Information design in nutrition public policies: contributions to food and beverage labeling in Brazil

Design da informação em políticas públicas em nutrição: contribuições para rotulagem de alimentos e bebidas no Brasil

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public policies, nutrition labeling, information design

Public policies are essential to improve the health conditions of the population. Malnutrition caused by the increase in the consumption of ultra-processed foods and drinks with excess sodium, sugars, and fat is a public health problem. In this scenario, nutritional labeling of industrialized products becomes strategic to inform the population about health risks of such products, and in helping them make informed healthy food choices. This article presents contributions from the field of information design to nutritional labeling, through an experience report of the Information Systems Design Laboratory (LabDSI/UFPR). The role and participation of the Laboratory in regulatory discussions and proposals for nutrition labeling systems in Brazil and Mercosur is highlighted. Finally, the relevance of information design to health policies and the need for further research in nutritional labeling are pointed out.

políticas públicas, rotulagem nutricional, design da informação

As políticas públicas são essenciais para melhorar as condições de saúde da população. A desnutrição causada pelo aumento do consumo de alimentos e bebidas ultraprocessados com excesso de sódio, açúcares e gorduras é um problema de saúde pública. Nesse cenário, a rotulagem nutricional em produtos industrializados torna-se estratégica para informar a população sobre os riscos à saúde no consumo de tais produtos, auxiliando nas escolhas alimentares saudáveis. Este artigo apresenta contribuições do design da informação para a rotulagem nutricional, por meio de um relato de experiência do Laboratório de Design de Sistemas de Informação (LabDSI/UFPR). Destaca-se sua participação em discussões regulatórias e propostas de sistemas de rotulagem nutricional no Brasil e no Mercosul. Por fim, aponta-se a relevância do design da informação para as políticas de saúde e a necessidade de pesquisas futuras em rotulagem nutricional.

1 Introduction

Public health policies are part of the social action of a government and aim to improve the health conditions of the population through the promotion, protection, and recovery of the health of citizens and society (Lucchese, 2004). Thus, these policies address social demands regarding

circumstances that compromise or may compromise the health of citizens and the community. Among public health policies are those that focus on populational nutrition, considering factors that negatively impact it. In this scope, obesity and chronic non-communicable diseases, such as diabetes and hypertension, stand out. These are the leading causes of death in the countries of the Americas, reaching a rate of 80% (World Health Organization [WHO], 2023). The deficient/poor diet of the population is considered the predominant factor, which characterizes malnutrition (NCD Countdown 2030 collaborators, 2018; Levis et al., 2024). The rate of adults who are overweight or obese is estimated to reach 54% worldwide by 2035 (World Obesity Federation, 2024).

In Brazil, the obesity rate among adults is also a concern, with 24.3% of the population considered obese in 2023 (Vigitel, 2023). These numbers are alarming, whether on a global or national scale, demanding nutritional policies to curb the growth of mortality from malnutrition. Malnutrition problems and the significant number of premature deaths in Brazil are associated with the increased consumption of ultra-processed foods with excess sodium, sugars, and fat (Nilson et al., 2023).

Nutritional labeling of food and beverage products is one of the strategies that can be used to address malnutrition. These labels inform consumers about the composition of products through the list of ingredients, nutrition facts table, declaration of allergens, as well as information on the product expiration date and storage instructions (Rayner & Vandevijvere, 2017; Codex Alimentarius Commission, 2018). Moreover, nutritional labeling may present front-of-package (FOP) labels as supplementary information on the nutrition quality of products. They are simplified graphic messages (e.g., symbols, letters, color) intended to be easily grasped by consumers when purchasing foods and drinks, to help them make healthier choices (Pan American Health Organization [PAHO/WHO], 2024). The Guideline Daily Amount (GDA) used in the United States, the Traffic Light System in the United Kingdom, and the Health Star Rating in Australia are examples of FOP labels (Figure 1).

The FOP labeling should be seen as a public health policy that seeks to improve the food environment (Acton et al., 2019), by persuading the industry to improve the nutrition quality of their products (Van Kleef & Dagevos, 2011). Among the FOP labeling systems are the warning labels. These are considered the most effective way to inform consumers about products containing excess of critical nutrients (Crosbie et al., 2023). In the Region of the Americas, FOP warnings have been adopted in several countries, mainly in the octagon format (Figure 2).

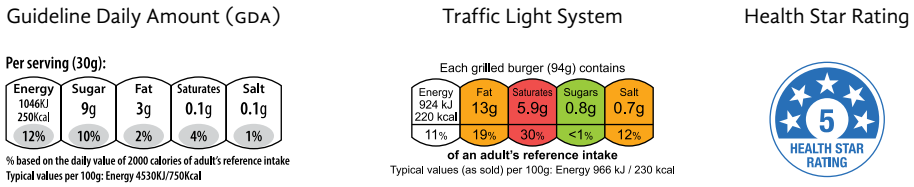


Figure 1 Examples of front-of-package labels (PAHO/WHO, 2024).

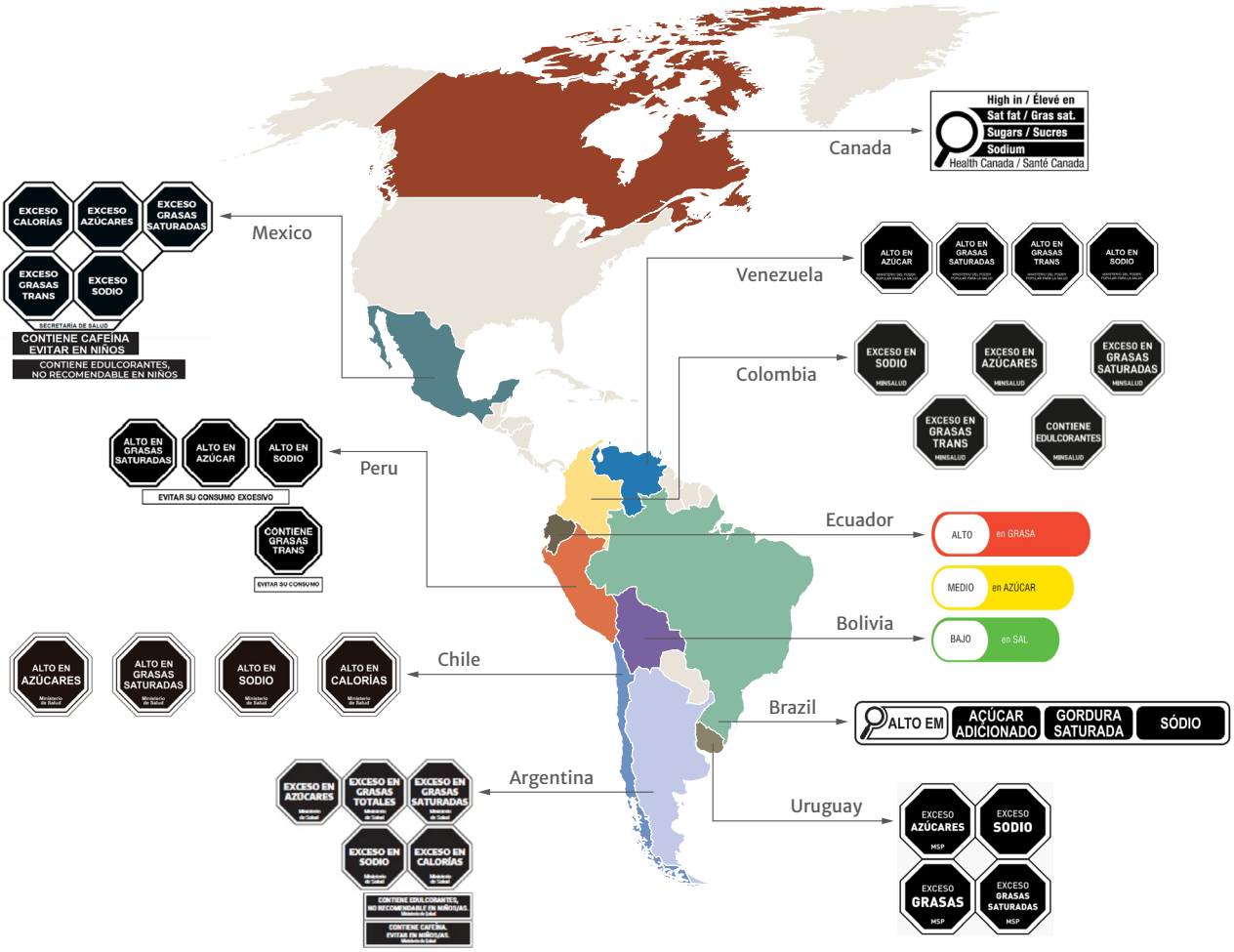


Figure 2 Front-of-package warning labels adopted in the region of the Americas (Crosbie et al., 2023).

1.1 Front-of-package nutritional warning labeling

The FOP warning labels alert consumers about food and beverage products presenting risks to their health, such as a high amount of sugar, sodium and/or fat. Thus, FOP warnings should emphasize and simplify information on the critical nutrients of products, promoting communication efficiency and reducing cognitive load (Spinillo, 2019). These labels should therefore attract attention and be quickly understood (Mont'Alvão, 2002; Wogalter, 2006). This is key since purchasing decisions at supermarkets generally occur within three seconds (L'Abbé et al., 2012).

Simple words and graphic symbols in FOP warnings have been proved to promote consumers' comprehension of the healthiness of food and beverage products, influencing their purchase intentions (Branca et al., 2007; Chen et al., 2011; Khandpur et al., 2019; Crosbie et al., 2023). On the other hand, FOP labels which are not warnings (e.g., GDA, Traffic Light System) were found to poorly aid – or even fail to aid – consumers' decisions regarding healthier choices, particularly when compared to FOP warnings (Cabrera et al., 2017; Arrúa et al., 2017; Khandpur et al., 2019). Despite this, the food

and beverage industry has objected to the adoption of FOP warnings in products presenting risks to consumers' health in nutritional policies. In this regard, Ares et al. (2020) observe that the regulated sector (food and beverage industry) is resistant to the implementation of public policies that can regulate them, which creates a conflict of interest in the regulatory process (Ralston et al., 2021).

To guide nutrition policies, studies have been conducted to evaluate the effectiveness of FOP labels (Aqueveque et al., 2012; Ministry of Health [Chile], 2009; Kelly et al., 2009; Borgmeier & Westenhoefer, 2009; Ares et al., 2016; Khandpur et al., 2019). These studies generally focused on the nutrition aspects, and those commissioned by the food and beverage industry also considered the interests of product marketing. In most studies, graphic and typographic aspects of FOP labels were overlooked due to lack of knowledge of information design on the part of those conducting the studies. This scenario provided an opportunity for the Information Systems Design Laboratory (LabDSI/UFPR) to bring the perspective of information design to research on FOP labeling, as well as to the discussion and proposal of nutritional labeling models. This experience report presents an account of the experience, including the challenges faced, actions taken, and insights gained, of LabDSI/UFPR in the regulatory process for new Brazilian nutritional labeling and research in this field. The LabDSI/UFPR is part of the Post-Graduate Program (Master and Doctorate) in Design of the Federal University of Paraná (UFPR), and develops research, training, and community-based projects, as well as collaborating in the discussion and elaboration of health policies.

2 Participation in the discussion and elaboration of regulatory policies

In 2015, the National Health Surveillance Agency (ANVISA) of the Brazilian Ministry of Health invited LabDSI/UFPR to make a presentation on the role of Information Design in nutritional labeling, as part of the **Nutritional Labeling Working Group (WG)** meeting. Representatives from the industry, consumers, public administration, universities, civil society organizations, such as the Brazilian Institute for Consumer Protection (Idec) and PAHO/WHO (ANVISA, 2018) took part in the meeting. In 2016 a collaboration between Idec and LabDSI/UFPR was established to develop a proposal for the Brazilian nutrition labeling for the document 'Improvement of nutritional information on food labels in Brazil' (Idec & UFPR, 2017), which was submitted to ANVISA in 2017.

2.1 Proposal of the triangle front-of-package warning label for Brazil

The proposal for the new Brazilian nutrition labeling developed by Idec and LabDSI/UFPR was supported by evidence-based literature on nutrition, information design and warning, technical standards, and regulations on

nutrition labeling. The proposal consisted of a nutrition facts table, a list of ingredients and a FOP warning label in the shape of a triangle in black to indicate the excess of critical nutrients that affect consumers' health (sodium, sugar, total fat, saturated fat, trans fat, and presence of sweeteners).

The triangle was chosen for the FOP label due to the simplicity and clarity of its shape, making it easy to identify on product packaging, even when reduced in size. Thus, the triangle shape meets the Gestalt principles of visual perception (e.g., simplicity principle) and its Prägnanz law (Arnheim, 1998; Pettersson, 2024). Moreover, the triangle is a FOP warning symbol familiar to Brazilians in the context of health. A yellow triangle with the letter 'T' for 'Transgenic' is used in food packaging to indicate products that are genetically modified (Brazil, 2003). The triangle shape is also a symbol adopted by international technical standard organizations to denote risks (ISO 3864; ANSI Z535; Wogalter, 2006). In addition, the color black for the triangle was intended to align it with ANVISA's regulation for controlled medications in Brazil (black stripe) to warn of health risks.

One of the triangle FOP label's main design features was the white box used as its background to isolate the label from other elements of the packaging (e.g. marketing elements, brand visual identity), promoting its prompt visualization (Figure 3). This design feature was considered in the regulatory discussions promoted by PAHO/WHO in the Pan-American countries.

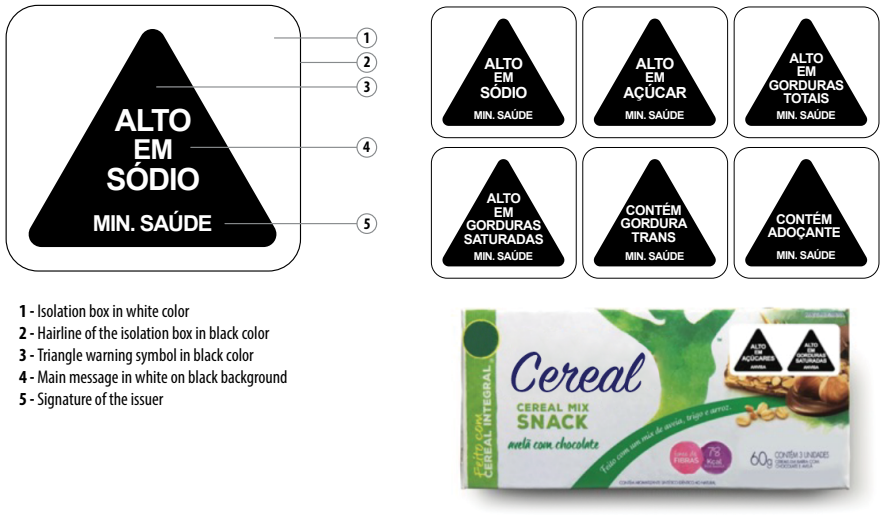


Figure 3 Warning Triangle Proposal for Brazilian FOP (Idec & UFPR, 2017).

It is important to highlight that the proposal for the Brazilian FOP label was also the result of an information design technical discussion on what would be the most appropriate symbol for warning in FOP nutrition labeling. In this discussion, the octagonal label in force in Chile, which is an analogy to the 'stop' traffic sign, was also considered but eventually discarded. Its geometric complexity (eight sides) fails to meet the Gestalt simplicity principle and the Prägnanz law, and when reduced in small packaging, the octagon resembles a circle, a shape widely used in product marketing.

This could jeopardize the prompt perception of the warning label and its differentiation from other components of the packaging. Furthermore, the association between the octagonal 'stop' traffic sign and the nutritional warning may not be obvious to consumers and may demand further effort to interpret the nutrition warning label. Thus, the triangle shape was proposed as an alternative to the octagon for the Brazilian FOP warning label (Figure 4).

Figure 4 Comparison of the triangle warning FOP (Idec & UFPR proposal) and octagon (Chile) on cereal packaging (taken from the slides of the presentation on Food Nutritional Labeling in Brazil: Idec & UFPR Improvement Proposal [Table 1] from November 8 to 10, 2017, ANVISA-DF Headquarters).

To advocate the triangle FOP warning label proposal (Figure 5), intensive media and social network campaigns were launched by Idec, giving visibility to the proposal. This has resulted in local and national press coverage.

Figure 5 Promotional material and media coverage of the warning triangle proposal (Idec & UFPR, *Greg News* episode from YouTube).

Furthermore, 50,000 signatures supporting the triangle label were gathered from parliamentarians, NGOs, researchers (e.g., Brazil, USA, UK, Canada), scientific institutions, and food/cook influencers, and sent to ANVISA.

In addition, to verify the communicative effectiveness of the FOP warning triangle, nationwide research was conducted by Idec, University of São Paulo (USP), and LabDSI/UFPR in 2017. Initially, a panel of 10 experts was formed, followed by 13 focus groups in the South, Southeast, Northeast, and Midwest regions of Brazil, totaling 101 participants. Subsequently, a randomized controlled experiment was conducted with 3,422 participants (Figure 6). The results of the research showed the higher level of effectiveness of the triangle label in promoting understanding and perception of health risks when compared to other labels (Khandpur, 2019; de Morais Sato et al., 2019).

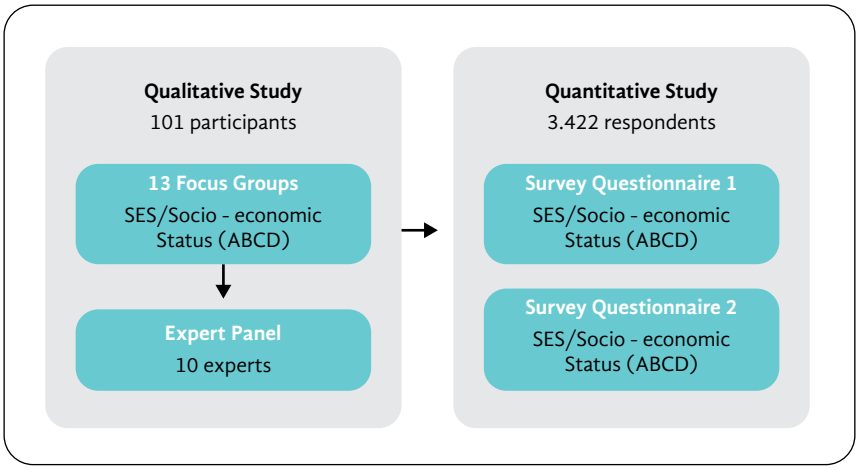


Figure 6 Synthesis diagram of the research methodology (taken from the slides of the presentation on Food Nutritional Labeling in Brazil: Idec & UFPR Improvement Proposal from November 8 to 10, 2017, ANVISA-DF Headquarters).

Despite the scientific evidence and national and international support, the food and beverage industry, and conservative government/parliamentary representatives raised objections to the triangle FOP label proposal. In 2020, ANVISA approved the 'magnifying glass' as the Brazilian front-of-package labeling (Ministry of Health [Brazil], 2020a, 2020b). Figure 7 shows the results of a survey to determine which of the two labels, magnifying glass or warning triangle, was more effective. The survey was conducted by Idec/Datafolha and published on the website of the Brazilian Association of Nutrition (ASBRAN, 2019). Despite this outcome, the importance of information design for nutritional labeling was acknowledged: the white background design feature of the triangle FOP label was used in the magnifying glass label to visually separate it from other elements of the packaging; and the new nutrition facts table followed the typographic legibility criteria of the Idec and UFPR (2017) proposal for the Brazilian nutrition labeling system.

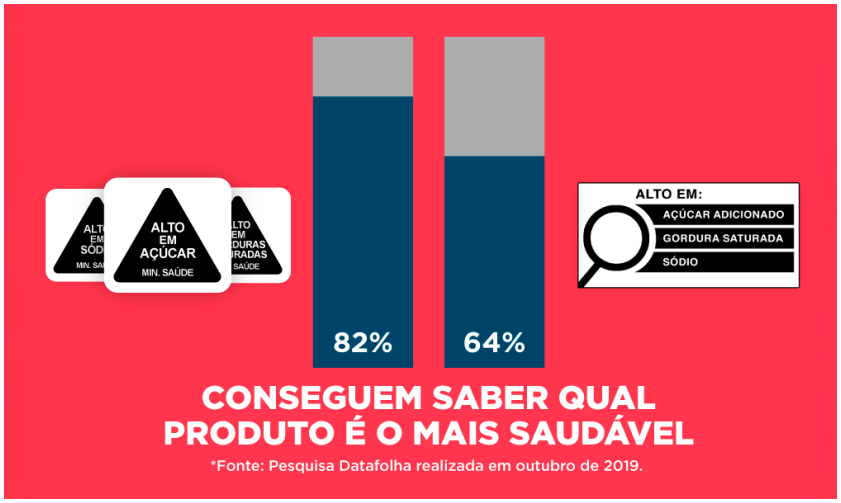


Figure 7 Comparative study of the magnifying glass and the warning triangle conducted by Idec/Datafolha (ASBRAN, 2019).

2.2 Development of the new Brazilian nutrition facts table

In 2019, as part of the labeling regulatory process, ANVISA presented a proposal for the new Brazilian nutrition facts table in a national meeting. The proposed table design, which was based on Canada's and the United States' labels, presented poor information design that would compromise legibility. The weaknesses of the ANVISA's nutrition facts table were highlighted by the LabDSI/UFPR representative in the meeting, and their comments and feedback were well received by the agency's technical team. As a result, the Laboratory was invited to advise on the design of the new Brazilian nutrition facts table with a view to improving its legibility.

The redesign of the nutrition facts table incorporated features of the Idec and UFPR (2017) proposal so as to meet the legibility criteria of clarity, text-background contrast, information hierarchy and emphasis (Schriver, 1996; Bringhurst, 2012). The new design also took into consideration graphic characteristics of the Canadian nutrition table model – rather than the United States' one – due to the variety of its design templates and detailed specifications for the table typesetting. Moreover, the Canadian table design better met the requirement of simplicity, particularly in the use of black horizontal lines to separate/cluster nutrition information (Figure 8). However, it should be pointed out that the nutritional approach used in the Canadian design differed from the Brazilian approach established by ANVISA: the Brazilian model referred to 100 g to facilitate comparison across products regardless of serving size or food category, whereas the Canadian model emphasized calories.

As a result, the redesign of the new nutrition facts table for Brazil presented: a white box background with a thin black outline to isolate it from other elements of the packaging; horizontal and vertical lines to show the table rows/columns numerical structure; thicker black lines to differentiate the table headings from its nutrition information; and text indentation

United States – 2016

Nutrition Facts

8 servings per container
Serving size **2/3 cup (55g)**

Amount per serving
Calories **230**

	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 240mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Canada – 2016

Nutrition Facts
Per HM (MM)

Calories ####	**% Daily Value***
Fat ## g	## %
Saturated ## g + Trans ## g	## %
Carbohydrate ## g	
Fibre ## g	## %
Sugars ## g	## %
Protein ## g	
Cholesterol ### mg	
Sodium #### mg	## %
Potassium #### mg	## %
Calcium #### mg	## %
Iron ## mg	## %

*5% or less is **a little**, 15% or more is **a lot**

Figure 8 The nutrition facts tables of the US and Canada.

to indicate nutrition hierarchy between items and sub-items within the table. Arial and Helvetica were stablished as the standard typefaces and their typographic settings regarding the use of uppercase and lowercase letters, bold and minimum body size were also regulated. Those typefaces were chosen due to their legibility qualities and wide availability in table design software. It is worth mentioning that in the Idec and UFPR (2017) proposal, it was suggested that a yellow highlight should be used in the table to indicate the presence of nutrients in excess in products, allowing their prompt visualization by consumers. This feature, however, was not included in the new Brazilian nutrition facts table. Figure 9 shows the tables proposed by Idec and UFPR (2017) and by ANVISA (2019), and the improved table approved in 2020 (Ministry of Health [Brazil], 2020a, 2020b).

Nutrition facts table proposed by Idec and UFPR in 2017

INFORMAÇÃO NUTRICIONAL

NUTRIENTES	**Nesta 270g**	**Por 100g**
Calorias	1017kal	335kal
Carboidratos	207g	77g
Açúcar	81g	30g
Proteínas	17g	6g
Gorduras	5g	5g
Gorduras Saturadas	5g	2g
Gorduras Trans	0g	0g
Sódio	990mg	367mg
Fibra Alimentar	15g	6g

Nutrition facts table proposed by ANVISA in 2019

INFORMAÇÃO NUTRICIONAL

Porção: ___ g ou ml (medida caseira)
Porções por embalagem:

	100 g	**Porção**	**%VD**
Valor energético (kcal)	96	100	4
Carboidratos (g)	23	46	8
Açúcares totais (g)	18	36	7
Açúcares adicionados (g)	12	24	5
Proteínas (g)	5	10	5
Gorduras totais (g)	3	6	6
Gorduras saturadas (g)	2	4	4
Gorduras trans (g)	1	2	2
Fibras alimentares (g)	25	50	8
Sódio (mg)	20	40	10

Nutrition facts table implemented by ANVISA in 2020, with collaboration from LabDSI/UFPR

INFORMAÇÃO NUTRICIONAL

Porções por embalagem: 000 porções
Porção: 000 g (medida caseira)

	100 g	**000 g**	**%VD***
Valor energético (kcal)			
Carboidratos totais (g)			
Açúcares totais (g)			
Açúcares adicionados (g)			
Proteínas (g)			
Gorduras totais (g)			
Gorduras saturadas (g)			
Gorduras trans (g)			
Fibra alimentar (g)			
Sódio (mg)			

*Percentual de valores diários fornecidos pela porção.

Figure 9 Models of nutrition facts tables developed in the process of updating the Brazilian regulation on nutrition labeling (Idec & UFPR, 2017, p. 33; ANVISA, 2019; Ministry of Health [Brazil], 2020a, p. 117).

Accordingly, and with the collaboration of LabDSI/UFPR, five models for the new nutrition facts table were developed, resulting in a design system for nutrition facts information: (a) vertical, (b) horizontal, (c) divided vertical, (d) divided horizontal, and (e) aggregate formats. A non-tabular model was also designed for exemptional cases (e.g., different packaging shapes, lack of space on the packaging), which was referred to as 'linear table', with its components separated by bullet points (Figure 10). Furthermore, the regulation allowed the use of typographic compacting resources (e.g., condensed type variations) for the table design. The redesigned table system was approved and launched by ANVISA in 2020, as part of the new nutrition labeling regulation for Brazil.

The new Brazilian nutritional labeling regulation has positively impacted people's behavior as regards the purchase of food and drink products, and this has been acknowledged by the press. For instance, *Folha de São Paulo* (2024),[1] a leading Brazilian newspaper, published an article about people's reaction to the new labeling. The article mentioned a survey conducted with 1,998 participants varying in socioeconomic status, revealing that 56% of

1 https://www1.folha.uol.com.br/mercado/2024/03/brasileiro-se-assusta-com-alto-teor-de-acucar-gordura-e-sal-na-comida.shtml

Vertical format

INFORMAÇÃO NUTRICIONAL

Porções por embalagem: 000 porções
Porção: 000 g (medida caseira)

	100 g	000 g	%VD*
Valor energético (kcal)			
Carboidratos totais (g)			
Açúcares totais (g)			
Açúcares adicionados (g)			
Proteínas (g)			
Gorduras totais (g)			
Gorduras saturadas (g)			
Gorduras trans (g)			
Fibra alimentar (g)			
Sódio (mg)			

*Percentual de valores diários fornecidos pela porção.

Divided vertical format

INFORMAÇÃO NUTRICIONAL

Porções por embalagem: 000 porções ● Porção: 000 g (medida caseira)

	100 g	000 g	%VD*		100 g	000 g	%VD*
Valor energético (kcal)				Gorduras totais (g)			
Carboidratos (g)				Gorduras saturadas (g)			
Açúcares totais (g)				Gorduras trans (g)			
Açúcares adicionados (g)				Fibras alimentares (g)			
Proteínas (g)				Sódio (mg)			

*Percentual de valores diários fornecidos pela porção.

Horizontal format

INFORMAÇÃO NUTRICIONAL

Porções por emb.: 000
Porção: 000 ml (medida caseira)

	100 ml	000 ml	%VD*
Valor energético (kcal)			
Carboidratos (g)			
Açúcares totais (g)			
Açúcares adicionados (g)			
Proteínas (g)			
Gorduras totais (g)			
Gorduras saturadas (g)			
Gorduras trans (g)			
Fibras alimentares (g)			
Sódio (mg)			

*Percentual de valores diários fornecidos pela porção.

Divided horizontal format

INFORMAÇÃO NUTRICIONAL

Porções por emb.: 000 ● Porção: 000 ml (medida caseira)

	100 ml	000 ml	%VD*		100 ml	000 ml	%VD*
Valor energético (kcal)				Gorduras totais (g)			
Carboidratos (g)				Gorduras saturadas (g)			
Açúcares totais (g)				Gorduras trans (g)			
Açúcares adicionados (g)				Fibras alimentares (g)			
Proteínas (g)				Sódio (mg)			

*Percentual de valores diários fornecidos pela porção.

Aggregate format

INFORMAÇÃO NUTRICIONAL

	Produto 1 Porções por emb.: 000 Porção: 000 ml			**Produto 2** Porções por emb.: 000 Porção: 000 ml			**Produto 3** Porções por emb.: 000 Porção: 000 ml		
	100 ml	000 ml	%VD*	100 ml	000 ml	%VD*	100 ml	000 ml	%VD*
Valor energético (kcal)									
Carboidratos (g)									
Açúcares totais (g)									
Açúcares adicionados (g)									
Proteínas (g)									
Gorduras totais (g)									
Gorduras saturadas (g)									
Gorduras trans (g)									
Fibras alimentares (g)									
Sódio (mg)									

*Percentual de valores diários fornecidos pela porção.

Linear format

INFORMAÇÃO NUTRICIONAL

Porções por embalagem: 000 • Porção: 000 g (medida caseira)

Por 100 g (**00 g**, %VD*): Valor energético 000 kcal (**00 kcal**, 0%) • Carboidratos 00 g (**00 g**, 0%), dos quais Açúcares totais 00 g (**00 g**), Açúcares adicionados 00 g (**00 g**, 0%) • Proteínas 00 g (**00 g**, 0%) • Gorduras totais 00 g (**00 g**, 0%), das quais Gorduras saturadas 00 g (**00 g**, 0%), Gorduras trans 00 g (**00 g**, 0%) • Fibras alimentares 00 g (**00 g**, 0%) • Sódio 00 mg (**00 g**, 0%).

*Percentual de valores diários fornecidos pela porção.

Figure 10 Models of the Brazilian nutrition facts table (Ministry of Health [Brazil], 2020a).

participants have identified the new labels on the products; among those, 80% considered changing their purchasing behavior as a result. As the new nutrition facts table stands out on the product's packaging, it has allowed the prompt visualization of the nutrition information, distinguishing it from marketing claims and visual elements related to the product's brand identity (Figure 11). However, it is important to note that the regulatory implementation process is ongoing and will not be completed until 2025, thus, many products have yet to fully comply with the new standards (Borges et al., 2024). Once this process is completed, the positive impact of the new nutritional labeling regulation is expected to increase leading consumers to make health-conscious choices when purchasing food and drinks.

Figure 11 Examples of real products comparing the old and new standards for nutrition labeling.

The information design approach to the new Brazilian nutrition facts table was also considered during the Mercosur discussions when searching for a common labeling regulation for the following country members: Brazil, Uruguay, Paraguay and Argentina. The following section summarizes the nutrition information system proposed by LabDSI/UFPR to the Mercosur.

2.3 Proposal for a nutritional information system for Mercosur

To facilitate food and beverage trade among the Mercosur country members and improve labeling information for consumers, a regulatory process for standardizing food and beverage labeling was initiated in 2023. The Brazilian representative agency, ANVISA, invited LabDSI/UFPR researchers to advise on information design aspects of nutrition labeling, particularly legibility and visibility. Accordingly, a graphic analysis of current nutrition information on product packaging was carried out to identify problems in their design (Figure 12). A nutrition labeling information system for Mercosur was then developed and presented at the regulatory meetings. The system was later endorsed by ANVISA.

The information system proposed consisted of nutrition facts table, list of ingredients, allergen warnings, conservation information, expiration date, and product batch/lot. The system aimed to promote graphic unity and information visibility in the display of regulatory labeling on packaging, and in doing so, to facilitate consumers' information search strategies.

Figure 12 Examples of legibility problems on product packaging presented by LabDSI/UFPR at Mercosur regulatory meetings (taken from presentation slides on legibility in general food and beverage labeling; meeting with ANVISA, April 3, 2023).

The system was based on the design features of the Brazilian nutrition facts table, but it also took into account the trade demands of the Mercosur countries (e.g., bilingual declaration). Thus, the system components were set in Arial or Helvetica typefaces, inside a white box background outlined by a thin black line to separate them from the non-regulated elements of the packaging. Their headings were in uppercase bold style, in a larger font size than the nutrition-related information text. Similar to the nutrition facts table, the list of ingredients had a horizontal thick line to separate the heading from the declaration of ingredients, which were in upper-lower case, each item separated by bullet points.

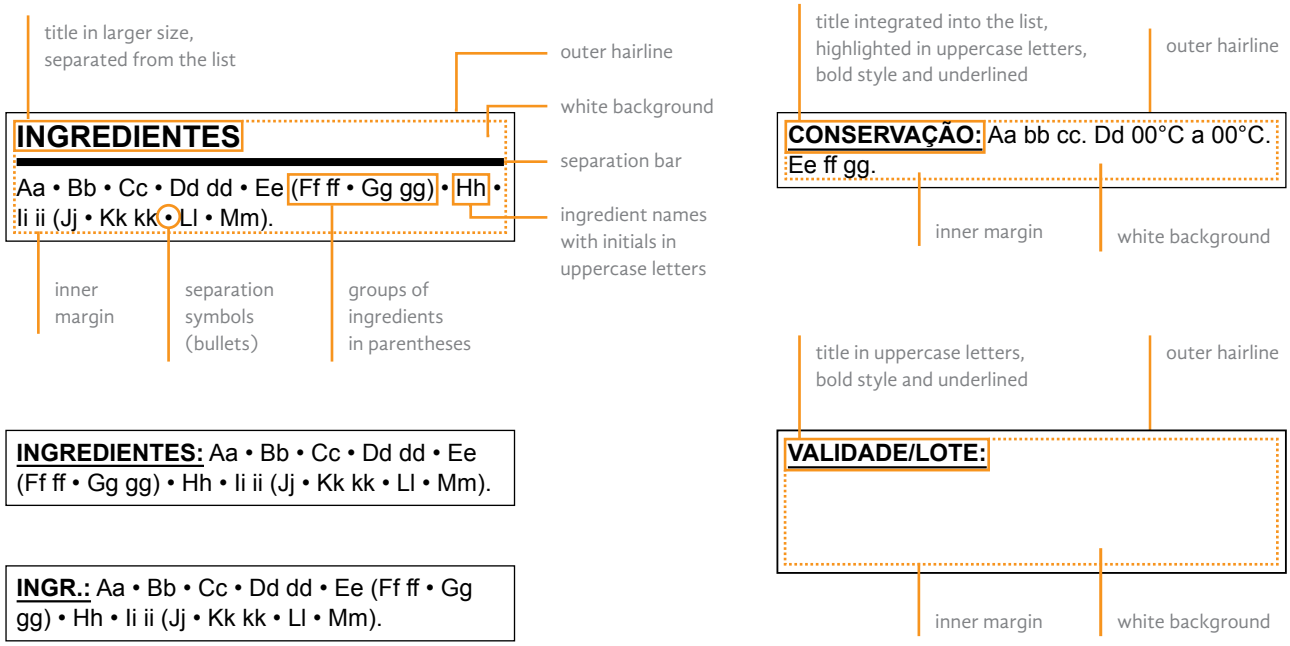
The flexibility of the system allowed for some typographic variations. For instance, the same font size could be used for headings and nutrition-related information texts in case of lack of space on the packaging. Regarding the list of ingredients, the heading 'INGREDIENTES' [ingredients] could be abbreviated to 'INGR.' in the same text line of the declaration of ingredients. In such cases, the heading should be underlined to distinguish it from the declaration. This typographic feature was also applied to the labels of the 'conservation information' and 'expiration date/product batch/lot'. Regarding the latter, due to particularities of the printing process adopted by the industry to declare the product expiration date/product batch/lot, an empty white box was provided either for inserting this information later or for indicating where to find it on the packaging (e.g., see lid). Figure 13 shows the proposed nutrition information system for the list of ingredients, conservation, and expiration/batch labels.

When the allergen warning (e.g., gluten, lactose) is required in a product, it is visually related to the list of ingredients in the nutrition labeling system proposed. Hence, it is placed inside the box that contains the list of ingredients, below the declaration of items. To draw attention to the warning, this was entirely in white uppercase letters within a black background and with the signal word 'ATENÇÃO' [attention] in bold style (Figure 14).

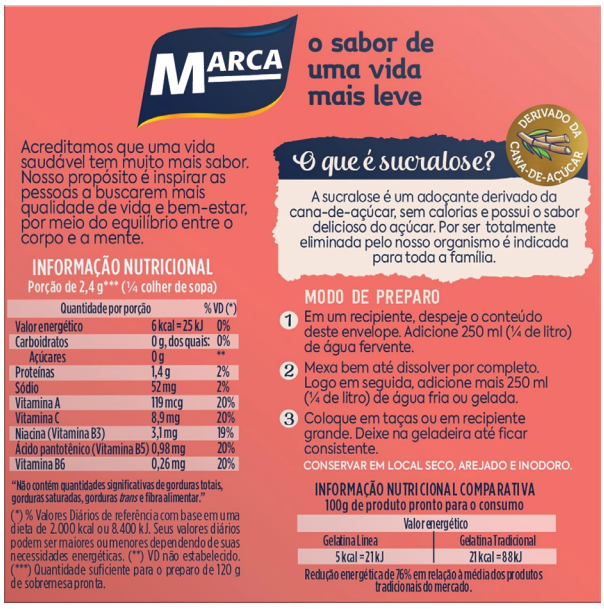
In an information system, the nutrition labeling components should be displayed near each other, preferably on the same packaging face. The modular character of our proposed system (labels in individual boxes) makes this possible, as it allows for the graphic composition of components according to the space available for labeling on the packaging. The proximity of the components on the packaging and their graphic similarity suggests information grouping, facilitating consumers' search strategies for nutrition information on food and beverage products.

Although the labeling system proposed did not include the product identification (e.g., dairy beverage), its quantity, weight or volume, recommendations were also made regarding their typographic presentation on the frontal face of food and beverage packaging. These recommendations aimed to improve legibility and visibility of the nutrition-related information and differentiate them from the marketing components of the packaging. In this regard, it was suggested that: (i) a plain background should be used to display the written information in the standardized typographic fonts (Arial and Helvetica); (ii) color background could be employed, as long as it provided the necessary contrast with the text to assure legibility;

SYSTEM FEATURES



APPLICATION ON PACKAGING



original layout

layout with the application of the system proposed

Figure 13 The proposed nutrition information system: list of ingredients, conservation, and expiration/batch labels (taken from presentation slides on legibility considerations; proposal for labeling – Mercosur; meeting on March 28, 2024).

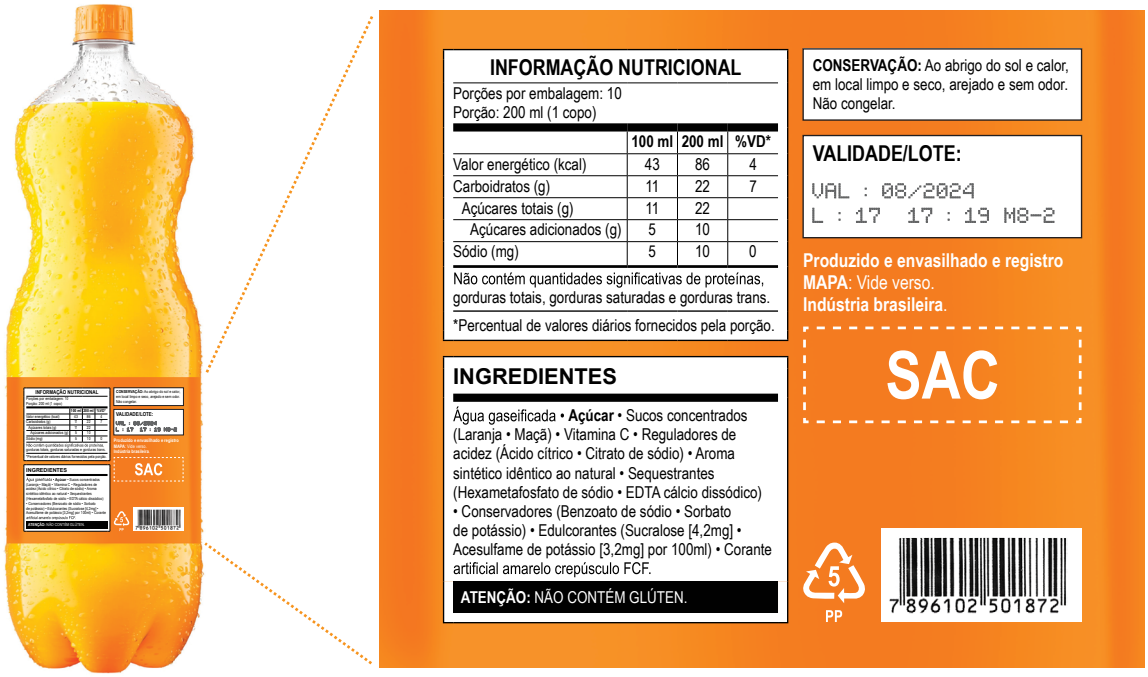


Figure 14 Example of allergen warning as part of the information system (taken from presentation slides on the proposal for the general food and beverage labeling system; meeting with ANVISA on June 16, 2023).

and (iii) small font size could be used provided that it did not jeopardize the reading of the information on the packaging. It was also suggested that the size of the typographic fonts for the identification, quantity, weight/volume of the product should be proportional to the dimension of the main face area of the packaging. These recommendations were presented at the Mercosur meetings during the regulatory process in 2023/2024.

The LabDSI/UFPR proposal for the nutrition labeling information system, as well as the abovementioned recommendations, were endorsed by ANVISA. The agency technical team provided information on the legal aspects relevant to the system development and to the recommendations made for the Mercosur's new nutritional regulation.

3 Final considerations

This report aimed at presenting the relevance of information design to the development of nutrition public policies through the trajectory of LabDSI/UFPR. The report highlighted the pioneering role of information design in supporting nutritional labeling discussions and advocacy actions in Brazil and Mercosur. As an experience report, it showed the contributions of LabDSI/UFPR in regulatory processes, which led to the development and implementation of the new Brazilian nutrition facts table (Ministry of Health [Brazil], 2020a). The design proposals for labeling information systems by LabDSI/UFPR were also presented herein. Figure 15 shows a timeline of the Laboratory trajectory in public policies on nutritional labeling from 2013 to 2024.

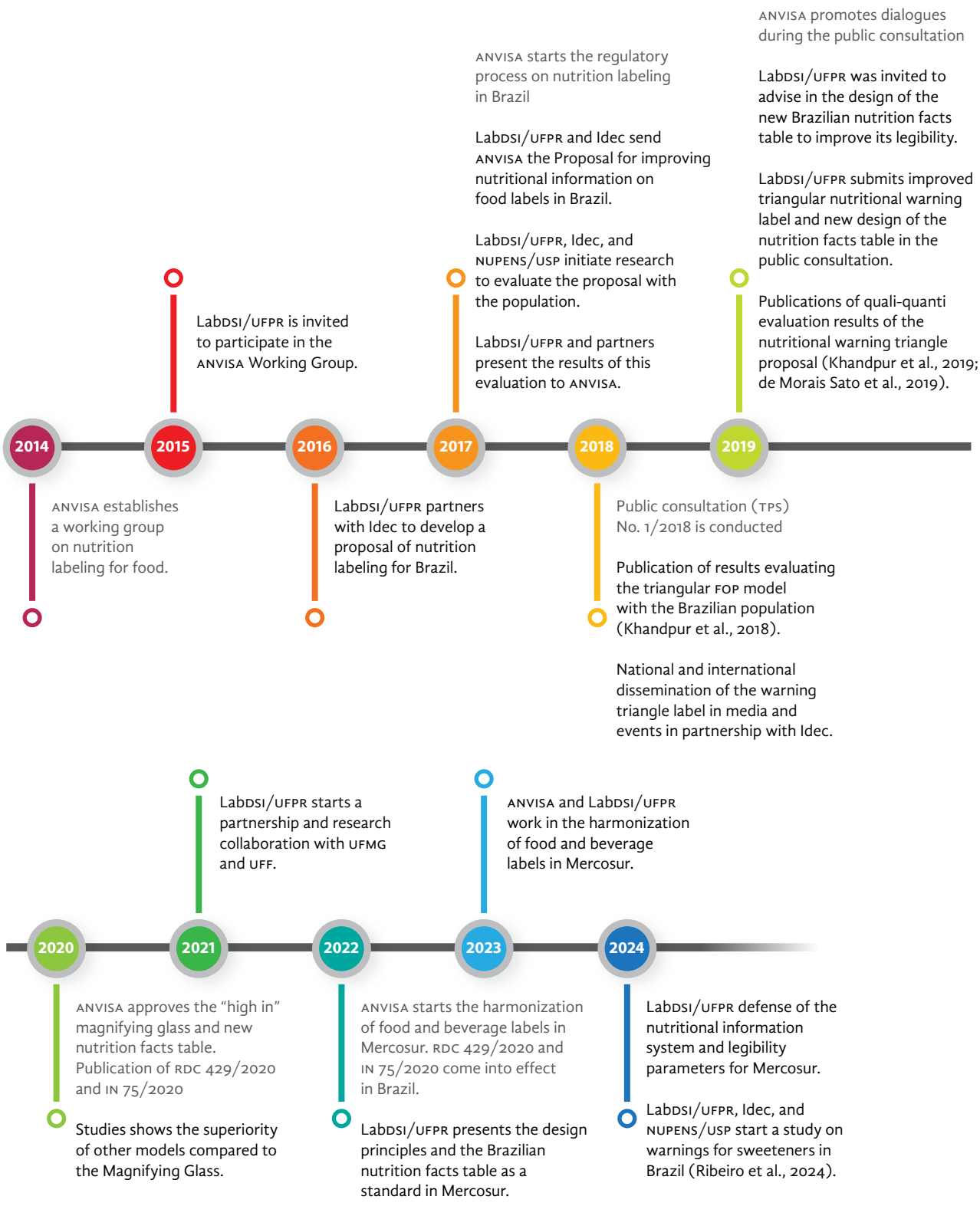


Figure 15 Timeline of the LabDSI/UFPR trajectory in nutrition public policies.

The participation of LabDSI/UFPR in national and international nutrition forums is a recognition of the significant role that information design has in the making of health policies, and the importance of an interdisciplinary approach to regulatory processes. This is particularly corroborated by the understanding of the Brazilian regulatory agency, ANVISA, that nutritional labeling is an information design system in which legibility and visibility are key for communication effectiveness.

The contributions of information design to nutritional labeling regulation mentioned in this experience report are significant, yet more research on the effectiveness of nutrition labeling is still needed to support public policies in Brazil and Mercosur. For instance, the typographic and the graphic composition of labeling components of food and beverage packaging should be further investigated. Additionally, a quantitative approach to information design research is particularly relevant as it can provide statistical evidence to support (or not) nutrition labeling policies, to make recommendations to improve such policies, and to evaluate their effectiveness on promoting a healthier eating/drinking behavior in the Brazilian population.

Finally, it is hoped that the experience shared in this report will encourage information design researchers and professionals to participate in and contribute to health policy regulatory processes, as this would certainly reinforce the social role of information design as a strategic area for promoting people's quality of life.

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