cases of Colombia and Mexico

**Yesica Mayett-Moreno[1]** | **Mauricio Sabogal-Salamanca[2]**

[1]Graduate School of Business, UPAEP University, Puebla, Mexico

[2]Economics, Finance and Business Administration School, Universidad EAN, Bogotá, Colombia

**Correspondence**
Yesica Mayett-Moreno, Graduate School of Business, UPAEP University, 17 Sur 901 Colonia Santiago, Puebla 72410, Mexico.
Email: yesica.mayett@upaep.mx

**Abstract**

Diabetes contributes to COVID-19 deaths in Colombia and Mexico, where the latter having the highest prevalence of diabetes among OECD countries. Some reports consider that advertising influences diabetes by confusing labels on ultra-processed foods and soft drinks that lead to unhealthy food choices. Both countries are in the process of modifying their labeling legislation; however, governments and food industries have pushed to delay its implementation. Using a mixed research design, we interviewed 550 consumers in both countries during June–July 2020; a high number of respondents misunderstand today's food labeling and are unaware of the new labeling legislation. Respondents strongly agree that the food industry should be in charge of changing the labels; otherwise, they would consider not buying their products. Using cluster analysis, we identified three groups that would help design public policies, nutritional and educational campaigns. Although changes in food labeling alone are not enough to reduce obesity and diabetes rates, food labels constitute public health tools due they assist consumers to make food and nutritional choices (considering that nutrition can help prevent and overcome COVID-19). The costs of

maintaining current labels could increase Colombians and Mexicans illnesss and poverty. These deceptive practices of the food industry would harm their brands.

**KEYWORDS**

consumers, corporate image, diabetes, food industry, food policy, hierarchical cluster analysis, obesity, overweight, public health, sustainable marketing

## 1 | INTRODUCTION

People with diabetes are more likely to become seriously ill and die from COVID-19 (Colombian Ministry of Health [CMH], 2020a; Mexican Ministry of Health [MMH], 2020; Pan-American Health Organization-World Health Organization [PAHO-WHO], 2020). The prevalence of type 2 diabetes has increased dramatically in countries of all income levels over the past three decades, mainly in low- and middle-income countries. This disease causes 1.6 million deaths annually worldwide (WHO, 2020). While in the Americas there are about 242,000 deaths, forecasts indicate that the number of people affected in this region will increase to more than 91 million by 2030, considering diabetes a global epidemic (PAHO, 2012).

With this study, we are contributing to the following academic literature, trying to assemble them in a systemic perspective:

We discussed the consumer behavior and attitudes, its complexity due to micro (culture, income, attitudes, lifestyles), macro variables (COVID-19 context, public health priorities, ultra-processed food supply, and demand), and the marketing forces (labeling, advertising, distribution, prices, among others) that influence the nutritional and health consumers' decision-making processes.

We illustrate the power of marketing and its contribution to the consumers well-being based on the Activist School of Marketing, helpful in studying malpractices of marketing (Sheth et al., 1988); the Consumer Movement and the Sustainable Marketing, worried for the preservation and enhancement of natural and human capital (Kotler & Keller, 2016; Martin & Schouten, 2012); the green consumer and its segmentation based on their behavior (Martin & Schouten, 2012; Ottman, 2011), the Transformative Consumer Research to improve consumer well-being; with segmentation as a mean for understanding sustainability-oriented segments (Natural Marketing Institute, 2008); and the consumers' needs for making better decisions (Martin & Schouten, 2012).

Finally, the Stakeholder and the Institutional Theories outlined the importance of the congruence between an organization and the expectations from their stakeholders that their actions are appropriate. Especially in a COVID-19, within the food labeling legislation, adopting this approach would help to strengthen their brands.

From time to time, managers or people in charge of the strategy design in their organizations act according to the discipline they belong to (health, economic, marketing, business sectors, and so on). Plenty of times, those strategies are not necessarily connected. The COVID-19 challenges everyone and every organization worldwide; many disciplines and organizations from a wide diversity of sectors were forced to interact more closely with other organizations and variables, some of the alien or perhaps never considered before, but that made us more conscious about their systemic effects.

We aimed to infer the consequences of avoiding adopting ultra-processed food legislation from the food sector in Latin America in the society's public health, recovering the contributions of the Activist School of Marketing Thought, the Sustainable Marketing; the Stakeholder and Institutional theories. When these theories are assembled with today's health concerns (such as diabetes, obesity, diet, and nutrition), the result should conduct more coordinated efforts to mitigate COVID-19. We believe there is a gap and an opportunity area in these and other disciplines that COVID-19 brought to researchers: It is vital to adopt a broader, systemic, and interdisciplinary mindset in this complex and dynamic context.

Then, the research question was: why is ultra-processed food labeling legislation imperative to be adopted by Latin American food enterprises to overcome society's health and nutrition priorities under COVID-19 as part of their sustainable marketing and institutional strategies? How might these actions enhance their brand and become a win-to-win strategy?

## 1.1 | Diabetes, obesity, and vulnerability to COVID-19

As diabetes is a longstanding global epidemic, some authors have found a bidirectional relationship between COVID-19 and diabetes: On the one hand, diabetes is associated with an increased risk of severe COVID-19; on the other, the occurrence of a new type of diabetes and severe metabolic complications of pre-existing diabetes have been observed in patients with COVID-19. The overall mortality rate of COVID-19 ranges from 1.4% to 2.3%, but patients with comorbidities such as diabetes mellitus are more likely to have severe disease, acute respiratory distress syndrome, pulmonary inflammation, and increased mortality (Rimesh & Bhansali, 2020; Rubino et al., 2020). Given that a substantial proportion of the world's population is affected by diabetes and other comorbidities, it is important to reduce these rates and take preventive measures to avoid burdening healthcare systems (Cuschieria & Grechb, 2020).

Among the countries in the Organization for Economic Co-operation and Development (OECD), the highest prevalence of diabetes is recorded in Mexico, which is also positioned in the second place with the highest rates of overweight and obesity (OECD, 2017). Obesity and overweight rates in Mexicans have reached epidemic proportions after joining the North American Free Trade Agreement in the early 1990s with the United States and Canada, as processed foods became more accessible (Esposito, 2020). On average, diabetes is the third leading cause of mortality after heart and ischemic heart diseases but the first one in productive ages of 15–64 years (MMH, 2019). COVID-19 has exacerbated this health crisis: Today, obesity and diabetes contribute 35.8% and 36.8%, respectively, of Mexican deaths from COVID-19 (MMH, 2020). Obesity and diabetes, among other digestive illnesses (such as cancer), generated 2210 million USD of direct costs and 1315.8 million USD of indirect damages (WHO, 2015). This amount was close to 17.0% of the health budget in Mexico for 2017 (MMH, 2017).

Although the percentage of diabetes, overweight, and obesity in adults in Colombia is still low compared to Mexico (Table 1), it is concerning that Colombians almost doubled their percentage of mortality from this disease in 3 years (2016–2019). Diabetes has been present in 23.1% of deaths in the Colombian population and 9.1% in obesity. Diabetes alone increases the risk of death from COVID-19 by 5.9 times, while high blood pressure, body overweight, and dietary factors contribute to the highest comorbidity in Colombian people (CMH, 2020a; El Tiempo, 2020a; National Health Institute [NHI], 2020). Despite similarities in culture, language, and level of socioeconomic development, Colombians remain less vulnerable than Mexicans to COVID due to the latter's higher rates of diabetes. However, Colombians need to be aware of

**TABLE 1**  Prevalence of diabetes and related risk factors in Colombia and Mexico, 2016 (percentages)

| | Colombia | | Mexico | |
|---|---|---|---|---|
| **Illness category** | **Males** | **Females** | **Males** | **Females** |
| Diabetes | 7.6 | 8.5 | 9.7 | 11.0 |
| Overweight | 53.2 | 58.3 | 61.6 | 65.0 |
| Obesity | 15.7 | 25.5 | 22.1 | 32.7 |
| Physical inactivity | 53.4 | 72.9 | 18.9 | 31.2 |
| Proportional mortality due diabetes (% of total deaths, all ages) | 3.0 | | 14.0 | |
| COVID-19 confirmed cases as percentage of its population | 0.012 | | 0.03 | |
| COVID-19 deaths as percentage of its population | 0.005 | | 0.11 | |
| Mortality due COVID-19 in people with diabetes | 23.1 | | 35.8 | |

*Source*: World Bank (2019); WHO at September 3, 2020 (https://covid19.who.int/).

the risks they could be facing due to their increasing rates of physical inactivity, urbanization, and food intake outside their homes.

## 1.2 | Diet, nutrition, and food labels: Its importance to overcome COVID-19

Malnutrition affects immune systems negatively, impairing protection against infections and increasing the severity of acquired disease, patient recovery time, complications, and mortality. As long as malnutrition prevails worldwide, COVID-19 outcomes will increase. Therefore, nutrition is key in defending against viral threats. Modulating nutrition can help prevent, support, and overcome COVID-19. However, changes in diet, urban lifestyles, social distancing, increased fast food, and eating out have led to deficiencies or insufficiencies of some macro and micronutrients and have contributed to poor nutritional status, affecting the immune system (Cuschieria & Grechb, 2020; Mentella et al., 2021). Consumers tend to make less healthy choices when purchasing prepared meals since portions tend to be larger, and the amount of salt, sugar, and trans-fat used in their preparation is out of control (Adams, 2019). Correcting the nutritional status of individuals can stop and reverse the problem, given that obesity is a negative prognostic risk factor in the progression of this disease. COVID-19 care should integrate nutritional screening: Assessment and efforts should focus on promoting balanced nutrition regimens, healthy eating habits, and active living to prevent overweight, obesity, or nutrient deficiency. Some of the best nutritional practices against COVID-19 and strategies to assist patients in their recovery consider preventive measures such as a healthy diet, physical activity, staying hydrated, eating fresh and unprocessed foods, less salt and sugar, and avoiding industrially produced trans-fats (Cuschieria & Grechb, 2020; Mentella et al., 2021).

Under this scenario, nutrition labels are considered public health tools because they help consumers differentiate among the alternatives that the market offers, and therefore, they can make well informed food decisions (Shamim et al., 2020). Some studies have shown that voluntary front-of-shelf and similar front-of-pack nutrition labels directly influence food purchasing patterns (Li et al., 2021). Food labeling not only helps in the consumer decision-making process, but it is also part of a product design that identifies the product or brand and describes who, where, and when it was made, its contents, and how it should be used safely.

MAYETT-MORENO AND SABOGAL-SALAMANCA

**Business and Society Review**

Journal of the W. Michael Hoffman
Center for Business Ethics at
Bentley University

WILEY 5

Since labels may not only mislead customers, but also fail to describe important ingredients or include safety guidelines, different countries have adopted mandatory labeling requirements that demand the seller to provide unit pricing, open dating, nutritional labeling, and the use of health-related terms (Nutritional labeling and educational act 1990, Food and Drug Administration in USA, Kotler & Armstrong, 2019, p. 233). Different calls for action regarding food labeling can be found in international organizations such as the WHO since 2004, the PAHO model, and in other countries (Dumoitier et al., 2019; Mora et al., 2019; Rusmevichientong et al., 2021; Söderlund et al., 2020). However, in nations such as Mexico and Colombia, there has been a delay in its adoption, which in a COVID-19 environment could affect the health and well-being of people, increasing the risk of their poverty status in this scenario due to the costs of convalescence and management of diseases that accompany obesity, overweight, and diabetes, combined with COVID-19. We consider relevant to expose the perception of the public on the ease of reading the food label, the knowledge of the new legislation, the role that the food industry and the government play in this effort, and the benefits of the legislation in the Colombian and Mexican consumers.

## 1.3 | Theoretical framework

### 1.3.1 | Marketing, Activist School of Marketing Thought, sustainable marketing, and labeling

Sociocultural influences play a crucial role in food preferences, and marketing strategies help shape them through the marketing mix. However, marketers have been seen marketing strategies as part of the problem of obesity and overweight (Kotler & Armstrong, 2019; Kotler & Keller, 2016), as the population is continuously assaulted by advertising with messages of fatty, salty, and sugary products and beverages, especially in vulnerable groups such as children and the poorly educated population (Reisch et al., 2013).

Desires, values, consumption patterns, and attitudes are subject to larger forces and arise from other sociocultural and economic processes that go deeper than what is produced by companies and the media. Moreover, the concept of customer satisfaction has been criticized because it is difficult to define it objectively. Generally, the desires of the consumer do not suit them in many situations (Kotler & Armstrong, 2019; Kotler, 1972, cited in Sheth et al., 1988, p. 131). Nevertheless, marketing is a useful technique that can work for our benefit.

Since 1930, the Activist School of Marketing Thought has been concerned with consumer welfare issues and has continued to grow ever since. This school is "focused on the imbalances between buyers and sellers, and on poor marketing practices by individual firms in the marketplace" (Sheth et al., 1988, p. 127). This proposal of thought emerged later and together with the Consumer Movement, whose main interest was consumer protection, including consumerism. Marketing has become more aware of its social responsibility in a holistic view of marketing (Kotler & Keller, 2016) and has even evolved toward a new definition of what sustainable marketing is, as a process for creating, communicating, and delivering value to customers in a way that natural and human capital is preserved or even enhanced (Martin & Schouten, 2012).

Recent interest in sustainable marketing has increased studies that seek to understand the green consumers and their behavior, even attempting to segment according to their interests in "green options" or sustainable lifestyles (Martin & Schouten, 2012; Ottman, 2011). Some authors have also highlighted the importance of the "Transformative Consumer Research" to improve

**6** WILEY— Business and Society Review
Journal of the W. Michael Hoffman
Center for Business Ethics at
Bentley University
MAYETT-MORENO AND SABOGAL-SALAMANCA

consumer well-being, examining the role of consumption in problems such as overconsumption of products and obesity, among others. Segmentation provides the opportunity to understand the demographics and lifestyles of sustainability-oriented components (Natural Marketing Institute, 2008). In fact, marketers have expressed the need for sustainable packaging, including labels that help consumers make better and more informed decisions (Martin & Schouten, 2012). However, an industry that offers many correct products may be profitable but not useful from the society's point of view. In this case, that industry requires social and governmental regulations, as not all marketers follow the concept of sustainable marketing, and some companies continue to use questionable marketing practices (Kotler & Armstrong, 2019; Sheth et al., 1988).

In terms of labeling and consumer decision making, the label might help promote the brand, add personality, help positioning, connect with customers, and could even become an important element in marketing campaigns (Kotler & Armstrong, 2019, p. 233). In Colombia and Mexico, there has been a long period where disconnection and lack of close oversight between the government and the food industry to address the call for label change have prevailed Official Journal of the Federal Government of Mexico [OJF], 2020a).

### 1.3.2 | Stakeholder and institutional theory

Today's organizations compete not only for customers but also for institutional legitimacy (which can be a bonus to survival). There are influences through regulatory structures, government agencies, laws and courts, professions, interest groups, and public opinion, among others, to ensure legitimacy, gain social support, and get along with accepted conventions for the survival of an organization (Daft, 2019; Hatch, 2013). It is stated by the Stakeholder Theory that post-industrial organizations have no boundaries, and it becomes suitable for them to consider ethics in their behavior. Unethical business practices can take many organizations to bankruptcy. Nowadays, "organizations [must] consider their impact on the broader social and physical environment from which they take their resources" (Hatch, 2013, pp. 82–83). Institutional theory describes how organizations survive and succeed through the congruence between the actions of an organization and the expectations of its stakeholders; the institutional environment reflects what the larger society sees as the right way to behave, giving them legitimacy. Institutional theory deals with the set of intangible norms and values that shape the behavior of organizations and industries, considering that a good reputation is aligned with success and the other way around, leading to homogeneity or similar forms and practices in established organizations (Daft, 2019). In this scenario, consumers, companies, government, and society must measure the impact of their delays or refusals on the attention to food labeling legislation.

## 2 | CONTEXT

### 2.1 | Food labeling legislation: Worldwide experiences and health concerns

It is very important to know the legislation on food labeling in other countries, as we coexist in this globalized world, and we can learn from their experiences and overcome their limitations. There are plenty labeling systems that have been developed and tested in some regions (European Union) and countries, namely, the Swedish keyhole symbol, the traffic light symbol

in the United Kingdom, the Choices Programme (Netherlands and internationally), the Australian/New Zealand Heart Foundation Tick, and the Australasian Health Star Rating nutrition labeling system; the nutritional traffic light color ranking in Iran, similar efforts in India; and the Chilean front-of-package warning label: a black and white stop sign (Dumoitier et al., 2019; Kušar et al., 2021; Shamim et al., 2020; Söderlund et al., 2020).

In the late 1960s, the United States of America (USA) started with the design of the Nutrition Fact Label, reporting different updates in 1994, 2005, 2007, 2014, and 2016. After that, they signed into law the Nutrition Labeling and Education Act of 1990 (NLEA). In 2016, the U.S. Food and Drug Administration (FDA) announced new requirements for the Nutrition Facts label (NFL) that would be effective by the beginning of 2020 (Adams, 2019; Dumoitier et al., 2019; Kušar et al., 2021).

The Chilean Food Act of 2016 was the first mandatory front-of-package labeling regulation implemented worldwide, an "ambitious attempt to remake a country's food culture" (Jacobs, 2018). The results of its implementation so far appear to be positive: A fixed effects analysis found that, compared to a counterfactual scenario based on pre-regulation trends, beverages classified as "High in" decreased by 22.8 ml/capita/day (Taillie et al., 2020). Another study further documents an overall decrease in sugar and calorie intake of 7–9% (Correa et al., 2019). The effect was driven by the demand side: substitution from labeled to unlabeled products; and by the supply side: reformulation of products and grouping at thresholds The Chilean Warning Label has been an important reference for the new legislation in Colombia and Mexico,

However, labels do not work in isolation; their effectiveness is enhanced by simultaneously using targeted awareness campaigns to educate specific audiences. Physical activity may vary according to the population's nationality, culture, level of education, and socioeconomic status (Dumoitier et al., 2019).

## 2.2 | Colombian Nutritional Labeling Agreement (AENC by its abbreviation in Spanish) in ultra-processed foods and soft drink products

Article 10 of Law 1355 of 2009 establishes the responsibility of food producers to provide accurate information on the nutritional and caloric content of products. This responsibility is established for the labeling of ultra-processed food products in Resolution 5109 of 2005 (Colombian Social Protection Ministry [CSPM], 2005) and Resolution 333 of 2011. The latter includes all technical requirements for the labeling, including the information that should be provided for all food product ingredients and nutritional and health properties (CSPM, 2011). Resolution 3803 of 2016 shows an upgrade of the recommendations on daily energy and nutrient intake (CSPM, 2016). However, there is a need to modify these reference values for nutrition labeling and an upgrade of the labeling requirements and changes according to the demographics of society and the nutritional profile of the country (CMH, 2020b).

Currently, the processed food industry uses the Guideline Daily Amount as self-regulation (El Tiempo, 2020b), based on the average daily energy and nutrient requirements for a healthy adult to provide orientation on the calorie, fat, and sodium intake. However, research has found that ceding regulation to industry brings opportunities, but is highly risky, raising concerns about whether it is sufficient to protect the public (Sharma et al., 2010).

Independent studies have found that the information provided by this guideline could be misinterpreted by the general public, in addition to the fact that the information presented is for healthy adults. However, it is often advertised to a child population, making it confusing and inappropriate (CMH, 2019; Mora et al., 2018). A recent study on perceptions for Colombia has shown that the front warning labeling is better than the Guideline Daily Amount for consumers to classify their products (Red PaPaz, 2019). Guarnizo and Narváez (2019) have identified problems with the current Colombian regulation, including the no obligation to label or present nutritional information, reporting high sugar or sodium contents, and warnings about the low nutritional value of the product.

Civil society has supported studies that favor a change in the legislation. Red PaPaz (2019) found that most Colombians think that the government has high responsibility in preventing diseases such as diabetes and obesity. Not only having a regulation regarding ultra-processed food products is required, but also making more informed decisions with tools such as a front warning label. According to government studies, the economic benefits of regulating the access to processed foods by labeling and advertising are better than the current regulation (CMH, 2019).

Colombia tried to implement changes in the legislation on ultra-processed foods in 2017 (Draft Act 019) and 2018 (Draft Act 214), but they failed in Congress due to expiration of terms. Those projects, promoted by different political and social groups, sought to establish a front labeling warning similar to the Chilean Warning Label model (Dejusticia, 2020; El Espectador, 2019).

During 2020, following a process that included the participation of the government, the academia, the food industry, and different associations representing the society, and after addressing concerns to the front labeling project (CMH, 2019), a new model of front label and table of nutrients was presented, one that increased its size to make it more understandable and included front warning labels indicating whether the product is high in added sugar, sodium, or saturated fats, which will be mandatory in 2022, replacing Resolution 311 (CMH, 2020a, 2020b, 2020c). Analysts criticized the delay in implementation of the new model and recommended a faster application, that is to say, no longer than 1 year (Dejusticia, 2020).

Draft Act 167 of 2019 (Congress of Colombia, 2019), known as "Ley de Comida Chatarra" or "Junk Food Act," was approved by the Colombian Congress in its fourth debate at the moment of writing this article (Currea, 2021). The intention of the law is not only to provide a front warning label but to allow technical standards for processed foods and license and define the design of promotion and prevention campaigns for processed foods and the control for advertising, especially for children (Caicedo, 2020; Currea, 2021). Almost at the same time of the approval of the act, Resolution 810 of 2021 was approved by the Ministry of Health (CMH, 2021), which also defines the inclusion of front labeling and an "approval" sign for certain criteria of processed foods. Some analysts have expressed concern about the "lesser" impact of the Resolution compared to that intended by the Act and have expressed that, given that an Act is a superior standard to a Resolution, the latter will have to be adapted to comply with the new Act that has been approved (El Tiempo, 2021).

The implementation of the Act will be gradual, and according to some of the promoters of the law, the new labeling could be seen in a year or year and a half (Piñeros, 2021). Also, the implementation will be monitored by its promoters (El Tiempo, 2021).

MAYETT-MORENO AND SABOGAL-SALAMANCA

Business and
Society Review

Journal of the W. Michael Hoffman
Center for Business Ethics at
Bentley University

WILEY

9

## 2.3 | Mexican efforts concerning food labeling. MXL-NOM 051 (Official Mexican Norm-051-SFI/SSA-i-2010)

In 1976, the Federal Government of Mexico put into effect the Federal Consumer Protection Law by means of the Office of the Federal Prosecutor for the Consumer (PROFECO by its abbreviation in Spanish), whose mission is to empower people by means of the protection of their rights and the trust of the population, promoting rational, informed, sustainable, safe, and healthy consumption, to correct market abuses and strengthen the internal market for the well-being of the entire population. Mexico was considered the first country in Latin America to create such an oversight institution, and the second to implement a law on this matter (PROFECO, 2020a, 2020b). By 1994, the Federal Metrology and Standardization Law, NOM 051, was developed with the primary objective of protecting the Mexican population regarding the information on the ultra-processed food labels for products and beverages. The Ministry of Health could establish limits according to public health concerns and nutritional information regarding added or natural ingredients in food or soft drinks. Additionally, the Secretariat could address situations in which labels or packaging generate false expectations or do not describe in their table of contents the ingredients with real or potential risks linked to digestive intolerances, allergies, or metabolic diseases (Ponce, 2020).

Although overweight and obesity has been increasing ever since 1988, NOM051 was modified three times (in 2010, 2014, and 2020). In 2010, only three health institutions participated (two from the government and one private nutritional association), together with 53 trade organizations, the food sector, and chemical industries related to food production. By 2014, the Ministry of Health, by means of the Federal Commission for the Protection against Sanitary Risks (COFEPRIS by its abbreviation in Spanish), authorized a labeling policy based on the daily dietary guides that was incomprehensible even to nutrition specialists (Barquera et al., 2020; Ponce, 2020). This label used several versions in the amounts of calories (sometimes kilocalories), measured by pieces or by grams (15, 25, 42.5) for similar food products and brands. On August 14, 2019, the NOM051 was revised, on this occasion counting with the voluntary participation of 53 parties from the food industry, brand trade, health, and nutritional associations, as well as with academics from the most important Public Universities in Mexico, scientist from three National Institutes of Public Health, Medical Sciences. On behalf of the Federal Government, the Ministries of Economy, Agriculture and Rural Development, Health, and PROFECO participated. International agencies such as UNICEF, the Pan American Health Organization (PAHO), and the Food Agriculture Organization (FAO) were also involved, taken the Chilean Warning Label on the front of the package as an important reference. From the food industry, invitations were extended to the Business Coordinating Council (CCE by its abbreviation in Spanish), and the Mexican Council on the Consumer Products Industry, among others (Ávila, 2020; OJF, 2020a). All participants endorsed the new NOM 051 version 2020 (Official Mexican Norm-051-SFI/SSA-i-2010).

The main changes in the labeling intended to give clear, instant, and quick data (without the need for arithmetic calculations) on risk ingredients, using black octagons per category when there is an excess of calories, sugar, trans fat, saturated fat, and sodium, in order to facilitate comparisons among products, mainly for children. Black octagons with white lettering should appear in the upper front of the package, in a size constituting ≥12.5% of the total surface area (whereas previously, it was about 10% in the lower left). This new proposal should signal when hazardous ingredients for children, such as caffeine and sugar or artificial flavors are present; ideally, ultra-processed foods and soft drinks should be chosen "with the least (or none) number of black octagons" (Barquera et al., 2020; OJF, 2020a; Ponce, 2020).

## 2.4 | Problem statement and objectives

In Colombia, Media reported on industry pressures to modify the projects or to try to stop them (Bogota Chamber of Commerce, 2018; Cuestión Pública, 2019). The same had happened in the food industry in Mexico where Coca-Cola Co, PepsiCo Inc, Nestle, and the largest Mexican bread maker Grupo Bimbo, along with multinational food corporations from foreign countries such as Switzerland, the United States, Canada, and some countries in the European Union (home of the major ones), have lobbied to delay NOM-051 (Esposito, 2020). This has happened in other countries such as the United States, where conservatives in the Congress introduced the Common Sense Nutrition Disclosure Act, which eviscerated menu labeling mandated by the Affordable Care Act, in order to protect small businesses and prevent job losses. For the new food labeling requirements that began in 2020 in the United States, the FDA gave manufacturers 6 months to update their labels and promised to work with them in order to comply with the labeling requirements (Adams, 2019; Dumoitier et al., 2019; Esposito, 2020; Great Lakes Label, 2021). In Mexico, some industries also said that this new labeling would mislead consumers, causing the food industry not only to lose 25% of the agri-food industry production, but also to experience conflicts with their commercial partners (Ávila, 2020; Esposito, 2020), despite the fact that the Federal Government published the NOM-051 in April 2020 and communicated food companies that it would start to operate in October of the same year. Unfortunately, on July 31, 2020, the Federal Government reversed course and granted an extension to adopt NOM-051; food companies that did not comply would not be in a forfeiture situation (OJF, 2020b). The government argued this decision due to the situation with COVID-19 and its economic consequences in small and medium-sized food companies.

We believe that the food industry must address this regulation, and the Federal Government must keep its position in pursuit of the general welfare and common interest in both countries. COVID-19 urges accurate information about what people eat: food, sugar, and fat intake, and it is a powerful reason for change. Although changes in food labeling alone are not enough to reduce the problems of malnutrition, obesity, and overweight, they constitute a strategic principle.

As the main concern has been to increase public awareness of unhealthy foods and to help consumers make healthier food choices, at the time of this research, there are no publications that address consumers' knowledge regarding previous labeling, therefore no information on issues such as whether labels are being used, whether they are easy to read, whether the vocabulary on the label is understandable, whether it is difficult to calculate the correct amount of nutrients, whether they are aware of the new food labeling legislation, or people's opinions about delays in its implementation, their attitudes toward companies that do not adopt them, and the government participation in this process.

In accordance with the appreciations above, we consider it relevant to conduct this research to address the following specific objectives:

1. To describe the efforts in the legislation on the labeling of ultra-processed food and beverage products in Colombia and Mexico and the challenges in addressing these concerns.
2. To examine the level of knowledge of the population about today's legislation on the labeling of ultra-processed food and beverage products, by country.
3. To contrast the level of knowledge about the new food labeling legislation and attitudes toward the benefits of it within specific consumers' generations.

MAYETT-MORENO AND SABOGAL-SALAMANCA

Business and
Society Review

Journal of the W. Michael Hoffman
Center for Business Ethics at
Bentley University

WILEY

11

4. To investigate the perception of customers regarding the seriousness of the request for label change in food companies and of the institutions involved in such request, in the region of study.

5. To discuss the potential impact on brand perception and social responsibility of those companies that are delaying or refusing the adoption of the Colombian legislation AENC, or the Mexican legislation MXL-NOM-051.

Obstruction in food labeling could mainly affect people with less education and lower income in health and welfare, increasing the risk of their condition of poverty: Headey et al. (2020) reported that an additional 140 million people in extreme poverty are expected in the world due to COVID-19, which today in such condition constitutes 45.5% and 47.4% of the population in Colombia and Mexico, respectively (World Bank [WB], 2020a). COVID-19 has put employment at risk threatening basic household incomes, as it has also led to shortages in the availability of nutritious foods, as food chain management has also experienced cuts due to the shortage of workers, challenging the nutritional status of the entire population. These are compelling reasons to continue the effort to help people make the right food choices through labeling.

## 3 | METHODS

### 3.1 | The region of study

Colombia and Mexico are considered upper-middle income economies with a gross net income between US\$4046 and US\$12,535 per capita per year (WB, 2020a). Although different in population size and gross domestic product, these countries experience similar inequalities as evidenced by their Gini indices, poverty rate, life expectancy at birth, and urbanization rate (PAHO, 2012; WB, 2018, 2019, 2020a, 2020b, 2020c) (Table 2). The concentration of income in small groups of people is a common rule in these countries, acknowledging that only 10% of Mexicans and Colombians own 33.8% and 41% of the nation's wealth in each country, which contributes to generate 22.8 million Colombians and 60.4 million Mexicans in poverty (Acosta et al., 2017; National Institute of Statistics and Geography [INEGI], 2010).

As food remains the most significant household expense (34.9%) in Colombia, while in Mexico it is the second most important (22.7%), food and beverage consumption of the lower income segment ranges between 41.8% and 46.8%, for each country, respectively (WB, 2020b). Economic forces and disparities in purchasing power tend to make lower-income people more

**TABLE 2** General macroeconomic indicators from Colombia and Mexico

| Country | Population (million) 2019 | Gross domestic product annual growth 2000– 2019 (%) | Gini index (2018) | Poverty rate of its population (2008) % | Life expectancy at birth 2018 (years) | Rate of urbanization (2018) % |
|---|---|---|---|---|---|---|
| Colombia | 50.3 | 4.3 | 50.4 | 45.5 | 77 | 81.0 |
| Mexico | 127.6 | 2.1 | 45.4 | 47.4 | 75 | 80.0 |

*Source*: PAHO-WHO, 2012; World Bank, 2018, 2019, 2020a, 2020b, 2020c.

price sensitive, pushing them to buy cheaper (junk food) and sometimes uncertified food (fresh or processed). Currently, immediate physical access to "cheaper" ultra-processed food products and beverages and junk food increases the daily intake of high energy, sugar and sodium dense foods, and soft drinks of the most deprived people (MMH, 2010). In addition, higher relative prices of safe and nutritious fruits and vegetables contribute to complicate the scenario: Some studies showed that in Colombia, despite the fact that the daily fruit consumption of its population between 5 and 64 years old is 66.8%, its vegetable intake is only 28.1% (CMH, 2015; CMH & FAO, 2013; National Survey on Nutritional Situation, 2010). Mexico's daily intake of fruits and vegetables in its population aged 15 years and older was only 43.1% and 57.5% of the recommended daily intake, respectively; still, a meager amount compared to the regular fruits and vegetables eaten in Australia, where those values are 95.0% and 99.0%, respectively (OECD, 2017).

If we incorporate the urbanization rate of 81% in Colombia and 80% in México (WB, 2018), we see more women working outside the home, less time for food preparation, and a shift to ultra-processed food options to meet these lifestyle changes. In both countries, the percentage of expenditure on food outside the home ranged from 6.8% to 21.9%, respectively; Mexicans became the largest consumer of processed foods in Latin America and the fourth largest worldwide (BBVA Research, 2019; Esposito, 2020; INEGI, 2016; National Administrative Department of Statistics of Colombia [DANE], 2018; RADDAR, 2020; WB, 2020b, 2020c).

## 3.2 | Research design

This work used a mixed research design (Brown et al., 2018): a descriptive cross-sectional study to collect primary information and literature and secondary information search in official databases to describe the similarities in the legislation regarding the labeling of ultra-processed food products and beverages in the region of study, as well as the challenges they had to face in addressing these concerns. We selected these two Latin countries because of their geographical proximity and their cultural and socioeconomic similarities.

## 3.3 | Sampling plan

The target population in the region of study was people between 18 and 69 years old, from different socioeconomic levels drawn from students, professors, administrative staff, and close friends from the universities where the researchers work. As the population size rounded 25,000, we calculated a sample size of 275 per country or 550 consumers (50.0% from Colombia and 50.0% from Mexico) with a degree of confidence of 95%, half-precision of 50%, and margin of error of 4.11 using the formula for finite population (Lopez, 1998). The sample design was non-probabilistic (convenience sampling). The response rate (RR) or number of completed interviews divided by the number of eligible response units in the two samples used was RR: $550/1261 = 0.43$ in the original sample. For the database composed by only Colombians, the RR was $RR = 789/883 = 0.89$ (Brown et al., 2018). This suggests fewer problems of non-response bias, as well as interest among respondents and good questionnaire design. As the survey was administered online, there was no possibility to compensate or give any response incentive to the participants.

## 3.4 | The questionnaire design

We designed a highly structured 16-item questionnaire including a 5-response Likert scale (where 5 is the highest rating), including the following sections attending the specific objectives: (a) consumers' use, easiness to read, and level of knowledge of current labeling on ultra-processed foods and soft drinks; (b) level of knowledge of the population about the new food labeling legislation NOM-051 in the case of Mexico and the Colombian Nutrition Labeling Agreement (AEN by its abbreviation in Spanish); (c) consumers' attitudes toward the benefits of food labeling for specific consumers´ generations; (d) seriousness of the legislation and institutions involved; (e) public affectation on the brand and perception of social responsibility of those companies that are delaying or refusing the adoption of the legislation, as well as their willingness to buy food from those companies that refuse to adopt the new labeling legislation; (4) finally, demographic information of respondents was included. The items were tested using Cronbach's alpha whose value was 0.821. Although the article proposes some constructs (Appendix A1) based on the research proposal, the validation of the survey was done at a general level using Cronbach's alpha. However, the assessment of the statistical adequacy of the constructs was not performed and would be an area for further exploration, given that there are currently no examples of constructs measuring perceptions related to food labeling in the literature. The survey was administered online by Google Forms® during June and July 2020. For a second cluster analysis, a larger Colombian sample of 789 respondents (containing the main sample of 275 respondents) was used to contrast the first comparative results.

## 3.5 | Analysis of data

Using the IBM SPSS® software version 25, we conducted univariate and multivariate techniques (Brown et al., 2018). In the first case, we used frequencies, percentages, media (M), standard deviation (SD), as well as test for two independent samples like Mann–Whitney, analysis of varince (ANOVA), and Chi-Squared to see if there were variances of the respondents by clusters and differences in their demographics in the two countries. Moreover, we used hierarchical cluster analysis as multivariate analysis, with Ward's method of least variance criterion; we included squared distances as a measure of distance for each country, taking the Likert scale variables as a reference. Hierarchical cluster analysis helped us group behaviors and consumer segments within countries, which is essential to understand different behaviors and develop specific policies and communication messages for food label design. We completed the analysis with a dendrogram to define the appropriate number of clusters.

An additional hierarchical cluster analysis was performed to understand if there was different behavior from the clusters we analyzed in the first part of the analysis but for a larger sample of 789 respondents for Colombia.

## 4 | RESULTS

### 4.1 | Descriptive results

Of the total of 550 people grouped from the two countries, the majority were women, and the age groups between 18 and 40 years of age represented more than 80.2%, with a varied level of

education, whose activities were mainly those of employees (43.9%) and students (36.4%); their marital status was mainly single (67.1%), most of them without any economic dependent (61.3%) or one to two economic dependents (31.3%) (Table 3).

On the level of knowledge about today's food labeling on ultra-processed food products and soft drinks, interviewees from both countries are similarly of the opinion that they always read the labels ($M$ 42.5–42.9); their knowledge about reading current labels and how to do so is low ($M$ 2.9–3.1); however, they perceive that performing mathematical operations is not necessary to understand the labels ($M = 2.5$). We think that there is a social response bias in this answer, given that not reading labels correctly and in depth will lead the consumer not to be able to know if they require them to do mathematic operations in order to understand the information. The knowledge of both countries about the different sectors involved in the new legislation is regular ($M = 2.8$–3), and we only found differences between the countries regarding the information presented on the label (whether it shows information concerning excess of sugar, salt,

**TABLE 3** Respondents' demographics in the two countries studied in 2020 (frequencies)

| Variable | Category | Colombia ($N = 275$) | Mexico ($N = 275$) | Total ($N = 550$) | Total (%) |
|---|---|---|---|---|---|
| Gender | Female | 159 | 190 | 349 | 63.5 |
| | Male | 116 | 85 | 201 | 36.5 |
| Ages | 18–20 | 63 | 20 | 83 | 15.1 |
| | 21–30 | 100 | 136 | 236 | 42.9 |
| | 31–40 | 64 | 58 | 122 | 22.2 |
| | 41–50 | 31 | 27 | 58 | 10.5 |
| | 51–69 | 17 | 34 | 51 | 9.3 |
| Education | High school or less | 125 | 64 | 189 | 34.4 |
| | Bachelors | 110 | 132 | 242 | 44.0 |
| | Advanced degree | 40 | 79 | 119 | 21.6 |
| Main activity | House | 2 | 14 | 16 | 2.9 |
| | Student | 103 | 97 | 200 | 36.4 |
| | Employee | 126 | 114 | 240 | 43.6 |
| | Free- lance or retired | 23 | 31 | 54 | 9.8 |
| | Entrepreneur and/or commercial activity | 17 | 11 | 28 | 5.1 |
| | Unemployed | 4 | 8 | 12 | 2.2 |
| Marital status | Single | 181 | 188 | 369 | 67.1 |
| | Married | 78 | 70 | 148 | 26.9 |
| | Unmarried couple | 6 | 10 | 16 | 2.9 |
| | Divorced/widow | 10 | 7 | 17 | 3.1 |
| Number of economic dependents | None | 163 | 174 | 337 | 61.3 |
| | 1–2 | 96 | 76 | 172 | 31.3 |
| | 3–6 | 16 | 25 | 41 | 7.5 |

*Note*: $N$ = size of the sample.

calories, and fats) and the knowledge about the new labeling legislation, which was higher for Mexico (Mann–Whitney Test significance level of 0.006) (Table 4):

As for the new label legislation, seemed that Mexicans know more (33.1%) than Colombians (16.4%) (Mann–Whitney Test significance level of 0.000), even though less than the half (44.7–46.9%) of respondents hardly recognize which institutions participated in the project. To contrast differences among consumer's knowledge attitudes regarding the importance of the benefit of the new food labeling for specific generations of consumers, we found no significant differences between countries: All interviewees agreed that the changes will benefit mainly adults, then the elderly, teenagers, and finally, children. Therefore, the importance of the changes in labeling was rated very positively ($M = 4.3$–$4.4$) (Table 5).

With reference to the perception of the consumers on the importance of the food industry changing its food labeling and/or (must change), 84.7–86.5% "agree- definitely agree" to those questions ($M = 4.3$–$4.4$). However, 69.5–74.2% of the respondents recognize that changes in food labeling do not only concern the food industry. About the potential impact on the brand image of those companies that are delaying the adoption of the legislation, surprisingly, almost half of the interviewees in both countries (54.7%) stated that they would not be willing to buy food from those companies that do not change their food labels (this question has the highest variance), and 81.1% considered that food companies that heed the call of changes in their labels are socially responsible (Table 6).

## 4.2 | Hierarchical cluster analysis

We obtained three different clusters of respondents per country (Table 7): (a) Cluster 1 ($N = 210$) called from now on "committed to knowledge" and constitutes the largest in both countries, more in Mexico (45.8%) than in Colombia (30.6%); (b) with almost the same number of respondents is Cluster 2 ($N = 208$), called "uninformed but concerned," reporting more in

**TABLE 4**  Respondents' level of knowledge about today's food labeling in ultra-processed food and soft drinks (percentages)

| Questions | Colombia ($N = 275$) | | | | | Mexico ($N = 275$) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5–4 | 3–1 | Don't know | *M* | *SD* | 5–4 | 3–1 | Don't know | *M* | *SD* |
| I always read the labels | 42.9 | 57.1 | 0 | 3.1 | 1.3 | 42.5 | 57.5 | 0 | 3.1 | 1.3 |
| I have knowledge about how to read the labels | 41.1 | 55.6 | 3.3 | 2.9 | 1.3 | 44.0 | 54.6 | 1.5 | 3.1 | 1.3 |
| Labels require me to do mathematic operations to understand them | 29.1 | 66.2 | 4.7 | 2.5 | 1.3 | 31.3 | 59.3 | 9.5 | 2.5 | 1.5 |
| Today's labels show "excess" of sugar, salt, calories, and trans or saturated fat[a] | 20.4 | 73.5 | 6.2 | 2.0 | 1.3 | 28.4 | 67.2 | 4.4 | 2.3 | 1.4 |

*Note*: Scale used: Definitely yes = 5; Probably yes = 4; Neutral = 3; Probably not = 2; Definitely not = 1; *N* = size of the sample; *M* = Mean; *SD* = standard deviation.
[a]Significant differences by country using Mann–Whitney *U* Test (significance level = 0.006).

**TABLE 5** Respondents' knowledge and attitudes toward new food labeling benefits for specific consumers' ages (percentages)

| Questions | Colombia (N = 275) | | | | | Mexico (N = 275) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5–4 | 3–1 | Don't know | M | SD | 5–4 | 3–1 | Don't know | M | SD |
| I have knowledge regard the new label legislation[a] | 16.4 | 73.1 | 10.5 | 1.8 | 1.3 | 33.1 | 59 | 8.0 | 2.5 | 1.5 |
| I think changes in labels are important | 79.3 | 20.4 | 0.4 | 4.4 | 1.0 | 78.9 | 19.2 | 1.8 | 4.3 | 1.0 |
| In the new legislation participated the government, academics, scientist, enterprises, and civil associations | 46.9 | 41.9 | 11.3 | 3.0 | 1.6 | 44.7 | 38.6 | 16.7 | 2.8 | 1.7 |
| Changes in food labeling will benefit mainly To the children | 76.7 | 21.1 | 2.2 | 4.0 | 1.2 | 68.4 | 29.1 | 2.5 | 3.8 | 1.3 |
| To teenagers | 74.5 | 24 | 1.5 | 4.0 | 1.1 | 75.3 | 22.5 | 2.2 | 3.9 | 1.2 |
| To adults | 83.6 | 15.3 | 1.1 | 4.1 | 1.0 | 81.5 | 17.1 | 1.5 | 4.1 | 1.1 |
| To elderly | 80.0 | 17.5 | 2.5 | 4.1 | 1.2 | 72.7 | 25.1 | 2.2 | 3.9 | 1.3 |

*Note*: Scale used: Definitely yes = 5; Probably yes = 4; Neutral = 3; Probably not = 2; Definitely not = 1; N = size of the sample; M = Mean; SD = standard deviation.
[a]Significant Differences by country using Mann Whitney U Test (significance level = 0.000).

**TABLE 6** Respondents' opinions concerning the seriousness involved in the call of changing labels for food companies and potential affectation in the brand and social responsibility insight of those companies who are delaying the adoption *(percentages)*

| Questions | Colombia (N = 275) | | | | | Mexico (N = 275) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5–4 | 3–1 | Don't know | M | SD | 5–4 | 3–1 | Don't know | M | SD |
| It is important that the food industry change their nutritional and front labels | 86.5 | 12.3 | 1.1 | 4.4 | 1.0 | 84.7 | 14.2 | 1.1 | 4.3 | 1.0 |
| The food industry must change food labels | 82.5 | 15.3 | 2.2 | 4.3 | 1.1 | 83.3 | 15 | 1.8 | 4.3 | 1.1 |
| Changes in the food labeling concern not only to the food industry | 69.5 | 28.8 | 1.8 | 3.8 | 1.3 | 74.2 | 24.3 | 1.5 | 3.9 | 1.3 |
| I would not be willing to buy food from those companies that do not change their labels | 54.5 | 44.3 | 1.1 | 3.5 | 1.3 | 54.9 | 41.4 | 3.6 | 3.4 | 1.4 |
| Food companies that attend the call of changes in their labels are socially responsible | 83.6 | 15.3 | 1.1 | 4.2 | 1.0 | 78.5 | 20 | 1.5 | 4.1 | 1.2 |

*Note*: Scale used: Definitely yes = 5; Probably yes = 4; Neutral = 3; Probably not = 2; Definitely not = 1; N = size of the sample; M = Mean; SD = standard deviation.

**TABLE 7** Answers using hierarchical cluster analysis for Colombia and Mexico's interviewees (percentages)

| Questions | Type of answer | Cluster 1 Committed with knowledge (N = 210) | | Cluster 2 Uninformed and worried (N = 208) | | Cluster 3 Carefree and uninformed (N = 132) | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | Colombia 30.6% | Mexico 45.8% | Colombia 53.8% | Mexico 21.8% | Colombia 15.6% | Mexico 32.4% |
| I always read labels | 5–4 | 48.8 | 50.0 | 37.8 | 30.0 | 48.8 | 40.4 |
| | 3–1 | 51.2 | 50.0 | 62.2 | 70.0 | 51.2 | 59.6 |
| I know how to read front labels | 5–4 | 47.6 | 50.0 | 37.8 | 33.3 | 39.5 | 42.7 |
| | 3–1 | 51.2 | 49.2 | 56.8 | 65.0 | 60.5 | 55.1 |
| Labels require me to do mathematic operations to understand them | 5–4 | 32.1 | 34.9 | 29.1 | 23.3 | 23.3 | 31.5 |
| | 3–1 | 65.5 | 57.1 | 66.2 | 65.0 | 67.4 | 58.4 |
| Today's labels show the amount of sugar, salt, calories, and trans or saturated fat | 5–4 | 14.3 | 33.3 | 23.6 | 28.3 | 20.9 | 21.3 |
| | 3–1 | 79.8 | 62.7 | 69.6 | 66.7 | 74.4 | 74.2 |
| I have knowledge regard the new label legislation | 5–4 | 20.2 | 34.9 | 16.9 | 25.0 | 7.0 | 36.0 |
| | 3–1 | 70.2 | 58.7 | 70.9 | 65.0 | 86.0 | 55.1 |
| In the new legislation participated the government, academics, scientist, enterprises, and civil associations | 5–4 | 50.0 | 53.2 | 45.3 | 30.0 | 46.5 | 42.7 |
| | 3–1 | 40.5 | 29.4 | 42.6 | 53.3 | 41.9 | 41.6 |
| I think the changes in the labels are important | 5–4 | 78.6 | 83.3 | 79.7 | 75.0 | 79.1 | 75.3 |
| | 3–1 | 20.2 | 15.9 | 20.3 | 25.0 | 20.9 | 20.2 |
| Changes in labels will benefit children | 5–4 | 72.6 | 75.4 | 79.1 | 66.7 | 76.7 | 59.6 |
| | 3–1 | 25.0 | 23.0 | 18.2 | 33.3 | 23.3 | 34.8 |
| Changes in labels will benefit teenagers | 5–4 | 73.8 | 78.6 | 78.4 | 76.7 | 62.8 | 69.7 |
| | 3–1 | 23.8 | 20.6 | 20.9 | 23.3 | 34.9 | 24.7 |

(Continues)

**TABLE 7**  (Continued)

| Questions | Type of answer | Cluster 1 Committed with knowledge (N = 210) | | Cluster 2 Uninformed and worried (N = 208) | | Cluster 3 Carefree and uninformed (N = 132) | |
| | | Colombia 30.6% | Mexico 45.8% | Colombia 53.8% | Mexico 21.8% | Colombia 15.6% | Mexico 32.4% |
|---|---|---|---|---|---|---|---|
| Change in labels will benefit young adults | 5–4 | 82.1 | 85.7 | 85.8 | 86.7 | 79.1 | 71.9 |
| | 3–1 | 16.7 | 13.5 | 12.8 | 13.3 | 20.9 | 24.7 |
| Change in labels will benefit the elderly | 5–4 | 78.6 | 78.6 | 81.1 | 76.7 | 79.1 | 61.8 |
| | 3–1 | 16.7 | 20.6 | 16.9 | 23.3 | 20.9 | 32.6 |
| It is important that the food industry change their nutritional and front labels | 5–4 | 85.7 | 87.3 | 85.8 | 86.7 | 90.7 | 79.8 |
| | 3–1 | 13.1 | 12.7 | 12.8 | 13.3 | 9.3 | 16.9 |
| The food industry must change food labels | 5–4 | 82.1 | 84.9 | 81.1 | 81.7 | 88.4 | 82.0 |
| | 3–1 | 14.3 | 13.5 | 16.9 | 18.3 | 11.6 | 14.6 |
| Changes in the food labeling concern not only to the food industry | 5–4 | 67.9 | 76.2 | 69.6 | 61.7 | 72.1 | 79.8 |
| | 3–1 | 31.0 | 23.8 | 27.7 | 35.0 | 27.9 | 18.0 |
| I would not be willing to buy food from those companies that do not change their labels | 5–4 | 46.4 | 61.1 | 54.1 | 43.3 | 72.1 | 53.9 |
| | 3–1 | 52.4 | 34.9 | 44.6 | 55.0 | 27.9 | 41.6 |
| Food companies that attend the call of changes in their labels are socially responsible | 5–4 | 79.8 | 83.3 | 83.1 | 78.3 | 93.0 | 71.9 |
| | 3–1 | 19.0 | 15.9 | 15.5 | 21.7 | 7.0 | 24.7 |

*Note*: Definitely yes = 5; Probably yes = 4; Neutral = 3; Probably not = 2; Definitely not = 1; N = size of the sample.

Colombia (53.7%) than in Mexico (21.8); (c) Cluster 3 (N = 132), called "unconcerned and uninformed" reporting more Mexicans (32.4%) than Colombians (15.6%).

The first cluster is characterized by the fact that people in both countries read labels more, know more about understanding labels, and consider necessary a change in labeling; they also think that the change in labeling will benefit all members of society and that changes in labels are not only the responsibility of the industry; this cluster considers stopping buying from companies that do not change their labeling. Interestingly, this cluster is not very aware of the change in legislation in any of the countries under study.

The second cluster shows respondents who experience a low level of information about labeling and labeling regulation but consider that a change in labeling is necessary and will benefit different members of society.

The third cluster includes people who have lower levels of information and awareness about labeling and also show little concern about the issue compared to the first two clusters. According to the ANOVA tests, all variables were significant ($P$ value < 0.05) in explaining the differences among clusters, except for question four in the case of Mexico (front labeling of ultra-processed foods and soft drinks shows "excess" sugar, salt, calories, and saturated and trans fats).

Additional comparisons among the country clusters showed that in Cluster 1, Colombians compared to Mexicans require less mathematical operations to understand labels; also, Colombians perceive that, as of the change in legislation, probably not—definitely not—front labels show warning texts and that the change in labeling legislation should include all the actors involved. Colombians in this cluster will stop buying from companies that do not change labeling, unlike Mexicans.

In Cluster 2, Colombians will stop buying from companies that do not change their labels and are more optimistic about the participation of all the stakeholders in the change in legislation, unlike Mexicans.

In contrast to Mexicans, Colombians belonging to Cluster 3 have similar perceptions of the mathematical operations to understand labels; they are also less aware of the change in the law and will stop buying from companies that do not change their labels; however, Colombians are more convinced of the benefits that label change brings for children and the elderly.

As for the perceptions of companies and brands, the three consumer clusters showed high averages in their intention to stop buying food from those companies that do not change their labels (interestingly, the "unconcerned" cluster shows a high proportion on this issue, in both countries as well). Companies that change labels are considered by all three clusters to be committed to society and agree on the need to change labels, specifically the front ones.

In the cluster analysis, the "I do not know" responses were shallow, except for queries related to mathematical calculations (with an average of 10.0% for Mexico and 5.0% for Colombia) and on the change in legislation (8.0% average in Mexico and 10.0% in Colombia).

Regarding demographics, we used Chi-Square to find out if there were differences among the clusters of the countries, according to their demographic profiles, but we only found significant differences for education level (0.023) and age range (0.008) for Mexicans between clusters (Table 8). In Mexico, all groups have more female than male respondents; in Colombia, only in Cluster 3 does the opposite occur. In terms of educational level, Clusters 1 and 3 showed the highest educational level, while individuals in Cluster 2 have only high school education. In the case of Mexico, Clusters 1 and 3 had mostly employees, while Cluster 2 had mostly students. In Colombia, all three clusters had mostly employees. In terms of marital status, both countries show a high percentage of single people in all three Clusters. Meanwhile, Cluster 3 has the youngest people in the sample and reported the highest percentage of people with no economic dependence.

## 4.3 | Additional cluster analysis

When analyzing an expanded sample of 789 participants, the three main clusters found in the previous chapter reappeared and were significant in the ANOVA test for all the questions in the

**TABLE 8** Demographic differences using hierarchical cluster analysis in Colombia and Mexico (percentages)

| Variable | Category | Cluster 1 Committed with knowledge (N = 210) | | Cluster 2 Uninformed and worried (N = 208) | | Cluster 3 Carefree and uninformed (N = 132) | |
|---|---|---|---|---|---|---|---|
| | | Colombia 30.6% | Mexico 45.8% | Colombia 53.8% | Mexico 21.8% | Colombia 15.6% | Mexico 32.4% |
| Gender | Female | 61.9 | 68.3 | 48.8 | 73.0 | 58.1 | 65.0 |
| | Male | 38.1 | 31.7 | 51.2 | 27.0 | 41.9 | 35.0 |
| Education | High school | 39.0 | 20.0 | 42.0 | 19.0 | 50.0 | 37.0 |
| | Bachelor, master, PhD | 61.0 | 80.0 | 58.0 | 81.0 | 50.0 | 63.0 |
| Occupation | Student | 33.0 | 30.0 | 30.0 | 36.0 | 42.0 | 45.0 |
| | Employee | 49.0 | 48.0 | 47.0 | 37.0 | 44.0 | 35.0 |
| | Self-employed | 10.0 | 10.0 | 14.0 | 13.0 | 5.0 | 7.0 |
| Marital status | Single | 64.0 | 65.0 | 65.0 | 64.0 | 67.0 | 82.0 |
| | Married | 33.0 | 28.0 | 28.0 | 29.0 | 26.0 | 15.0 |
| Age range | 18–27 | 46.0 | 44.0 | 40.0 | 44.0 | 53.0 | 72.0 |
| | 28–37 | 30.0 | 27.0 | 35.0 | 25.0 | 24.0 | 17.0 |
| | 38–47 | 11.0 | 17.0 | 9.0 | 9.0 | 16.0 | 5.0 |
| Number of economic dependents | 0 | 57.0 | 60.0 | 65.0 | 60.0 | 59.0 | 77.0 |
| | 1–3 | 43.0 | 38.0 | 35.0 | 35.0 | 40.0 | 22.0 |

*Note*: N = size of the sample.

survey. The percentages of the clusters were different: committed to knowledge are 44.0% (30.5% in the smaller database), uninformed and concerned are 49.0% (53.8% in the former sample), and unconcerned and uninformed are 7.0% (15.6% in the former sample).

Compared to the original sample, the expanded sample from Colombia shows similar percentages, but the percentages of agreement are above the original sample in the case of the committed (between 3.0% and 22.0%) and below the original sample in the case of the unconcerned (a high two-digit difference in most questions). In the case of the concerned, the expanded sample shows lower than average and low agreement values (less than 10.0%) compared to the original sample (Table 9). The expanded sample not only increases the percentage of concerned and informed but also increases their agreement values and lowers the percentage of uninformed, increasing their level of disagreement with the questions. In the case of the concerned, the expanded sample decreases the level of agreement.

In this expanded version of the sample, only gender shows significant differences, meaning that there are more women in the concerned and committed clusters and more men in the unconcerned clusters (Table 10). Compared to the original sample, the expanded sample is very similar to the case of the committed sample, only with a higher proportion of employees. In the case of the concerned cluster, there is a higher percentage of women, lower percentage of employees, and a younger age range with lower economic dependence. In the case of the unconcerned cluster, there is a higher percentage of men, employees, and singles.

**TABLE 9**   Answers using hierarchical cluster analysis for Colombia, extended sample, and comparison with original sample (percentages)

| Questions | Type of answer | Cluster 1 Committed with knowledge (N = 348) 44,10% | Cluster 2 Uninformed and worried (N = 386) 48,90% | Cluster 3 Carefree and uninformed (N = 55) 7% | Difference between extended (789) and original database (275) in terms of percentages | | |
|---|---|---|---|---|---|---|---|
| | | | | | Cluster 1 | Cluster 2 | Cluster 3 |
| I always read labels | 5–4 | 60% | 33% | 15% | 11% | −5% | −34% |
| | 3–1 | 40% | 67% | 85% | −11% | 5% | 34% |
| I know how to read front labels | 5–4 | 50% | 39% | 24% | 3% | 2% | −16% |
| | 3–1 | 49% | 58% | 71% | −2% | 1% | 10% |
| Labels require me to do mathematic operations to understand them | 5–4 | 42% | 25% | 4% | 10% | −4% | −20% |
| | 3–1 | 57% | 66% | 85% | −9% | 0% | 18% |
| Today's labels show the amount of sugar, salt, calories, and trans or saturated fat | 5–4 | 27% | 15% | 20% | 13% | −8% | −1% |
| | 3–1 | 69% | 79% | 60% | −11% | 9% | −14% |
| I have knowledge regard the new label legislation | 5–4 | 98% | 76% | 9% | 7% | −5% | −2% |
| | 3–1 | 2% | 23% | 78% | −3% | 6% | −6% |
| In the new legislation participated the government, academics, scientist, enterprises, and civil associations | 5–4 | 95% | 69% | 13% | 13% | −6% | −34% |
| | 3–1 | 5% | 30% | 56% | −6% | 2% | 16% |
| I think the changes in the labels are important | 5–4 | 95% | 69% | 4% | 19% | −4% | −70% |
| | 3–1 | 5% | 30% | 73% | −18% | 3% | 57% |
| Changes in labels will benefit children | 5–4 | 98% | 77% | 24% | 22% | −10% | −64% |
| | 3–1 | 2% | 22% | 58% | −20% | 12% | 33% |
| Changes in labels will benefit teenagers | 5–4 | 97% | 74% | 15% | 21% | −9% | −59% |
| | 3–1 | 3% | 25% | 62% | −19% | 9% | 38% |
| Change in labels will benefit adults | 5–4 | 99% | 85% | 11% | 16% | −8% | −55% |
| | 3–1 | 1% | 15% | 73% | −15% | 9% | 37% |

(Continues)

**TABLE 9** (Continued)

| Questions | Type of answer | Cluster 1 Committed with knowledge (N = 348) 44,10% | Cluster 2 Uninformed and worried (N = 386) 48,90% | Cluster 3 Carefree and uninformed (N = 55) 7% | Difference between extended (789) and original database (275) in terms of percentages | | |
|---|---|---|---|---|---|---|---|
| | | | | | Cluster 1 | Cluster 2 | Cluster 3 |
| Change in labels will benefit older person | 5–4 | 28% | 12% | 5% | 18% | −7% | −65% |
| | 3–1 | 67% | 77% | 80% | −14% | 8% | 41% |
| It is important that the food industry change their nutritional and front labels | 5–4 | 63% | 39% | 13% | 13% | −1% | −80% |
| | 3–1 | 34% | 45% | 58% | −12% | 2% | 63% |
| The food industry must change food labels | 5–4 | 96% | 80% | 11% | 14% | −1% | −77% |
| | 3–1 | 3% | 18% | 58% | −11% | 1% | 47% |
| Changes in the food labeling concern not only to the food industry | 5–4 | 87% | 58% | 31% | 19% | −11% | −41% |
| | 3–1 | 12% | 37% | 56% | −19% | 9% | 28% |
| I would not be willing to buy food from those companies that do not change their labels | 5–4 | 71% | 50% | 13% | 25% | −4% | −59% |
| | 3–1 | 28% | 48% | 73% | −24% | 4% | 45% |
| Food companies that attend the call of changes in their labels are socially responsible | 5–4 | 93% | 81% | 31% | 13% | −3% | −62% |
| | 3–1 | 7% | 19% | 51% | −12% | 3% | 44% |

*Note*: N = size of the sample.

MAYETT-MORENO AND SABOGAL-SALAMANCA

Business and
Society Review

Journal of the W. Michael Hoffman
Center for Business Ethics at
Bentley University

WILEY 23

**TABLE 10** Demographic differences using hierarchical cluster analysis: Original sample versus extended sample for Colombia (percentages)

| Variable | Category | Cluster 1 Committed with knowledge | | Cluster 2 Uninformed and worried | | Cluster 3 Carefree and uninformed | |
|---|---|---|---|---|---|---|---|
| | | Original | Extended | Original | Extended | Original | Extended |
| Gender | Female | 61.9 | 60.9 | 48.8 | 52.1 | 58.1 | 40.0 |
| | Male | 38.1 | 39.1 | 51.2 | 47.9 | 41.9 | 60.0 |
| Education | High school | 39.0 | 38.0 | 42.0 | 47.2 | 50.0 | 52.7 |
| | Bachelor, master, PhD | 61.0 | 61.8 | 58.0 | 52.1 | 50.0 | 47.3 |
| Occupation | Student | 33.0 | 30.0 | 30.0 | 39.0 | 42.0 | 35.0 |
| | Employee | 49.0 | 58.0 | 47.0 | 48.0 | 44.0 | 53.0 |
| | Self-employed | 10.0 | 10.0 | 14.0 | 8.0 | 5.0 | 5.0 |
| Marital status | Single | 64.0 | 62.0 | 65.0 | 68.0 | 67.0 | 73.0 |
| | Married | 33.0 | 25.0 | 28.0 | 20.0 | 26.0 | 16.0 |
| Age range | 18–27 | 46.0 | 45.0 | 40.0 | 54.0 | 53.0 | 51.0 |
| | 28–37 | 30.0 | 29.0 | 35.0 | 25.0 | 24.0 | 35.0 |
| | 38–47 | 11.0 | 19.0 | 9.0 | 16.0 | 16.0 | 7.0 |
| Number of economic dependents | 0 | 57.0 | 55.0 | 65.0 | 61.0 | 59.0 | 58.0 |
| | 1–3 | 43.0 | 45.0 | 35.0 | 39.0 | 40.0 | 42.0 |

# 5 | DISCUSSION

## 5.1 | Regarding the specific objectives

On the level of knowledge about previous labeling of ultra-processed foods and soft drinks among countries, the findings suggest that there is mostly unawareness, misunderstanding, and misuse. When labeling requires mathematical calculations, it can be difficult to assess their content or nutritional value, as any quantitative task represents a barrier which had been reported in other countries (Dumoitier et al., 2019). If respondents recognize that their knowledge of the new labeling legislation is low, they barely identify who has been involved in its development. In our research different stages of awareness of labels legislation by countries were found: those interviewees committed with knowledge (Cluster 1) in Mexico, and uninformed and concerned (Cluster 2) in Colombia, those disparities may be due to the different stages in the implementation of the labeling law. The media and advertising coverage at the time of the survey, indicates that those foundational efforts has been somewhat useful. Currently, there is a law to be implemented in both countries; at the time of the survey, Colombia was still working on a law project with the intention of a new resolution, with possibly less press devoted to the issue. The unconcerned and uninformed group (Cluster 3) is more prominent in Mexico than in Colombia. This could show that there are still Mexicans who are either apathetic about the legislation (even though this country faces such high rates of diabetes, obesity, and overweight) or

who experience some physical or psychological dependence/addiction to sugar, salt, trans fat, or other ultra-processed foods and soft drinks.

The cluster analysis performed for both countries found three main clusters with similarities among them. An additional analysis performed for an expanded sample found a similar cluster configuration. The only difference is that with a larger sample, the percentage of committed increases, and the percentage of unconcerned and uninformed decreases. The level of agreement for the committed increases, for the concerned slightly decreases, and for unconcerned, the level of disagreement increases. This could indicate that the larger sample size makes the cluster more different from each other and presents a more accurate participation of those in the population.

The study was unable to find significant demographic differences among clusters on most variables for both the original and expanded sample (age, city, educational level, occupation, number of dependents). Even with the sampling limitation of both countries, the cluster analysis found gender differences among clusters. Considering these data and the former conclusions on cluster size, it could be propounding that the government intensifies its efforts to educate through advertising campaigns designed to address these differences and cluster characteristics.

To contrast the differences among consumer attitudes regarding the benefits of the new food labeling for specific generations of consumers by country, on average, citizens in both countries agree that the change in labeling legislation is significant (79.1%) and that it would benefit all generations, mainly adults, seniors, teenagers, and children. This answer could be biased due to its demographic profile, as we sampled mainly young adults aged 21–40, single, without children. This is comprehensible, as the benefits of changing labels now will be seen when today's children and teenagers become adults (just as today we are experiencing the benefits in the adoption of the non-smoking legislation 20 years ago).

These results are consistent with objective "e," where most of the interviewees (85.6%) "agree and definitely agree" that it is not only essential but mandatory to change food labels. This could have a potential impact on the brand image of those companies that are delaying the adoption in both countries, as almost half of interviewees in both countries (54.7%) stated that they would not be willing to buy food from those companies that do not comply with label legislation.

Regarding legislative efforts on the labeling of ultra-processed foods and soft drinks in Colombia and Mexico, at the time of the study, we observed delays in the adoption of the food labeling legislation in Colombia attributable to the government and rejections referable to food industries in Mexico, such as the largest Mexican bakery Grupo Bimbo, along with foreign countries such as Switzerland, the United States, Canada, and some countries of the European Union (home of major multi-national food corporations). It was interesting to note how in the home countries of some food manufacturing companies, such as Coca Cola Co, PepsiCo Inc, and Nestle, labeling legislation has made significant progress, and perhaps these companies are taking care of it. Unfortunately, in developing countries, they seem to try to avoid them. Some of these companies in Mexico even in 2020 obtained recognition as Socially Responsible Companies (cemefi.org), which is completely contradictory.

Food industries that act and comply with the legislation will be seen as socially responsible, balancing the interests of companies and society. Under the COVID-19 conditions worldwide, deceptive practices in the food industry damage companies' brands in the long term. Brands are fundamental to the relationship between companies and customers; they represent consumers' perceptions and feelings about a product and its performance and are the company's main enduring asset (Kotler & Armstrong, 2019). The same authors state that brands provide many

competitive advantages, awareness, and loyalty when they are built on positive brand equity based on relevance (how consumers feel it meets their needs) and esteem (how consumers regard and respect the brand), between differentiation and knowledge. In addition, profitable relationships with the customers are based on value and trust: If customers feel they have been cheated, they may switch to other products, which ultimately affects the company's reputation, brand equity, and profitability. Nowadays, consumers can avoid buying from such companies and can use word-of-mouth communication in order to prevent the same thing from happening to other consumers in the future.

Recalling that in a COVID-19 context, nutrition labels are considered public health tools because they assist consumers in differentiating healthy food alternatives and make better-informed choices. Today, everything that helps patients improve their nutritional status, enhance their immune system, or overcome from COVID-19 are best practices against this illness. It becomes imperative to correct people's nutritional status as obesity is an adverse prognostic risk factor in this disease progression, and diabetes is associated with an increased risk of severe COVID-19.

What stands out is the respondents' systemic perspective that changes in food labeling do not only concern the food industry. As a multi-causal challenge, it has to be solved by many actors and disciplines at national and global levels. The primary responsibility for food labeling is not limited to food producers and sellers. A more integrated inspection system would be needed, with authorities working closely together, sharing up-to-date information and coordinating with other actors (public, private, national, and international) as it has been established (MMH, 2010, 2017, 2019, 2020). These results highlight the importance of enhancing efforts among society, academics, politicians, and the food industry to continue these attempts, particularly in this COVID-19 scene. We acknowledge those food companies that have started to change their labels, and we trust that the rest of them (some of the large food industries) will engage to this endeavor as established by the Institutionalism theory.

## 5.2 | Limitations

This research was exploratory and aimed at generating insights on the subject; respondents were chosen by convenience and the size of the sample was small, so it does not represent the target population in both countries under study.

Future studies should increase the size of the sample and use a stratified probability sample (dividing the population into mutually exclusive and exhaustive subsets by age, gender, educational level, geographic area, and country), to ensure adequate representation of each subgroup of interest (Brown et al., 2018): This is especially important given the evidence that specific demographic characteristics of persons may lead to increased participation in sustainable food activities (Griffin & Sobal, 2013) or vulnerability to advertising of unhealthy food options (Reisch et al., 2013). Besides, the survey design and the statistical adequacy of the constructs should be performed.

## 5.3 | Recommendations

When addressing the lack of knowledge and greater involvement in public policy, education plays a vital role in influencing consumer attitudes and behavior through branding and labeling

under today's COVID-19 surroundings (Marcini et al., 2017). However, education should be only one part of a broader set of policies needed to advance obesity prevention, with the great importance of food labeling (Magnusson, 2010). In addition, consumers at early ages are vulnerable (as is the case of children) and more sensitive to brand image (Cavazos et al., 2014; Consumers International, 2002), and regulations to tackle the obesity epidemic are designed to address the entire population: children under 14 years of age to prevent; in teenagers and adults, to curb; and in the case of those with diabetes to slow down their illness condition (Correa et al., 2019; MMH, 2010).

In adulthood, we are supposed to decide reasonably. Nevertheless, it becomes relevant to move on to self-regulate our consumption. Although this is a challenging endeavor, we are responsible for becoming proactive rather than passive agents who are vulnerable to advertising or blame the marketing and food industries for our situation. We should also engage in public and private networks using the power of word-of-mouth and other civic actions with accurate information.

Innovation and opportunities for food manufacturers arise for new food products and soft drinks particularly in this pandemic circumstances. However, although it requires expenditure (Kušar et al., 2021), the return of investment could become profitable in the medium term as a way to diversify in this sector. Söderlund et al. (2020) found that consumers may prefer reformulated products; front labeling can induce product reformulation and influence manufacturers to reduce sugar, trans fat, and sodium, which would improve population health, even with no (or little) change in consumer behaviors; therefore, warning labels could be a powerful incentive to reformulate foods if they want to become market leaders. Li et al. (2021) stated that voluntary shelf nutrition labels and similar front-of-pack nutrition labels positively influence food purchasing patterns; companies should participate in this effort to promote their reputation as honest enterprises that are committed with the population. Another business opportunity might be investing in public fountains, construction, distribution, maintenance, and all the financing involved in setting up public access to drinkable, potable water in all public places (schools, airports, bus stations, streets, among others).

Federal resources could be placed in advertising as part of the COVID-19 communication strategies, to increase consumer awareness through communication on social media and websites. There have been low presence of the new nutrition labeling in massive media and the absence of a comprehensive public plan along preventive measures such as a healthy diet, physical activity, and the lack of governance for a healthy food environment, which also occurs in other countries. So it is outstanding to strengthen governance for a healthy food environment to improve the program. It is also recommended to evaluate the effect of the policy and public perception of the labels, their application, and its benefits under the COVID-19 circumstances (Edalati et al., 2020).

## 5.4 | Further research

Recent legislation in both countries excludes the un-packed "bulk" sale of candies, chocolate, cookies, bread, cakes, pizza, restaurant food due to the larger portions they offer (Dumoitier et al., 2019), and others available in all movie theaters, supermarkets, shopping malls, and ice cream parlors. There is no visual warning at the point of sale. Furthermore, sponsorship and advertising on cups where restaurants and movie theaters sell combos include images of recent movie characters promoting their personalities. People (especially children) take them home,

exposing the cartoons, images, and brands to children and family members on a daily basis (Cavazos et al., 2014; Consumers International, 2002).

Despite the fact that laws regarding mass media advertising have been enacted since 1988, regulatory agencies remain ineffective, and no supervisory or punitive measures have been adopted (frequency of exposure, content, and schedules on TV, cable, and internet). Now we experience overexposure in cable ads related to overeating fast food, large portions associated with happiness, and the participation of celebrities, pop stars, characters, or personalities from children's programs that promote foods high in sugar, salt, and saturated fats. In addition, it would be urgent to regulate specific channels whose target audience is children, since it has become a paradise for this type of advertising (Cavazos et al., 2014). The internet will constitute a specific challenge, as it is hard to monitor and regulate exposure to international advertising; however, it would be another relevant and related topic to study, as children and teenagers have access to the network at an early age.

## ORCID

*Yesica Mayett-Moreno* https://orcid.org/0000-0002-7585-6060
*Mauricio Sabogal-Salamanca* https://orcid.org/0000-0002-2633-731X

## REFERENCES

Acosta, O., Azuero, F., & Concha, T. (2017). El ingreso y su distribución en Colombia. In *Hogares o empresas: ¿quién debe tributar?* Comisión Económica para América Latina y el Caribe (CEPAL). Retrieved from CEPAL website: https://repositorio.cepal.org/bitstream/handle/11362/43129/1/S1701024_es.pdf

Adams, R. (2019). A retrospective look at the common sense nutrition disclosure act: Small business lifeline or an impediment to informed consumer decision making? *Business and Society Review*, *124*, 515–522. https://doi.org/10.1111/basr.12189

Ávila, A. (2020). La batalla épica por el etiquetado de advertencia. In *Del Campo La batalla por nuestro derecho a saber*. La Jornada. Retrieved from https://www.jornada.com.mx/2020/02/15/delcampo/delcampo149.pdf

Barquera, S., Nieto, C., & Cruz, C. (2020). Una perspectiva académica. In *Del Campo La batalla por nuestro derecho a saber*. La Jornada. Retrieved from https://www.jornada.com.mx/2020/02/15/delcampo/delcampo149.pdf

BBVA Research. (2019). Perfilamiento del Consumidor Colombiano 2019. Retrieved from https://www.bbvaresearch.com/wp-content/uploads/2019/04/SituacionConsumo.pdf

Bogota Chamber of Commerce. (2018). Colombia: Sellos octagonales son erradicados de ley contra comida chatarra. Retrieved from Cámara de Comercio de Bogotá website: https://www.ccb.org.co/Clusters/Cluster-de-Salud-de-Bogota/Noticias/2018/Julio-2018/Colombia-Sellos-octagonales-son-erradicados-de-ley-contra-comida-chatarra

Brown, T. J., Suter, T. A., & Churchill, G. A. (2018). *Basic Marketing Research*. Cengage.

Caicedo, L. (2020). Etiquetado en Comida Chatarra da un paso más en el congreso. *Caracol Radio*. Retrieved from https://caracol.com.co/radio/2020/06/11/politica/1591858697_756818.html

Cavazos, J., Gaeta, M. L., & López-Calva, M. (2014). *Educando la autorregulación del consumo en la infancia: PEM Problemas Educativos de México*. Colección- UPAEP- M.A. Porrúa.

Colombian Ministry of Health. (2015). Frutas y verduras: Salud, desarrollo productivo, competitividad, innovación, paz. Retrieved from Ministerio de Salud website: http://www.asohofrucol.com.co/archivos/biblioteca/Frutas_Hortalizas_marco_para_paz_apuesta_para_la_competitividad.pdf

Colombian Ministry of Health. (2019). Informe global del proceso de consulta pública de la definición del problema del Análisis de Impacto Normativo en la temática de etiquetado nutricional y frontal en Colombia. Retrieved from Ministerio de Salud website: https://www.minsalud.gov.co/Normativa/PublishingImages/Paginas/analisis-de-impacto-normativo/Respuesta%20problema%20etiquetado%20nutricional%20y%20frontal.pdf

Colombian Ministry of Health. (2020a). Personas con Diabetes, Hipertensión y otras Enfermedades de Base Deben Quedarse en Casa. Retrieved from Ministerio de Salud website: https://www.minsalud.gov.co/Paginas/Personas-con-diabetes-hipertension-y-otras-enfermedades-de-base-deben-quedarse-en-casa.aspx

Colombian Ministry of Health. (2020b). Colombia tendrá etiquetado nutricional en los alimentos envasados. Retrieved from Ministerio de Salud website: https://www.minsalud.gov.co/Paginas/Colombia-tendra-etiquetado-nutricional-en-los-alimentos-envasados.aspx

Colombian Ministry of Health. (2020c). Análisis de Impacto Normativo en la temática de etiquetado nutricional y frontal de los alimentos envasados en Colombia. Retrieved from Ministerio de Salud website: http://www.fenalco.com.co/gesti%C3%B3n-jur%C3%ADdica/minsalud-publica-an%C3%A1lisis-de-impacto-normativo-relacionado-con-el-etiquetado-0

Colombian Ministry of Health. (2021): Resolución Número 810 de 2021. Retrieved from Ministerio de Salud website: https://www.minsalud.gov.co/Normatividad_Nuevo/Resoluci%C3%B3n%20No.%20810de%202021.pdf

Colombian Ministry of Health, & FAO. (2013). Perfil Nacional de Consumo de Frutas y Verduras. Retrieved from Ministerio de Salud website: https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/PP/SNA/perfil-nacional-consumo-frutas-y-verduras-colombia-2013.pdf (accessed on 23 July 2020).

Colombian Social Protection Ministry. (2005). Resolución 5109 de 2005. Retrieved from https://scj.gov.co/sites/default/files/marco-legal/resolucion_005109_2005%20%281%29.pdf

Colombian Social Protection Ministry. (2011). Resolución 333 de 2011, Por la cual se establece el reglamento técnico sobre los requisitos de rotulado o etiquetado nutricional que deben cumplir los alimentos envasados para consumo humano. Retrieved from https://docs.supersalud.gov.co/PortalWeb/Juridica/OtraNormativa/R_MPS_0333_2011.pdf

Colombian Social Protection Ministry. (2016). Resolución 3803, por la cual se establecen recomendaciones de Ingesta de Energía y Nutrientes para la población colombiana. Retrieved from https://www.minsalud.gov.co/Normatividad_Nuevo/Resoluci%C3%B3n%203803%20de%202016.pdf

Congress of Colombia. (2019). Proyecto de Ley 167: "Por medio de la cual se adoptan medidas para fomentar entornos alimentarios saludables y prevenir enfermedades no transmisibles y se adoptan otras disposiciones" (entornos alimentarios saludables). Retrieved from https://www.camara.gov.co/entornos-alimentarios

Consumers International. (2002). The junk food generation. A multi-country survey of the influence of television advertisements on children. *Consumers International.*. Retrieved from https://pdfs.semanticscholar.org/37a9/ab398f53ef8298da6e57e92ca622e0b2d155.pdf?_ga=2.230702815.1156481643.1597852079-2001822574.1597852079

Correa, T., Fierro, C., Reyes, M., Dillman Carpentier, F. R., Taillie, L. S., & Corvalan, C. (2019). Responses to the Chilean law of food labeling and advertising: Exploring knowledge, perceptions and behaviors of mothers of young children. *International Journal of Behavioral Nutrition and Physical Activity*, *21*(16). https://doi.org/10.1186/s12966-019-0781-x

Cuestión Pública. (2019). Así fue el lobby en el Congreso contra la Ley de Etiquetado. Cuestión Pública. Retrieved from https://cuestionpublica.com/ley-etiquetado-colombia-lobby/

Currea, A. (2021). A través de la Ley ́Comida Chatarrá el Senado de la República legisla en favor de la salud y la vida de los colombianos. In *Senado de la República*. Senado de la República. Retrieved from http://www.senado.gov.co/index.php/prensa/noticias/2757-a-traves-de-la-ley-comida-chatarra-el-senado-de-la-republica-legisla-en-favor-de-la-salud-y-la-vida-de-los-colombianos

Cuschieria, S., & Grechb, S. (2020). COVID-19 and diabetes: The why, the what and the how. *Journal of Diabetes and its Complications*, *9*(34), 107637. https://www.sciencedirect.com/science/article/abs/pii/S1056872720303962, https://doi.org/10.1016/j.jdiacomp.2020.107637

Daft, R. L. (2019). *Teoría y diseño organizacional*. Cengage learning.

Dejusticia. (2020). Informe del Centro de Derecho, Justicia y Sociedad –Dejusticia- por Requerimiento de Auto de 11 de marzo de 2020. Retrieved from https://www.dejusticia.org/wp-content/uploads/2020/07/Dejusticia-Informe-etiquetado-Rad.-25000-2341-000-2019-01063-00-Sin-firmas.pdf

Dumoitier, A., Abbo, V., Neuhofer, Z. T., & McFadden, B. R. (2019). A review of nutrition labeling and food choice in the United States. *Obesity Science and Practice*, *5*(6), 581–591. https://doi.org/10.1002/osp4.374

Edalati, S., Omidvar, N., Haghighian Roudsari, A., Ghodsi, D., & Zargaraan, A. (2020). Development and implementation of nutrition labelling in Iran: A retrospective policy analysis. *The International Journal of Health Planning and Management*, *35*, e28, e44–e44. https://doi.org/10.1002/hpm.2924

MAYETT-MORENO AND SABOGAL-SALAMANCA

Business and
Society Review

Journal of the W. Michael Hoffman
Center for Business Ethics at
Bentley University

WILEY | 29

El Espectador. (2019). Se hundió el proyecto de ley que pedía etiquetas más claras en comida chatarra. Retrieved from https://www.elespectador.com/noticias/salud/se-hundio-el-proyecto-de-ley-que-pedia-etiquetas-mas-claras-en-comida-chatarra/

El Tiempo. (2020a). La edad y estas enfermedades aumentan el riesgo de morir por covid-19. Retrieved from https://www.eltiempo.com/salud/coronavirus-colombia-hoy-estas-son-las-enfermedades-ligadas-a-las-muertes-por-covid-19-518600

El Tiempo. (2020b). Así serían sellos de advertencia para comida alta en azúcares o grasas. Retrieved from https://www.eltiempo.com/salud/sellos-de-advertencia-para-comida-chatarra-en-colombia-resolucion-del-ministerio-de-salud-466458

El Tiempo. (2021). El Nuevo "Round" por el Etiquetado de Alimentos. Retrieved from https://www.eltiempo.com/vida/familia/etiquetado-de-alimentos-criticas-a-resolucion-810-del-ministerio-de-salud-599028

Esposito, A. (2020). Mexico's new warning labels on junk food meet supersized opposition from U.S., EU. *The New York Times*. Retrieved from https://www.nytimes.com/reuters/2020/08/11/world/americas/11reuters-mexico-health.html. accessed on 12 August 2020.

Griffin, M., & Sobal, J. (2013). Sustainable food activities among consumers: A community study. *Journal of Hunger & Environmental Nutrition*, *8*, 379–396. https://doi.org/10.1080/19320248.2013.816995

Guarnizo, D., & Narváez, A. (2019). Etiquetas sin derechos. Etiquetado de productos comestibles: un análisis desde los derechos humanos. *Dejusticia Documentos*, *47*, 50. Retrieved from https://www.dejusticia.org/wp-content/uploads/2019/04/Etiquetas-sin-derechos.pdf

Hatch, M. J. (2013). *Organizational Theory*. Oxford University Press.

Headey, D., Heidkamp, R., Osendarp, S., Ruel, M., Scott, N., Black, R., Shekar, M., Bouis, H., Flory, A., Haddad, L. Walker, N. (2020). Impacts of COVID-19 on childhood malnutrition and- related mortality. *The Lancet*. Advance Online Publication, *396*(10250), 519–521. https://doi.org/10.1016/S0140-6736(20)31647-0

Jacobs, A. (2018). In sweeping war on obesity, Chile slays Tony the Tiger. *The New York Times*. Retrieved from https://www.nytimes.com/2018/02/07/health/obesity-chile-sugar-regulations.html

Kotler, P., & Armstrong, G. (2019). *Principios de Marketing*. Pearson.

Kotler, P., & Keller, K. (2016). *Marketing Management*. Pearson. https://doi.org/10.1556/9789630597784

Kušar, A., Žmitek, K., Lähteenmäki, L., Raats, M. M., & Pravst, I. (2021). Comparison of requirements for using health claims on foods in the European Union, the USA, Canada, and Australia/New Zealand. *Comprehensive Reviews in Food Science and Food Safety*, *20*, 1307–1332. https://doi.org/10.1111/1541-4337.12716

Great Lakes Label. (2021). New 2020 (NLEA) Food Label Requirements. Retrieved from https://greatlakeslabel.com/nlea-food-label-requirements/

Li, W., Finkelstein, E. A., & Zhen, C. (2021). Intended and unintended consequences of salient nutrition labels. *American Journal of Agricultural Economics*, *104*, 853–872. https://doi.org/10.1111/ajae.12240

Lopez, A. (1998). *Introducción a la investigación de mercados*. Diana.

Magnusson, R. (2010). Obesity prevention and personal responsibility: the case of front-of-pack food labelling in Australia. *BMC Public Health*, *10*(662), 1–12. https://doi.org/10.1186/1471-2458-10-662

Marcini, P., Marchini, A., & Simeone, M. (2017). Which are the sustainable attributes affecting the real consumption behaviour? Consumer understanding and choices. *British Food Journal*, *119*(8), 1839–1853. https://doi.org/10.1108/BFJ-11-2016-0574

Martin, D., & Schouten, J. (2012). *Sustainable Marketing*. Pearson Prentice Hall.

Mentella, M. C., Scaldaferri, F., Gasbarrini, A., & Miggiano, G. A. D. (2021). The role of nutrition in the COVID-19. *Pandemic. Nutrients*, *13*, 1093. https://doi.org/10.3390/nu13041093

Mexican Ministry of Health. (2010). Acuerdo nacional para la salud alimentaria. Estrategia contra el sobrepeso y la obesidad. *Secretaría de Salud*, 1era. ed, 1–46.

Mexican Ministry of Health. (2017). Secretaria de Salud. 5to. Informe de Labores 2016–2017. *Gobierno Federal*, *7*, 201–270. Retrieved from https://www.gob.mx/cms/uploads/attachment/file/254434/5to_IL_SS.pdf

Mexican Ministry of Health. (2019). Secretaria de Salud. 1er. Informe de Labores 2018–2019. Gobierno Federal. Retrieved from https://www.gob.mx/cms/uploads/attachment/file/490167/1er_Informe_de_Labores_SS_2018-2019.pdf

Mexican Ministry of Health. (2020). ¿Quiénes forman los grupos de riesgo? Retrieved from https://coronavirus.gob.mx/preguntas-frecuentes/

Mora, M., Gomez, L., Jalabe, W., Smith, L., & Popkin, B. (2018). ¿Por qué es prioritario implementar un adecuado etiquetado frontal en productos comestibles en Colombia?. Retrieved from https://medicina. javeriana.edu.co/documents/3185897/0/Etiquetado.pdf/8a8bc91d-413a-4eb6-881d-fc1fcf2a17a3 (Accessed on July 24, 2020).

Mora, M., Gómez, L. F., Miles, D. R., Parra, D. C., & Taillie, L. S. (2019). Nutrition quality of packaged foods in Bogotá, Colombia: A comparison of two nutrient profile models. *Nutrients*, *11*, 1011. https://doi.org/10.3390/nu11051011

National Administrative Department of Statistics of Colombia (DANE). (2018). Resultados Encuesta Nacional de Presupuestos de los Hogares. Retrieved from https://www.dane.gov.co/files/investigaciones/boletines/enph/presentacion-enph-2017.pdf

National Health Institute. (2020). Boletín Epidemiológico Semana Epidemiológica 21 17 al 23 de mayo de 2020. Retrieved from https://www.ins.gov.co/buscador-eventos/BoletinEpidemiologico/2020_Boletin_epidemiologico_semana_21.pdf

National Institute of Statistics and Geography (INEGI). (2010). Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH). *2010*. Retrieved from http://www3.inegi.org.mx/rnm/index.php/catalog/36

National Institute of Statistics and Geography (INEGI). (2016). Encuesta Nacional de Ingresos y Gastos (ENIGH) 2016. Retrieved from https://www.inegi.org.mx/contenidos/programas/enigh/nc/2016/doc/presentacion_resultados_enigh2016.pdf

National Survey on Nutritional Situation. (2010). Resumen Ejecutivo ENSIN 2010. Retrieved from https://www.javeriana.edu.co/documents/245769/3025871/Resumen_Ejecutivo_ENSIN_2010.pdf/160e9856-006d-4a60-9da3-d71606703609

Natural Marketing Institute. (2008). Understanding the LOHAS Market Report. Retrieved from https://www.lohas.se/wp-content/uploads/2015/07/Understanding-the-LOHAS-Consumer-11_LOHAS_Whole_Foods_Version.pdf

Official Journal of the Federal Government of Mexico. (2020a). Modificación a la Norma Oficial Mexicana NOM-051-SCFI/SSA1–2010. Especificaciones generales de etiquetado para alimentos y bebidas no alcohólicas pre-envasados-Información comercial y sanitaria, publicada el 5 de abril de 2010. Retrieved from https://www.dof.gob.mx/2020/SEECO/NOM_051.pdf

Official journal of the Federal Government of Mexico. (2020b). Especificaciones generales de etiquetado para alimentos y bebidas no alcohólicas preenvasados. Información comercial y sanitaria, publicada el 5 de abril de 2010, que fue publicada el 27 de marzo de 2020. Retrieved from https://www.dof.gob.mx/nota_detalle.php?codigo=5597654&fecha=31/07/2020

Organization for Economic Co-operation and Development. (2017). Health at a Glance 2017: OECD Indicators, OECD Publishing. Retrieved from https://www.health.gov.il/publicationsfiles/healthataglance2017.pdf

Ottman, J. (2011). *The New Rules of Green Marketing: Strategies, Tools, and Inspiration for Sustainable Branding*. Greenleaf Publishing.

Pan American Health Organization. (2012). Health in the Americas: 2012 edition. Regional outlook and country profiles. World Health Organization regional Office for the Americas. Scientific and Technical Publication No. 636. Retrieved from http://www.paho.org/saludenlasamericas/index.php?option=com_docman&task=doc_view&gid=123&Itemid=

Pan American Health Organization and World Health Organization. (2020). Fact sheet: If I have diabetes, what do I need to know about COND-19?. Retrieved from https://iris.paho.org/bitstream/handle/10665.2/52213/PAHONMHNVCOVID-19200014_eng.pdf?sequence=5&isAllowed=y

Piñeros, C. (2021). Aprobada la Ley de Etiquetado de Comida Chatarra. Retrieved from https://razonpublica.com/aprobada-la-ley-etiquetado-comida-chatarra/

Ponce, J. (2020). El etiquetado que destapó el deprecio del sector industrial. Del Campo. La batalla por nuestro derecho a saber. La Jornada. Retrieved from https://www.jornada.com.mx/2020/02/15/delcampo/delcampo149.pdf

Procuraduría Federal de Consumidor PROFECO. (2020a). Historia de la Procuraduría Federal de Consumidor. Retrieved from https://www.gob.mx/profeco/que-hacemos

Procuraduría Federal de Consumidor PROFECO. (2020b). Programas y acciones. Retrieved from https://www.gob.mx/profeco/acciones-y-programas/nuestra-institucion

RADDAR. (2020). Informe del Gasto de Hogares. Retrieved from https://raddar.net/wp-content/uploads/2019/09/Microeconomic-Outlook-_-Febrero-2020-lite-1.pdf

Red PaPaz. (2019). Estudio de actitudes, percepciones y comportamientos frente a políticas públicas para proteger el derecho a la alimentación adecuada. Retrieved from https://www.redpapaz.org/wp-content/uploads/2019/05/Estudio-agenda-pais.pdf

Reisch, L., Eberle, U., & Lorek, S. (2013). Sustainable food consumption: An overview of contemporary issues and policies. *Sustainability: Science, Practice & Policy*, *9*(2), 7–25. https://doi.org/10.1080/15487733.2013.11908111

Rimesh, P., & Bhansali, A. (2020). COVID-19, diabetes mellitus and ACE2: The conundrum. *Diabetes Research and Clinical Practice. Advance Online Publication*, *162*, 108132. https://doi.org/10.1016/j.diabres.2020.108132

Rubino, F., Amiel, S. A., Zimmet, P., Alberti, G., Bornstein, S., Eckel, R. H., Mingrone, G., Boehm, B., Cooper, M. E., Chai, Z., Del Prato, S., Ji, L., Hopkins, D., Herman, W. H., Khunti, K., Mbanya, J.-C., Renard, E. (2020). New-onset diabetes in Covid-19. *The New England Journal of Medicine*, *383*, 789–790. https://www.nejm.org/doi/full/10.1056/nejmc2018688

Rusmevichientong, P., Ebrahim, R., Nila, J., Cheng, I., & Weiss, J. (2021). The new FDA nutrition facts labels and consumer purchase intentions: An effect of emotional tax. *Journal of Consumer Behavior*, *20*(6), 1422–1435. https://doi.org/10.1002/cb.1944

Shamim, K., Khan, S. A., & Ahmad, S. (2020). Consumers' understanding of nutrition labels for ultra-processed food products. *Journal of Public Affairs*, *22*, e2398. https://doi.org/10.1002/pa.2398

Sharma, L., Teret, S., & Brownell, K. (2010). The food industry and self-regulation: Standards to promote success and to avoid public health failures. *American Journal of Public Health*, *100*(2), 240–246. https://doi.org/10.2105/AJPH.2009.160960

Sheth, J. N., Gardner, D. M., & Garret, D. E. (1988). *Marketing Theory: Evolution and Evaluation*. Wiley.

Söderlund, F., Eyles, H., & Mhurchu, C. N. (2020). Stars versus warnings: Comparison of the Australasian health star rating nutrition labelling system with Chilean warning labels. *Australian and New Zealand Journal of Public Health*, *44*(1), 28–33. https://doi.org/10.1111/1753-6405.12959

Taillie, L. S., Reyes, M., Colchero, M., Popkin, B., & Corvalán, C. (2020). An evaluation of Chiles law of food labeling and advertising on sugar-sweetened beverage purchases from 2015 to 2017: A before-and-after study. *PLoS Medicine*, *17*(2), e1003015. https://doi.org/10.1371/journal.pmed.1003015

World Bank. (2018). World development indicators. Retrieved from https://databank.worldbank.org/reports.aspx?source=world-development-indicators

World Bank. (2019). World Development Indicators: Health risk factors and future challenges. Retrieved from http://wdi.worldbank.org/table/2.17

World Bank. (2020a). World Bank Country and Lending Groups. Retrieved from https://datahelpdesk.worldbank.org/knowledgebase/articles/906519

World Bank. (2020b). Global consumption data base Colombia. Retrieved from http://datatopics.worldbank.org/consumption/country/Colombia

World Bank. (2020c). Global consumption data base Mexico. Retrieved from http://datatopics.worldbank.org/consumption/country/Mexico

World Health Organization. (2015). WHO estimates of the global burden of foodborne diseases. In *Foodborne disease burden epidemiology reference group 2007–2015*. World Health Organization. Retrieved from http://apps.who.int/iris/bitstream/10665/199350/1/9789241565165_eng.pdf

World Health Organization. (2020). Diabetes country profiles. Retrieved from https://www.who.int/diabetes/country-profiles/en/#M

## APPENDIX A.

TABLE A1 Constructs proposed in this study and items used for each construct

| Specific objectives | Construct & definition | Primary information (questions) |
|---|---|---|
| a) To describe the efforts in the legislation on the labeling of ultra-processed food and soft drinks in Colombia and Mexico and the challenges in addressing these concerns. | Label legislation in Latin America. | (Secondary information) |
| b) To examine the level of knowledge of the population about today's legislation on the labeling of ultra-processed food and soft drinks by country. | Knowledge about today's food label. | 1. I always read the labels. 2. I have knowledge about how to read the labels. 3. Labels require me to do mathematic operations to understand them. 4. Today's labels show "excess" of sugar, salt, calories, and trans or saturated fat. |
| c) To contrast the level of knowledge about new food labeling legislation and attitudes toward the benefits of it within specific consumers' generations. | Knowledge about new food labeling and benefits. | 5. I have knowledge regard the new label legislation. 6. I think the changes in the labels are important. 7. Changes in the food labeling will benefit mainly: 8. To the children. 9. To teenagers. 10. To young adults. 11. To older person. |
| d) To investigate the perception of customers regarding the seriousness of the request for label change in food companies and of the institutions involved in such request, in the region of study. | Legislation in food industry and institutions involved. | 12. In the new legislation participated the government, academics, scientist, enterprises, and civil associations. |
| e) To discuss the potential impact on brand perception and social responsibility of those companies that are delaying or refusing the adoption of the Colombian legislation AENC or the Mexican legislation MXL-NOM-051. | Impact on brand perception & social responsibility. | 13. Changes in the food labeling concern not only to the food industry. 14. It is important that the food industry change their nutritional and front labels. 15. The food industry must change food labels. 16. I would not be willing to buy food from those companies that do not change their labels. 17. Food companies that attend the call of changes in their labels are socially responsible. |