

Mapping nutritional labeling regulation processes: a diagrammatic approach towards understanding

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Abstract. This paper describes how diagrams can help visualize complex processes to obtain relevant insights. Based on an hypothesis that creating a graphic representation of an idea can broaden a problem perspective, we use a case of nutritional labeling where we mapped how the regulatory system affects (influences) interactions with the consumer.

Keywords: Food Labeling, Information Visualization, Diagrams Design.

1 The thesis topic

The analysis of nutritional labeling of prepackaged foods was one of the most important phases in our research project, which involved an understanding of the government policy and regulations and their impact in the decrease of chronic non-communicable diseases (NCD). Following Irwin [2] and Kossoff [3] holistic perspective of complex systems, we identified that the label is just one part of a multifactorial problem involving multiple stake-holders and pursued to study the label as a set of pseudo-solutions to understand: How is the standard regulation process in Mexico from its conception to its placement on the packaging of foods? How to analyze a legal document full of technicalities that describes a complex process?

2 Diagrams to understand complex documents

For Tversky [8] diagrams are a set of ideas that convey relationships of knowledge more directly and effectively than text. According to the author, the main function of diagrams is to structure information to enable understanding, inference, and discovery. In order to understand the standard 051 (that regulates labeling in Mexico) and the labeling process, we used a diagram to visualize the main ideas and how they are related, which would help us to analyze the information in an easier and clearer way. Although our objective was to understand a complex document, the mapping of the information allowed us to reach other types of findings that we describe at the end of this text.

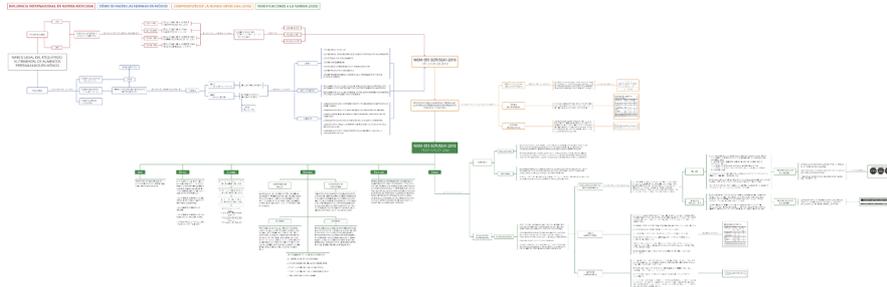


Fig. 1. Diagram showing the regulation process in Mexico from conception, operations, implementation and the involvement with stakeholders. For the full diagram, visit this link: <https://tinyurl.com/standard-051>

International influence on the Mexican standard (red). In this category we began by mapping the international labeling standards and good-practices in food packaging, and practices that influence the current Mexican regulation.

How standards are made in Mexico (blue). We coded in blue how laws, regulations and standards are made in Mexico, and those that complement the standard 051.

Components of the 2010 Mexican standard (yellow). This part describes the three main information components of the nutritional label as a system (and their relationship to their guideline structure): the **Guideline Daily Amounts (GDA)**, the **nutrition facts label** and the **ingredients list**. Among the first findings of this stage are the strict indications for the design of the front element in contrast to the few specifications for the elements placed on the back or lateral side, without any openly expressed reason.

Adaptations from 2020 standards (green). We thoroughly mapped the information on recent changes to the standard from a general perspective (objective, field and dates of application, actors involved) to the particular elements (physical changes in packaging and nutrition labeling). We classify physical packaging modifications into mandatory (main display surface elements) and optional (food quality and environmental designations). All the changes at the nutrition labeling level are mandatory and we subdivide them into each component element:

1. Front labeling is divided into **warning labels** and **precautionary legends**. Like the GDAs, they are intended to alert the consumer on the critical nutrient content of foods and have detailed design cues. These elements replace the GDAs.
2. The **nutrition facts label** and the **ingredients list** indicated the content of other nutrients and ingredients in the food. This must be declared per 100 grams of food. As in the 2010 regulation the design requirements are ambiguous and there are no obvious changes.

3 Contributions to the research

The use of diagrams to hierarchize and relate ideas allowed us to obtain findings that were very important for the research. On the one hand, the mapping of the standard helped us to have a better understanding of a complex document, but also, it allowed us to identify ambiguities that give rise to contradictions between the standard and labeling practice, which result in poor labeling and confusion for the consumer [6].

As Mauri and Ciuccarellia [4] explain, mapping information as a technique to clarify and understand concepts within the research is an open process, where diagrams coexist and continues to grow through multiple versions. For us, the evolution of those structures allow different readings of this complex problem.

The creation and analysis of the diagrams generated for the research allowed us to recognize problems related to regulation, situate rolls of certain actors involved, identify parts of the labeling information system and the way they were connected. We believe that, in order to address a complex problem such as this, it is necessary to identify different ways to approach it. Diagram as an information tool has been explored among various scientific literature in the field of design and diagrammatic reasoning [1, 5, 7]. By extrapolating our technique to more cases in a systematic way, we could open perspectives and discover better methods and mapping techniques.

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