Front-of-package labeling

as a policy tool for the prevention of noncommunicable diseases in the Americas

PAHO
Pan American Health Organization
World Health Organization
REGIONAL OFFICE FOR THE mericas

Front-of-package labeling

as a policy tool for the prevention of noncommunicable diseases in the Americas

Washington, D.C., 2020

PAHO Pan American Health Organization World Health Organization mericas

Front-of-Package Labeling as a Policy Tool for the Prevention of Noncommunicable Diseases in the Americas
PAHO/NMH/RF/20-0033

Contents

Background

High blood pressure, high fasting blood sugar levels (measured as fasting plasma glucose), and overweight/obesity are the top three risk factors for mortality in the Americas. By 2017, they were responsible for 44 percent of all deaths in this region or approximately 3.1 million deaths *(1)*. These risk factors are also responsible for the greatest loss of years of healthy life in the Americas. Nations of the Americas lost 75.2 million years of healthy life in 2017 due to high blood pressure, high fasting blood sugar levels, and overweight/obesity *(1)*. Years of life were lost because people died prematurely or lived without being able to study, work, play, or enjoy life to its potential. This loss impacts not only health but also human and socioeconomic development in the Region, as it reduces education attainment and labor productivity in the population, which increases societal costs *(2, 3, 4, 5, 6)*.

Unhealthy eating is closely linked to these top three risk factors in the Americas, driven largely by excess intake of sugars, total fats, saturated fats, trans fats, and sodium — which are referred to as the "critical nutrients" of public health concern (see Box) *(7, 8, 9)*. The excess intake of these nutrients has been driven largely by the widespread availability, affordability, and promotion of processed and ultra-processed food products that are excessive in sugars, fats, and sodium *(10, 11)*. As such, an essential part of the solution requires the use of laws and regulations to reduce the demand for and offer of products that contain excessive amounts of critical nutrients. One of the key policy tools to regulate such products to prevent them from unbalancing diets is the use of front-of-package labeling (FOPL) to indicate to consumers which products contain excessive amounts of sugars, total fats, saturated fats, trans fats, and sodium.

To support populations in the Americas in their efforts to meet the World Health Organization recommendations and protect them from the top risk factors harming their health and development, **the regulatory objective of a FOPL system should aim at allowing consumers to correctly, quickly, and easily identify products that contain excessive amount of sugars, total fats, saturated fats, trans fats, and sodium.**

LIMITS ON CRITICAL NUTRIENTS OF PUBLIC HEALTH CONCERN

The World Health Organization has set the upper limit intake for the critical nutrients that provide energy to be less than the following:

- 10 percent from free sugars (with additional benefit if lower than 5 percent)
- 10 percent from saturated fats
- 30 percent from total fats
- 1 percent from trans fats

For sodium (salt), the recommendation has an absolute and a relative upper limit.

- For adults, with an average 2000 kcal energy requirement, sodium intake should be lower than 2000 mg.
- For children, the upper limit for sodium should be adjusted downward based on the energy requirements *(7, 8, 9)*.

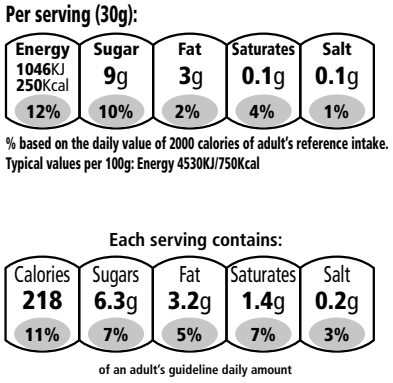
Labeling systems

Many FOPL systems for nutrition information have been designed and proposed, but the purpose of each system varies.

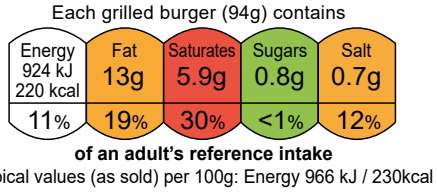
1.1 **Endorsement systems** apply front-of-package logos and seals to food products for the purpose of increasing the purchase of endorsed products (e.g., the green Keyhole logo originally developed by the Swedish National Food Administration *[12]* and the Choices logo developed by ultra-processed products companies *[13]*).

1.2 **Summary systems** provide an overall summary score about the healthfulness of the product (e.g., five possible scores in the Nutri-Score system developed in France (A, B, C, D, or E) *[14]* and 10 possible scores for the Health Star rating system developed in Australia, from half star to five stars *[15]*).

1.3 **Monochromatic guideline for daily amounts (GDA) systems** apply a miniature reproduction of the nutrition facts panel as a FOPL (e.g., a GDA system is used by ultra-processed food industry *[16]* that presents the number of calories and the amount of certain nutrients and their percentage contributions to daily intake).



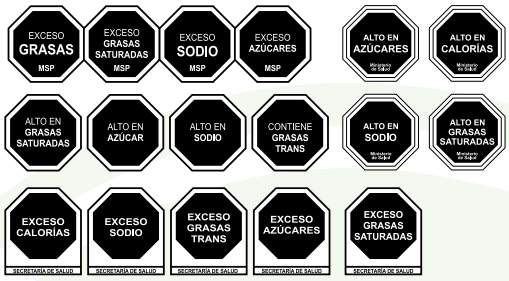
1.4 Color-coded GDA or Reference Intake (RI) FOPL systems use three different colors corresponding to traffic light road signs, depending on the level of nutrient content. The GDA miniature cells are filled with one of the three colors: red for a high level of nutrient content, amber for medium, or green for low (e.g., color-coded front-of-package scheme for voluntary adoption in the United Kingdom *[17]*).



1.5 Nutrient-specific textual and color-coded systems, also known as traffic-light systems, use multiple textual information associated with color codes to indicate the level of concentration of specific nutrients (e.g., the Ecuadorian mandatory system features levels of sugars, fats, or sodium by using text, color codes, and different sized bars to reflect the concentration of these nutrients in the product as high, medium, or low).

Ecuador (top to bottom):
HIGH in SUGAR
MEDIUM in FAT
LOW in SALT

1.6 "HIGH/EXCESSIVE" systems, also known as nutritional warnings, use front-of-package text-based seals to inform consumers when a product contains excessive amounts of critical nutrients. They place a "HIGH IN 'X'" or "EXCESS 'X'", where X would refer to the nutrients of concern when they are high/excessive (e.g., EXCESS SUGARS) (e.g., adopted as mandatory by Chile *[18]*, Mexico *[19]*, Peru *[20]*, and Uruguay *[21]* and proposed for mandatory use in Brazil *[22, 23]*, and Canada *[24, 25]*).



Uruguay (top left to right): EXCESS FATS, EXCESS SATURATED FATS, EXCESS SODIUM, EXCESS SUGARS; Chile (top right clockwise): HIGH IN SUGARS, HIGH IN CALORIES, HIGH IN SATURATED FATS, HIGH IN SODIUM; Peru (middle left to right): HIGH IN SATURATED FATS, HIGH IN SUGAR, HIGH IN SODIUM, CONTAINS TRANS FATS; Mexico (bottom left to right): EXCESS CALORIES, EXCESS SODIUM, EXCESS TRANS FATS, EXCESS SUGARS, EXCESS SATURATED FATS.

Purpose of the labeling system

Having a clearly defined regulatory objective helps in identifying the kind of FOPL system that fits the intended purpose. As noted above, the regulatory objective of a FOPL system should aim at allowing consumers to correctly, quickly, and easily identify products that contain excessive amount of sugars, fats, and sodium. This will help consumers meet the World Health Organization recommendations and protect them from the top risk factors for mortality, i.e. high blood sugar levels, and overweight/obesity, which are harming their health and development.

- **Monochromatic GDA systems** do not provide interpretative information, they simply place a miniature version of the numeric values in nutrition facts panels on the front of the package. These systems do not fit the purpose. They also do not address the well-established disparities associated with the understanding of numeric nutrient information, such as nutrition/health literacy, numeracy, and socioeconomic status.
- **Endorsement systems and summary score systems** do not allow consumers to identify products containing excessive amounts of specific critical nutrients (e.g., sugars, fats, and sodium). These systems do not fit the purpose.
- **Color-coded GDA or RI systems** use colors applied to three different levels of concentration of nutrients, applying a color to what they mean to be high or excessive. The system, however, does not tell consumers which one is high or excessive, which impedes it from being easy and simple. Therefore, this scheme requires the training of consumers and relies on higher baseline levels of nutrition knowledge *(26, 27)*. In addition, consumers might receive information of conflicting valence (i.e., positive and negative at the same time), as they may be informed that a product is simultaneously red and green *(28, 29, 30, 31, 32, 33, 34)*. These systems do not fit the purpose. They would add unnecessary information and distort the intend purpose; specifically, they would add other levels of concentration of nutrients and numbers that require nutrition and mathematical skills to be deciphered, resulting in a "paralysis by analysis" and/or abstraction of information *(35, 36, 37, 38, 39, 40, 41, 42)*.
- **Nutrient-specific textual and color-coded systems** are an improvement over the color-coded GDA or RI systems as they add text descriptors for each color and remove numbers, which improves the simplicity for consumers *(43)*. However, these systems may provide consumers with conflicting information, as they may still be informed that a product is simultaneously red/high and green/low in given nutrients. The use of bars and text for red/high, amber/medium, and green/low categories distracts from the purpose and diverts the focus by adding unnecessary information.
- **"HIGH/EXCESSIVE" systems, also known as nutritional warnings,** provide direct information using front-of-package text-based seals. The seals allow consumers to correctly, quickly and easily identify products that contain excessive amounts of critical nutrients. Nutrition warning systems are the best fit for the purpose of the front-of-package labeling.

Performance measures

There are hundreds of different FOPL systems applied to products worldwide (e.g., 158 unique FOPL systems were found solely in Canada *[44]*) with different purposes, which makes it impossible for studies to compare all systems and to subject each unique FOPL system to all research questions and measures of performance. For the purpose of FOPL research, it is unnecessary and inefficient to consider FOPL systems that do not fulfill the intended purpose of the front-of-package labeling. For this reason, a literature review can be focused on finding the best features in systems that fit the intended purpose.

Research shows that consumers face many challenges in accessing, understanding, and evaluating nutrition labeling information when making food choices. From a public health perspective, it is thus imperative that the main performance features of the FOPL system to be considered include: its capacity to capture consumers' attention; the ease with which consumers can process, understand, evaluate and use the information; and the influence of the FOPL system on consumers' purchase decisions *(45, 46)*.

Research has demonstrated consistently that consumers do not engage in extended cognitive effort in purchase situations—including Nobel Prize-winning research. Instead, they try to minimize both error and effort. Their major goal, especially in repetitive decisions (which is the case for food and drinks) is to make a satisfactory choice while minimizing cognitive effort. A typical shopping trip involves numerous decisions and consumers do not expend a great deal of time and effort on decisions *(35, 36, 37, 38, 39, 40, 41, 42, 47)*.

Improving the information available in the food system, people's access to information, and people's capacity to effectively use information can allow individuals as well as food systems to become more health-literate and nutrition-literate at functional, interactive, and critical levels. This can facilitate individual, environmental and systemic changes that are more coherent with public health goals *(48, 49)*.

For these reasons, it is important to consider FOPL systems that can inform consumers about the excessive amounts of critical nutrients of public health concern in a direct, simple, easy, and quick manner.

■ Attention capturing, information processing and understanding

Food purchase decisions are made in very short time frames *(50, 51)*. For this reason FOPL systems that quickly capture consumers' attention and ease information processing are preferable to those that require more time and cognitive effort to process. Nutrition warning systems are located and read more quickly than traffic light colored-coded systems *(28, 52 , 53)*. In addition, nutrition warning systems are better at improving consumers' understanding of excess nutrient content than traffic light systems *(52, 53, 54, 55)*. The psychophysics of reading and marketing and consumer research provide evidence that readability is improved when the most contrasting colors (i.e. black and white) are used *(56)*; conversely on the psychology of colors demonstrate that the use of multiple colors on the packaging and labels of food and beverage products increase consumers' appe-

tite for the product and stimulate more emotional rather than rational decision making *(57, 58, 59)*. In addition, the use of green for a specific nutrient may drive consumer misperception of a product as healthier *(28, 29, 30, 31, 32, 33, 34)*.

- **Usage of information and influence on purchase decision**

  Traffic light systems, to some extent, can improve consumer understating about the nutrition composition of the product when they are compared with the absence of a FOPL. Several studies, however, have demonstrated they have little influence on the improvement of consumers' purchase intentions or decisions *(60, 61, 62, 63, 64, 65)*. In contrast, nutrition warning systems have effectively decreased consumers' intent to purchase products containing excessive amounts of critical nutrients across different populations and influenced consumers' to make healthier purchase decisions *(54, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75)*.

All studies comparing the performance of FOPL systems aimed at informing consumers about the excessive amounts of critical nutrients associated with the greatest burden of diseases draw the same conclusion: FOPL nutritional warnings perform better than other systems in meeting that purpose.

Nutrient profile model

A nutrient profile is required to 1) define which products will be subject to the FOPL regulation and 2) what criteria will be adopted to interpret the nutrient content data in order to translate it into information for the consumer. In 2014, the Pan American Health Organization (PAHO) commissioned an Expert Consultation Group to develop a nutrient profile model that among other purposes serves as a basis for FOPL systems in the Americas. The PAHO nutrient profile model is designed to meet the recommended nutrient intake goals of the World Health Organization (WHO) *(7, 8, 9, 76)* and provides thresholds to identify products high in sugars, total fats, saturated fats, trans fats, and sodium. The model uses the percentage of energy from calorie-containing nutrients as the basis, making the system applicable and relevant to all age groups. For instance, children's energy requirements are lower than adults'. Using a 100g or given portion size as the basis could impose on children a higher load of nutrients of concern, while it would not affect the diet of adults. When using the energy as the basis, the model can be applied to all products and to population groups with different energy requirements.

For sodium, which is not a calorie-containing nutrient, an absolute number for the intake goal for adults has been established (2,000 mg), which is to be adjusted downward for children according to their energy requirements *(8)*. Countries can consider applying an absolute ceiling of 300 mg of sodium per 100g of product, in addition to the 1mg:1kcal sodium:energy ratio threshold recommended in the PAHO Nutrient Profile Model.

For ultra-processed and processed drinks that provide no energy, the upper limit for sodium can be set at 40mg per 100ml, which is double the amount of the maximum usual sodium content found in drinkable water according to WHO guideline on drinking-water quality *(77)*.

Frequently asked questions on front-of-package nutrition warning system for the prevention of noncommunicable diseases

1. Performance of the nutrition warning system and alternative FOPL systems

Performance of the nutrition warning system

#1 *Does the "stop" sign indicates a legal violation?*

Arguments used to oppose the nutrition warning FOPL:

☒ The "stop" sign indicates a legal violation rather than an informational and optional suggestion with the element of choice for our informed/educated consumers based on their daily individual dietary requirements and meal replacement options – as may be proposed by their doctor or dietician.

Response:

☑ A sign *per se* does not imply a violation. When applied to traffic, for example, a stop sign simply means the driver must stop before proceeding. Hence, the existence of a stop sign does not mean or indicate a legal violation.

☑ The purpose of nutrition warning systems is to inform consumers in a quick, correct, and easy way if a product contains excessive amounts of sugars, fats, and/or sodium. It does not forbid consumers from buying products; it helps them to quickly and easily make an informed decision.

#2 *Are education campaigns more effective consumer behavior change tools than nutritional warnings?*

Arguments used to oppose the nutrition warning FOPL:

☒ FOPL is insufficient to change consumer behaviors and must be complemented by education campaigns.

☒ Education campaigns should be used instead of FOPL.

☒ It may be more effective to promote information on creating low-cost nutritious meals.

☒ Nutrition education is a vital component of changing consumer behaviors. This should be included in FOPL standards to align with Codex Guidelines on Nutrition Labelling (CAC/GL 2-1985).

Response:

☑ Any measure to modify public behavior should form part of a suite of complementary policies supported by a comprehensive public education program and nutritional labeling is no exception.

☑ Education and information campaigns are indeed important. However, such measures are not alternatives or substitutes for FOPL or any other policy; they are complementary.

☑ FOPL is an education tool in itself as it provides information that helps educate consumers about the content of food products *(78, 79)*.

☑ Compared with media campaigns, FOPL is more cost-effective given the reach and large self-sustainability over time.

☑ Furthermore, a campaign to inform the population about healthy meals, by itself, would not allow consumers to know in a quick and easy way which products are high in sugars, fats, and/or sodium. Rather, a FOPL that fits that purpose must be concomitantly in place.

☑ The evidence is consistent in demonstrating that consumers employ little cognitive effort and time in deciding their purchases *(35, 36, 37, 38, 39, 40, 41, 42, 47)*. A large and growing body of scientific evidence consistently shows that FOPL nutrition warning systems work best to quickly, easily, and correctly inform consumers when products contain excessive amounts of nutrients related to noncommunicable diseases and to improve purchase intention and decision *(28, 52, 54, 55, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75)*.

#3 *Why do warning symbols focus on negative aspects of products?*

Arguments used to oppose the nutrition warning FOPL:

☒ The warning symbols only bring attention to unhealthy attributes; however, consumers also would be assisted by information to choose "healthy" foods.

☒ On their own, front of pack warning messages tend to label foods either as good or bad, while foods contain nutrients other than those in excess.

Response:

☑ The FOPL nutrition warning system is clear about its focus and purpose. The more purposes expected from a system, the less focused and less effective it will become in achieving its purpose or multiple purposes.

☑ The purpose of nutrition warning systems is to help the population identify products that contain excessive amounts of critical nutrients such as sugars, total fats, saturated fats, trans fats, and sodium. These nutrients should be the basis of the FOPL. Merging or adding information about positive nutrients or attributes into the FOPL system would divert its purpose, dilute the effect, and increase consumer confusion.

- ☑ FOPL systems that present positive nutrient or positive attributive information are not an appropriate vehicle to fit the purpose abovementioned (i.e., to help the population identify products that contain excessive amounts of critical nutrients) and to promote healthy diets, for several reasons *(28, 29, 30, 31, 32, 33, 34, 80 ,81 ,82 ,83)*:
  - They may stimulate excessive consumption of processed and ultra-processed products that would not be recommended as part of a healthy diet because they add a health halo effect and the misperception that the product in question is healthy *(28, 29, 30, 31, 32, 33, 80, 81, 82, 83)*;
  - They distract consumers from dietary recommendations that should be addressed by using other policy tools and vehicles of information, not the label of packaged products;
  - Claims such as "low in sodium" could generate an excessive consumption of ultra-processed products so labeled and subsequent excessive intake of sodium and/or other critical nutrients. This could be caused by the combination of hyperpalatability of such products and the stimuli of claims *(29, 30, 31, 32, 33, 80 ,81, 82, 83)*;
  - Studies have demonstrated that when consumers are rating the healthfulness of a product that has excessive amounts of sugars, fats, or sodium, adding the green color (perceived as a positive feature) to the FOPL system distorts their perception, making consumers believe that the product is healthier than it really is, or that it is recommended as part of a healthy diet when it is not *(28, 29, 30, 31, 32, 33)*.
- ☑ Products carrying front-of-package nutrition warnings are typically ultra-processed food and drink products that apart from having excessive amounts of critical nutrients, are associated with lower intake of positive nutrients such as vitamins, minerals, protein, and fiber *(10, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95)*. Hence, while FOPL nutrition warning systems focus on excessive amounts of critical nutrients, consumers are more likely to increase consumption of positive nutrients as well as avoid excessive amounts of sugars, total fats, saturated fats, trans fats, and sodium as they improve their purchase decisions due to the nutrition warning label *(66, 67, 68, 69, 70)*.

Alternative FOPL systems

#4 *Is the traffic-light FOPL system more attractive and preferred by consumers? Does it do a better job at facilitating consumer choice and understanding?*

Arguments used to oppose the nutrition warning FOPL:

- ☒ The traffic-light system is preferred by consumers.
- ☒ The traffic-light system has built-in options informed by individual needs, experience, and doctor/dietician propositions.

☒ The traffic-light system leaves room for consumer choice and facilitates reading and understanding of the products' nutritional components.

☒ The traffic-light system is more attractive. The bright colors are more aligned with the attractive nature of food labels.

Response:

☑ Consumer preference is not a parameter that measures the performance of a FOPL system and helps identify the most effective one. Hence, studies or assertions that indicate a system is preferred by consumers do not help in identifying the system that best suits the intended public health purpose *(43, 96, 97, 98, 99, 100, 101)*.

☑ Evidence does not support the argument that traffic light systems leave more room for consumer choice and facilitate reading and understanding of the products' nutritional components, when compared with nutrition warning systems. In fact, independent scientific evidence has demonstrated the opposite:

- The use of the traffic-light system has been proven to be less effective in informing consumers when products contain excessive amounts of sugars, fats, and/or sodium compared with use of the nutrition warning system *(28, 52, 54)* adopted in Chile, Mexico, Peru and Uruguay, and proposed for use in Brazil, Canada, and other countries.
- The traffic light system has been proven to be less effective in influencing consumer purchase intentions and decisions *(54, 60, 61, 102)*. This lower efficacy or lower performance has been explained by several scientific studies, *(28, 29, 30, 31, 32, 33, 34, 35, 52, 83, 103)* showing that:
  - consumers can get confused when exposed to traffic light labels that are simultaneously high, medium, and/or low on different nutrients *(28, 32, 34, 103)*;
  - consumers struggle with and take more time identifying whether a food product carrying a traffic-light FOPL is excessive in a given nutrient *(28, 29, 31, 32, 34, 35, 52)*;
  - the green sign for some products may work as a stimulus for the purchase of products that may be green in sodium, but are red in sugar, which could result in an undesirable increased consumption of these products *(28, 29, 30, 31, 32, 33, 34, 35, 52, 83)*.
- Since the 1970's, marketing and consumer research has demonstrated that consumers employ little time and cognitive effort in making a purchase decision, especially when it comes to repetitive purchases, which is the case for food and drink products. The traffic light system requires more cognitive effort and more time for consumers to process and decide, when compared with the nutrition warning system *(28, 35, 36, 37, 38, 39, 40, 41 ,42, 52)*.

☑ In addition to this evidence, it is also known that green-red color blindness is the most common form of color blindness, which means the measure would exclude part of the population from having the information.

☑ The traffic light system has been adopted voluntarily also because companies realized they could increase the sales of non-recommended products *(61, 63)*. Sugary drink companies adopted it volun-

tarily as a marketing strategy to upscale their sales by featuring the green light for sodium and fats in their sugary products.

☑ In order to protect consumers, FOPL systems that may be used as part of a marketing strategy to leverage the purchase of superfluous and unhealthy products should be avoided. For more details see PAHO's Technical Brief for a summary of the purpose of FOPL and comparison of the performance of different systems.

#5 *Why not use FOPL systems combining GDA and traffic light colors or summary systems based on recommended portions?*

Arguments used to oppose the nutrition warning FOPL:

☒ Other front of pack supplementary nutritional labeling may be included with the warning messages to provide additional information about the overall nutrient contribution a food provides at a glance and also when it is consumed in the recommended portion. This approach contributes to supporting consumers to make balanced and informed choices while realizing the essential need to control portion intake.

Response:

☑ Hybrid systems combining GDA and traffic light systems have the same limitations described in #4. In addition, the colored GDA does not include text that interprets the quantitative amounts of listed nutrients. For more details see PAHO's Technical Brief for a summary of the purpose of FOPL and comparison of the performance of different systems.

☑ In addition, FOPL systems that provide overall or summary nutrient scores do not allow consumers to clearly and quickly identify products that contain excessive amounts of critical nutrients (i.e., nutrients associated with the most burdensome diseases), such as sugars, total fats, saturated fats, trans fats, and sodium. For more details see PAHO's Technical Brief for a summary of the purpose of FOPL and comparison of performance of different systems.

PAHO Nutrient Profile Model

#6 *How rigorous is the PAHO Nutrient Profile Model?*

Arguments used to oppose the application of the PAHO Nutrient Profile Model to nutritional warnings:

☒ The PAHO Nutrient Profile Model is too rigorous.

Response:

- ☑ The PAHO Nutrient Profile Model is based on WHO recommendations and nutrient intake goals, developed with rigorous scientific review of the evidence *(76)*.
- ☑ The PAHO Nutrient Profile Model classifies products as having an excessive amount of critical nutrients when the proportion of such nutrients in the product surpasses the WHO recommended intake *(7, 8, 9, 76)*. The WHO population nutrient intake goals aim at guiding the daily dietary intake of nutrients to prevent noncommunicable diseases and other diet-related diseases *(7, 8, 9)*.
- ☑ The WHO population nutrient intake goals are expressed as a proportion of energy intake (e.g., free sugars should provide less than 10 percent of energy), and not as a proportion of a fixed number of calories per day. Given that different age groups have different energy requirements, the PAHO Nutrient Profile Model accounts for diets that are balanced for all age groups. When someone eats a product that is in excess of a nutrient according to the PAHO Nutrient Profile Model, he or she is increasing the proportion of the energy from that critical nutrient beyond the recommended intake goals. For example, when someone consumes a sugary drink that provides energy only in the form of sugars (i.e,. 100 percent of the energy is from sugars), by the end of the day the total energy intake from free sugars will be above the 10 percent, regardless the amount of product consumed or the age group consuming the product. The consumption of processed and ultra-processed products that exceed the PAHO Nutrient Profile Model criteria increases the proportion of energy from critical nutrients or the amount of sodium beyond the recommended intakes, unbalancing diets.
- ☑ If products do not meet PAHO/WHO recommendations, it does not mean that the PAHO Nutrient Profile Model is too rigorous; it simply means that products proportionally exceed the recommended nutrient intake goals. Public health recommendations are based on evidence, health risks, and associated burden. If products contain excessive amounts of nutrients that are associated with the most burdensome diseases, consumers should have this information quickly and easily available when they are making their purchase decisions. If the recommendations were to be changed, based on market and not on science, consumers would be misled to believe they are purchasing a product that is healthier than it actually is.

2. Policy-related considerations

#7 *Does Codex Alimentarius prevent countries from developing their own FOPL systems?*

Arguments used to oppose the development and/or implementation of nutrition warning FOPL:

- ☒ The proposed FOPL standard is not informed by Codex Alimentarius and currently there is no FOPL standard developed by the Codex.
- ☒ The standard or standard proposal has not been harmonized with Codex.
- ☒ Nutrition warnings are not part of the Guidelines on Nutrition Labelling (CAC/GL 2-1985) from Codex.

Response:

- ☑ Countries are sovereign and have a right to take necessary and non-discriminatory actions to protect public health and guarantee their populations' food and nutrition security *(104, 105)*. This includes going beyond Codex guidance, such as where implementation would be ineffective or inappropriate for achieving the government's health objective.
- ☑ Discussions and development of any Codex texts are based on and informed by the experiences of countries and regions. Therefore, Codex seeks country experiences in implementing policies to inform the development of relevant Codex texts. This means that Codex expects member states to take action. By establishing and adopting their FOPL standards, Codex member states will also contribute to informing global Codex discussions and work development.

#8 *Is there a need for additional research on the use of FOPL nutrition warning systems?*

Arguments used to oppose nutrition warning FOPL:

- ☒ Additional research is required from a policy perspective on the use of FOPL nutrition warning systems.

Response:

- ☑ In order to reduce the risk for diet-related noncommunicable diseases, the purpose of the FOPL system should be to inform people in a quick and easy way about which products contain excessive amounts of critical nutrients, i.e., sugars, total fats, saturated fats, trans fats, and sodium.
- ☑ People benefit from clear and simple guidance from front-of-package labeling that can help them identifying products containing excessive amounts of critical nutrients at the time of purchase. Based on available scientific evidence, the nutrition warning approach is the one that best fits this purpose. See items #3, #4, #5 and PAHO's Technical Brief for a summary of the purpose of FOPL and comparison of performance of different systems.

- ☑ **All studies comparing the performance of FOPL systems aimed at informing consumers about the excessive amounts of critical nutrients associated with the greatest burden of diseases draw the same conclusion: FOPL nutritional warnings perform better than other systems in meeting that purpose.** In addition, nutrition warning labels help consumers to quickly and easily identify products that contain excessive amounts of sugars, fats, and sodium, which are associated with noncommunicable diseases, the principal cause of ill-health and death in the country and in the Americas. See items #3, #4, #5 and PAHO's Technical Brief for a summary of the purpose of FOPL and comparison of performance of different systems.
- ☑ It becomes an ethical imperative to take action and adopt the FOPL nutrition warning system considering the volume and consistency of the evidence supporting this system as the one that best meets the purpose of informing people about products that are excessive in nutrients responsible for the highest morbidity and mortality in the Americas.
- ☑ For more details, see items #3, #4, #5 and PAHO's Technical Brief for a summary of the purpose of FOPL and comparison of performance of different systems.

#9 *Why should FOPL be mandatory?*

Arguments used to delay and/or weaken FOPL:

- ☒ The FOPL must be voluntary, especially for food products that already meet a national or foreign Nutrition Facts norm or standard.

Response:

- ☑ Public health measures that address important risks for the population should be mandatory, to ensure the protection of the entire population.
- ☑ When the health of the population is at risk, rigorous and urgent public health measures need to be mandated and enforced to ensure the protection of the public's health. Public health regulations should be not left to be adopted on a voluntary basis.
- ☑ There is no evidence to support that a voluntary approach can meet the intended purpose of a FOPL system. On the contrary, evidence has shown that food industry compliance with voluntary FOPL is low especially in instances where labels will reflect poorly on the products. The food industry is unlikely to comply with any voluntary FOPL that highlights negative properties of products they manufacture and discourages their purchase by consumers. Evidence from countries that have adopted a voluntary approach shows that companies selectively avoid applying the labeling to products of their portfolio that contain excessive amounts of critical nutrients, or they simply choose to not voluntarily apply the FOPL system at all *(106, 107, 108, 109, 110)*.
- ☑ In response to the growing recognition of the effectiveness and demand for front-of-package labels, the food industry has been promoting a voluntary guideline for daily amounts (GDA) front-of-package label. However, a robust body of global independent evidence has shown that GDAs

perform poorly on a number of dimensions compared with other existing FOPL systems, and that GDAs are the least impactful and least effective globally. For more details, see items #3, #4, #5 and PAHO's Technical Brief for a summary of the purpose of FOPL and comparison of performance of different systems.

#10 *Does lower laboratory capacity to derive quantitative assessments of nutritional content impede the adoption or implementation of FOPL?*

Arguments used to delay the adoption or implementation of FOPL:

☒ Adoption of a nutrition warning system requires the presence of laboratory capacity to undertake nutritional analysis for examination and verification of nutritional content.

Response:

☑ Commercial operators (i.e., manufacturers and importers) should not be allowed to mislead the consumer or promote fraudulent product content information. It is their responsibility to provide accurate information about the content of their food products. Nutrient content can be assessed using laboratory analysis and/or a stepwise nutrient analysis based on the composition of ingredients and on processes used to manufacture the product.

☑ In addition, laboratory and/or stepwise nutrient analyses are only one of the components of the monitoring and accountability frameworks to be used by governments. Noncompliance can be captured by means of manufacturing plant inspections and labeling documentation review. Such existing mechanisms can continue to be used to verify compliance throughout the Americas.

☑ Even wealthy countries do not undertake laboratory testing of all products. Stepwise nutrient analyses are commonly used to determine or estimate nutritional content based on the ingredients, and companies must provide a sworn declaration that the information on nutrient content or on other characteristics of the product required by the legislation is trustworthy. If a false claim is identified, sanctions are applied. False claims can be investigated by means of manufacturing plants inspections and food labels reviews and in very few specific cases by means of laboratory analysis.

☑ After inspections of manufacturing plants, document verification, and review of food labels, countries may need to analyze the nutrient content of samples of products considered at high risk of noncompliance. Countries and subregions of the Americas do have access to sufficient laboratory capacity for the various methods of analysis required.

3. Economic considerations

#11 *Will nutrition warning labels have significant cost implications?*

Arguments used to oppose nutrition warning FOPL:

- ☒ FOPL nutrition warning systems carry significant cost implications for manufacturers, importers, and retailers.
- ☒ An appropriate phase-in period and financial and technical resources will be needed to support the adoption of nutritional warning standards and regulations.
- ☒ Additional research is needed to understand the costs associated with the adoption of nutrition warning labels prior to adoption of the standards and regulations.
- ☒ Small companies will require more time to comply.

Response:

- ☑ The food and beverage sector has to comply with external export regulations and should also be prepared to comply with international/regional/domestic regulations.
- ☑ The initial costs of labeling will be a one-time investment related to the changing of the printing plates that are needed to print the labels. Companies operating in or exporting to different countries already have to meet different legislative requirements. In addition, the initial costs for businesses are diluted throughout the period of implementation.
- ☑ FOPL stickers can be used temporarily in cases where a significant amount of a product with a long expiration dates has already been manufactured. In such cases, when the product has already been labeled and is ready to be sold in the domestic market, manufacturers may add nutritional warning stickers in order to comply. New products will have the new label, printed using the new label printing plate with the nutritional warning embedded on the label/packaging.
- ☑ An analysis commissioned by the United Kingdom's Department for Environment, Food and Rural Affairs *(111)* demonstrated that companies are constantly re-labeling their products and mandatory changes due to new legislation account for less than 14 percent of re-labeling on average. It has been demonstrated that even smaller companies are changing their labels very often for promotion and advertisement purposes. Some of the costs of investing in labels already being used for product promotion would simply be redirected to meet public health and regulatory requirements. Product packaging is generally updated and reprinted quite frequently.

#12 *How FOPL will impact the economy?*

Arguments used to oppose nutrition warning FOPL:

☒ Nutrition warning labels will be harmful for the economy.

Response:

☑ Nutrition warning labels are not expected to have a negative impact on the economy. On the contrary, FOPL opens an opportunity for many businesses to develop and expand the demand and offer of foods recommended as part of a healthy diet.

☑ Against the background of the growing epidemic of obesity, associated noncommunicable diseases, morbidity and mortality, the cost savings from deaths averted or lives saved outweigh the costs associated with modification of product labels *(5, 6, 24, 112, 113)*.

☑ There is evidence indicating that companies are likely to shift to manufacturing healthier products as a result of changing consumer behavior and product demands. Ultimately, company financial performance would not be adversely affected, as the basis of business models shifts toward healthier options *(67, 69)*.

☑ Even for regulations that are more restrictive than FOPL, such as taxation of unhealthy products, the evidence shows that employment is not reduced *(114, 115)*.

4. International trade- and law-related considerations

#13 *Is nutrition warning FOPL a barrier to free trade, and will it affect trade with partners?*

Arguments used to oppose nutrition warning FOPL:

☒ The use of the nutrition warning labels will affect trade with various partners.

☒ Most of the country's or region's primary trading/export partners do not use the nutrition warning FOPL model yet.

☒ Nutrition warning FOPL is restrictive on exports.

☒ Nutrition warning FOPL is a discriminatory measure.

☒ Mandatory implementation of front-of-package labeling regulations is a perceived barrier to free trade.

☒ Nutrition warning FOPL would fail to meet countries' regional and international obligations under integration mechanisms (MERCOSUR, SICA, CARICOM, NAFTA), the Technical Barriers to Trade ("TBT") Agreement, and General Agreement on Tariffs and Trade ("GATT").

Response:

- ☑ Foreign trading partners typically have different labeling standards or elements of labeling that differ somehow. In this context, having a different national approach does not change the status quo. Products would still be able to be sold in more than one market by meeting the requirements of the markets in question.
- ☑ The FOPL system should not be decided based on trade partner practices, partly because trade agreements preserve the right to regulate to protect health. The nutrition warning FOPL has been designed to meet a public health purpose to protect countries' populations health and is based on evidence and recommendations from PAHO/WHO.
- ☑ The nutrition warning approach was firstly adopted in Chile, and then in Peru, Israel, Uruguay, and Mexico. Brazil, Canada and other countries are considering a similar system because it meets the purpose of helping consumers to identify products that have excessive amounts of critical nutrients associated with noncommunicable diseases.
- ☑ Mandatory labeling, including FOPL, is not a barrier to free trade. States have an obligation to protect public health *(105)*. Obesity is a growing problem in the Region and together with hypertension and diabetes caused 44 percent of all deaths in the Americas in 2017. This same year, Americas' nations lost 75.2 million years of healthy life due to high blood pressure, high fasting blood sugar levels (measured as fasting plasma glucose), and overweight/obesity *(1)*. Also it has been widely documented that obesity not only harms health, but it reduces educational attainment, job productivity (by increasing absenteeism and presenteeism), and reduces the likelihood of actual employment *(2, 3, 4)*. The nutrition warning FOPL approach is based on the best available independent evidence, and it has proven to provide quick and easy information that meets the purpose, which is to allow consumers to identify products with excessive amount of nutrients associated with the diet-related noncommunicable diseases and change their purchase decision into a healthier choice (see items #3, #4, #5). For this reason, nutrition warning FOPL is a necessary public health measure. It applies to all operators, domestic and international, and is thus non-discriminatory. All companies are capable of trading their products anywhere; they simply need to meet the nutrition warning FOPL standard adopted by the importing country as for any other labeling requirements, so there is no barrier to trade. In any case, countries are sovereign to take non-discriminatory and necessary actions to protect the public health *(104)*.
- ☑ Chile, Israel, Mexico, Peru, and Uruguay have adopted nutrition warning FOPL to inform the population about products containing excessive amounts of critical nutrients and this has not resulted in a legal challenge under a trade agreement. Those nutrition warning FOPL systems are evidence-based and do not discriminate based on the origin of products, placing the governments in a strong legal position.
- ☑ Therefore, when standards and regulations adopting nutrition warning FOPL systems do not discriminate based on the origin of products; by meeting public health and consumer protection goals, they do not violate regional and international obligations under SICA, CARICOM, NAFTA, MERCOSUR, or World Trade Organization (WTO) law *(104)*. The breadth of the right to regulate under trade

agreements is also reflected in a recent decision of the WTO Appellate Body upholding tobacco plain packaging as consistent with WTO law *(116)*. In subregional example, Ministries of Health of MERCOSUR have approved an agreement on guiding principles for front-of-package labeling that are supportive of and consistent with the purpose and evidence-based features of nutrition warning FOPL systems *(117)*.

- ☑ The United States Food and Drug Administration (FDA) or *Codex Alimentarius* are often mentioned as a reference for FOPL options. However, the FDA is not an international body, and neither Codex nor the FDA have guidelines for front-of-package labeling. *Codex Alimentarius* actually counts on countries to advance the use of front-of-package labeling to help inform consumers in a quicker and easier way, and to share their experiences and results, so that Codex can learn from these experiences. For more details see item #7.
- ☑ The July 2020 "Statement by the UN Special Rapporteur on the right to health on the adoption of front-of-package warning labelling to tackle NCDs" recognized front-of-package warning labels as a key measure for States to tackle the burden of NCDs. The statement was endorsed by the Special Rapporteur on the right to food, and the Chair and Vice-Chairs of the Working Group on the issue of human rights and transnational corporations and other business enterprises. States are called on to take a number of actions to fulfil their obligations *(118)*:
  - *"States are required to adopt regulatory measures aimed at tackling NCDs, such as front-of-package warning labelling on foods and beverages containing excessive amounts of critical nutrients."*
  - *"States should decisively counter undue influence of corporations on government decision-making by strengthening legal frameworks and safeguard the policies that protect the right to health, such as the front-of-package warning labelling, from commercial and other vested interests of the food and beverage industry."*
  - *"States cannot remain passive in the face of NCDs. They should adopt an integral approach to reduce the consumption of unhealthy food products through the use of a broader set of laws and regulations. Front-of-package warning labelling is a key measure for States to tackle the burden of NCDs."*

Acknowledgements

PAHO gratefully acknowledges the following: Alejandro Calvillo and Rebecca Berner (El Poder del Consumidor); Benn McGrady, Chizuru Nishida and Katrin Engelhardt (World Health Organization); David Hammond (University of Waterloo); Elisa Prieto and Ignacio Ibarra (Pan-American Health Organization); Elizabeth Mansfield (Health Canada); Fernanda Kroker (Institute of Nutrition of Central America And Panama); Gastón Ares (University of the Republic of Uruguay); João Peres (O Joio e o Trigo); Jo Jewell (United Nations Children's Fund); Maisha Hutton and Sir Trevor Hassell (Healthy Caribbean Coalition); Marcela Reyes, Francisco del Río, María Luisa Garmendia and Camila Corvalán (University of Chile); Paula Johns (ACT Promoção da Saúde); Oscar Cabrera, Isabel Barbosa, Ariadna Tovar Ramirez, Belén Rios and Silvia Serrano Guzmán (O'Neill Institute, Georgetown University); Simón Barquera (National Institute of Public Health of Mexico).

PAHO also acknowledges support from the Global Health Advocacy Incubator and funding from Bloomberg Philanthropies.

References

1. Institute of Health Metrics and Evaluation (2018). Available at: https://vizhub.healthdata.org/gbd-compare/
2. World Health Organization (2017). Report of the Commission on Ending Childhood Obesity. Geneva: WHO.
3. OECD (2014). Obesity Update 2014. Paris: OECD. Available at: https://www.oecd.org/els/health-systems/Obesity-Update-2014.pdf
4. OECD (2019). The Heavy Burden of Obesity: The Economics of Prevention. OECD Health Policy Studies. Paris: OECD.
5. Pan-American Health Organization (2011). The economic burden of non-communicable diseases in the Americas. Washington, D.C.: PAHO.
6. OECD/The World Bank (2020). Panorama de la Salud: Latinoamérica y el Caribe 2020. Paris: OECD Publishing.
7. World Health Organization (2003). Joint WHO/FAO Expert Consultation on diet, nutrition and the prevention of chronic diseases. Geneva: WHO.
8. World Health Organization (2012). Guideline: sodium intake for adults and children. Geneva: WHO.
9. World Health Organization (2015). Guideline: sugars intake for adults and children. Geneva: WHO.
10. Pan American Health Organization (2019). Ultra-processed food and drink products in Latin America: Sales, sources, nutrient profiles, and policy implications. Washington, D.C.: PAHO.
11. Swinburn BA, Kraak VI, Allender S, Atkins VJ, Baker PI, Bogard JR, et al. (2019). The global syndemic of obesity, undernutrition, and climate change: the Lancet Commission report. The Lancet 2019; 393:791-846.
12. Swedish National Food Administration (2012). Danish Veterinary and Food Administration. Norwegian Directorate of Health. Norwegian Food Safety Authority. Design manual for the Keyhole logo - prepacked food and generic marketing. Available at: https://docplayer.net/14583343-Design-manual-for-the-keyhole-logo.html
13. Packaged consumer food products and method of communicating a company's products' health values. Patent US 20080268103 A1. Available at: http://appft1.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&Sect2=HITOFF&d=PG01&p=1&u=%2Fnetahtml%2FPTO%2Fsrchnum.html&r=1&f=G&l=50&s1=%2220080268103%22.PGNR.&OS=DN/20080268103&RS=DN/20080268103
14. Nutri-Score. Available at: https://www.santepubliquefrance.fr/Sante-publique-France/Nutri-Score
15. About Health Start Ratings. Available at: http://healthstarrating.gov.au/internet/healthstarrating/publishing.nsf/Content/About-health-stars
16. The Institute of Grocery Distribution and IGD Services. GDA Consumer Research Report. Available at: https://www.igd.com/Portals/0/Downloads/Charitable%20Impact/GDA%20Consumer%20research%20report%20-%20Findings%203612.pdf
17. UK Department of Health, Food Standards Agency, British Retail Consortium. Guide to creating a front of pack (FoP) nutrition label for pre-packed products sold through retail outlets. Available at: https://www.food.gov.uk/sites/default/files/media/document/fop-guidance_0.pdf
18. Republica de Chile (2015). Ministerio de Salud. Modifica Decreto Supremo N° 977, de 1996, Reglamento Sanitario de Alimentos. 26 June 2015. Diario Oficial de la Republica de Chile.

19. Estados Unidos Mexicanos (2020). Secretaría de Economía. Secretaría de Salud. Comisión Federal para la Protección contra Riesgos Sanitarios. Modificación a la Norma Oficial Mexicana NOM-051-SCFI/SSA1-2010. Especificaciones generales de etiquetado para alimentos y bebidas no alcohólicas preenvasados-Información comercial y sanitaria. 27 March 2020.Diario Oficial.

20. República del Perú (2018). Decreto Supremo Nº 012-2018-SA. Aprueban Manual de Advertencias Publicitarias en el marco de lo establecido en la Ley Nº 30021, Ley de promoción de la alimentación saludable para niños, niñas y adolescentes, y su Reglamento aprobado por Decreto Supremo Nº 017-2017-AS. 16 Jun 2018. El Peruano.

21. República Oriental del Uruguay (2018). Decreto N° 272/018. Modificación del Reglamento Bromatológico Nacional, relativo al rotulado de alimentos. 29 Aug 2018. Diario Oficial.

22. ANVISA (2019). Relatório de Análise de Impacto Regulatório sobre Rotulagem Nutricional. September 2019. Brasilia: ANVISA.

23. ANVISA (2020). Revisão da rotulagem de alimentos embalados. Processo N° 25351.296188/2011-21. Brasilia: ANVISA. Available at: https://app.powerbi.com/view?r=eyJrIjoiODQwZWIxMjAtYTAwYiooZWZlLTgoNzQtMjQ1NGFiMDVkOGUyIiwidCI6ImI2N2FmMjNmLWMzZjMtNGQzNS04MGM3LWI3MDg1ZjVlZGQ4MSJ9

24. Health Canada (2018). Consultation on proposed front-of-package labelling. Regulations Amending Certain Regulations Made Under the Food and Drugs Act (Nutrition Symbols, Other Labelling Provisions, Partially Hydrogenated Oils and Vitamin D). Vol. 152, No. 6. 10 February 2018. Health Canada.

25. Office of the Prime Minister (2019). Minister of Health Mandate Letter. 13 December 2019. Ottawa: Office of the Prime Minister.

26. Ducrot P, Méjean C, Julia C, Kesse-Guyot E, Touvier M, Fezeu LK, Hercberg S, Péneau S. (2015). Objective understanding of front-of-package nutrition labels among nutritionally at-risk individuals. Nutrients 2015; 7(8):7106-25.

27. Feunekes GI, Gortemaker IA, Willems AA, Lion R, van den Kommer M. (2008). Front-of-pack nutrition labelling: Testing effectiveness of different nutrition labelling formats front-of-pack in four European countries. Appetite 2008; 50:57-70.

28. Cabrera M, Machín L, Arrúa A, Antúnez L, Curutchet MR, Giménez A, Ares G. (2017). Nutrition warnings as front-of-pack labels: influence of design features on healthfulness perception and attentional capture. Public Health Nutr 2017; 2:1-12.

29. Franco-Arellano B, Vanderlee L, Ahmed M, Oh A, L'Abbé M. (2020). Influence of front-of-pack labelling and regulated nutrition claims on consumers' perceptions of product healthfulness and purchase intentions: A randomized controlled trial. Appetite 2020; 149:104629.

30. Schuldt JP. (2013). Does green mean healthy? Nutrition label color affects perceptions of healthfulness. Health Commun 2013; 28(8):814-21.

31. Huang L, Lu J. (2016). The impact of package color and the nutrition content labels on the perception of food healthiness and purchase intention. Journal of Food Products Marketing 2016; 22(2):191-218.

32. Nyilasy G, Lei J, Nagpal A, Tan J. (2016). Color correct: the interactive effects of food label nutrition coloring schemes and food category healthiness on health perceptions. Public Health Nutr 2016; 19:2122-7.

33. Talati Z, Pettigrew S, Dixon H, Neal B, Ball K, Hughes C. (2016). Do Health Claims and Front-of-Pack Labels Lead to a Positivity Bias in Unhealthy Foods?. Nutrients 2016; 8(12):787.

34. Machín L, Aschemann-Witzel J, Curutchet MR, Giménez A, Ares G. (2018). Traffic Light System Can Increase Healthfulness Perception: Implications for Policy Making. J Nutr Educ Behav 2018; 50(7):668-74.

35. Tversky A, Kahneman D. (1974). Judgment under Uncertainty: Heuristics and Biases. Science 1974; 185(4157):1124-31.

36. Hoyer WD. (1984). An Examination of Consumer Decision Making for a Common Repeat Purchase Product. J Consum Res 1984; 11(3):822-9.

37. Knutson B, Rick S, Wimmer GE, Prelec D, Loewenstein G. (2007). Neural predictors of purchases. Neuron 2007; 53(1):147-156.

38. Deshpande R, Hoyer WD, Jeffries S. (1982). Low Involvement Decision Processes: The Importance of Choice Tactics. In Marketing Theory: Philosophy of Science Perspectives, eds. RF Bush and SD Hunt. Chicago: American Marketing Association. 155-158.

39. Olshavsky RW, Granbois DH. (1979). Consumer Decision Making—Fact or Fiction? J Consum Res 1979; 6(2):93-100.

40. Wright PL. (1975). Consumer Choice Strategies: Simplifying vs. Optimizing. J Mark Res 1975; 11:60-7.

41. Johnson EJ, Payne JW. (1985). Effort and accuracy in choice. Management Science 1985; 31(4):395-414.

42. Johnson MD. (1984). Consumer Choice Strategies for Comparing Noncomparable Alternatives. J Consum Res 1984; 11(3)741-53.

43. Campos S, Doxey J, Hammond D. (2011). Nutrition labels on pre-packaged foods: A systematic review. Public Health Nutrition 2011; 14(8):1496-1506.

44. Schermel A, Emrich TE, Arcand J, Wong CL, L'Abbé MR. (2013). Nutrition marketing on processed food packages in Canada: 2010 Food Label Information Program. Appl Physiol Nutr Metab 2013; 38(6):666-72.

45. Grunert, K.G, & Wills, J.M. (2007). A review of European Research on consumer response to nutrition information on food labels. Journal of Public Health, 15, 385-399.

46. Mansfield E, Wahba R, De Grandpré E. (2020). Integrating a Health Literacy Lens into Nutrition Labelling Policy in Canada. Int. J. Environ. Res. Public Health 2020; 17:4130. doi: doi.org/10.3390/ijerph17114130.

47. Brosch T, Coppin G, Schwartz S, Sander D. (2012). The importance of actions and the worth of an object: dissociable neural systems representing core value and economic value. Social Cognitive and Affective Neuroscience 2012; 7(5):497-505.

48. Nutbeam D. (2000). Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. Health Promot. Int. 2000; 15(3):259-67.

49. Mansfield E, Wahba R, De Grandpré E. (2020). Integrating a Health Literacy Lens into Nutrition Labelling Policy in Canada. Int. J. Environ. Res. Public Health 2020; 17(11):4130. doi: https://doi.org/10.3390/ijerph17114130.

50. van't Riet J, Sijtsema SJ, Dagevos, H, De Bruijn GJ. (2011). The importance of habits in eating behaviour. An overview and recommendations for future research. Appetite 2011; 57:585-96.

51. Clement J. (2007). Visual influence on in-store buying decisions: an eye-track experiment on the visual influence of packaging design. J Mark Manage 2007; 23:917-28.

52. Arrúa A, Machín L, Curutchet MR, Martínez J, Antúnez L, Alcaire F, et al. (2017). Warnings as a directive front-of-pack nutrition labelling scheme: comparison with the Guideline Daily Amount and traffic-light systems. Public Health Nutr 2017; 20(13):2308-17.

53. Deliza R, de Alcántara M, Pereira R, Ares G. (2019). How do different warning signs compare with the guideline daily amount and traffic-light system? Food Quality and Preference 2019; 80: 103821. doi: https://doi.org/10.1016/j.foodqual.2019.103821

54. Khandpur N, de Morais Sato P, Mais LA, et al. (2018). Are Front-of-Package Warning Labels More Effective at Communicating Nutrition Information than Traffic-Light Labels? A Randomized Controlled Experiment in a Brazilian Sample. Nutrients 2018; 10(6):688.

55. Goodman S, Vanderlee L, Acton R, Mahamad S, Hammond D. (2018). The Impact of Front-of-Package Label Design on Consumer Understanding of Nutrient Amounts. Nutrients 2018; 10(11):1624.

56. Legge GE, Parish DH, Luebker A, Wurm LH. (1990). Psychophysics of reading. XI. Comparing color contrast and luminance contrast. J Opt Soc Am 1990; 7(10):2002-10.

57. Singh S. (2006). Impact of color on marketing. Management Decision 2006; 44(6):783-9.

58. Spence C. (2015). On the psychological impact of food colour. Flavour 2015; 4:21.

59. Garber Jr. LL, Hyatt EM, Starr Jr. RG. (2000). The Effects of Food Color on Perceived Flavor. Journal of Marketing Theory and Practice 2000; 8(4):59-72.

60. Sacks G, Tikellis K, Millar L, Swinburn B. (2011). Impact of 'traffic-light' nutrition information on online food purchases in Australia. Aust N Z J Public Health 2011; 35(2):122-6.

61. Sacks G, Rayner M, Swinburn B. (2009). Impact of front-of-pack 'traffic-light' nutrition labelling on consumer food purchases in the UK. Health Promot Int 2009; 24(4):344-52.

62. Gorski Findling MT, Werth PM, Musicus AA, et al. (2018). Comparing five front-of-pack nutrition labels' influence on consumers' perceptions and purchase intentions. Prev Med 2018;106:114-121.

63. Sandoval LA, Carpio CE, Sanchez-Plata M. (2019). The effect of 'Traffic-Light' nutritional labelling in carbonated soft drink purchases in Ecuador. PLOS ONE 2019; 14(10):e0222866.

64. Kunz S, Haasova S, Rieß J, Florack A. (2020). Beyond Healthiness: The Impact of Traffic Light Labels on Taste Expectations and Purchase Intentions. Foods. 2020;9(2):134.

65. Ducrot P, Julia C, Méjean C, Kesse-Guyot E, Touvier M, Fezeu LK, Hercberg S, Péneau S. (2016). Impact of Different Front-of-Pack Nutrition Labels on Consumer Purchasing Intentions: A Randomized Controlled Trial. Am J Prev Med 2016; 50(5):627-636.

66. Ares G, Antúnez L, Giménez A, Gugliucci V, Vitola A, Machín L, Bove MI. (2020). Efectos inmediatos de la implementación del rotulado nutricional frontal en Uruguay. Montevideo: UNICEF.

67. Ministry of Health of Chile (2017). Informe de Evaluación de la Implementación de la Ley sobre composición nutricional de los alimentos y su publicidad [Evaluation Report on the Implementation of the Law on the Nutritional Composition of Foods and its Advertising]. Chile. Available at: https://www.minsal.cl/wp-content/uploads/2017/05/Informe-Implementaci%C3%B3n-Ley-20606-junio-2017-PDF.pdf

68. Ministry of Health of Chile (2018). Informe de Evaluación de la Implementación de la Ley sobre composición nutricional de los alimentos y su publicidad [Evaluation Report on the Implementation of the Law on the Nutritional Composition of Foods and its Advertising]. Chile; 2018. Available at: https://www.minsal.cl/wp-content/uploads/2018/05/Informe-Implementaci%C3%B3n-Ley-20606-febrero-18-1.pdf

69. Ministry of Health of Chile (2019). Evaluación Ley de Alimentos nº20.606 [Evaluation of Food Act 20.606]. Chile; 2019. Available at: https://www.minsal.cl/wp-content/uploads/2019/08/EVALUACION-LEY-DE-ALIMENTOS_julio-2019_02.pdf

70. Taillie LS, Reyes M, Colchero MA, Popkin B, Corvalán C. (2020). An evaluation of Chile's Law of Food Labeling and Advertising on sugar-sweetened beverage purchases from 2015 to 2017: A before-and-after study. PLoS Med 2020;17(2):e1003015.

71. Ares G, Varela F, Machín L, Antúnez L, Giménez A, Curutchet MR, Aschemann-Witzel J. (2018). Comparative performance of three interpretative front-of-pack nutrition labelling schemes: Insights for policy making. Food Qual Prefer 2018; 68:215-25.

72. Nieto C, Jáuregui A, Contreras-Manzano A, et al. (2019). Understanding and use of food labeling systems among Whites and Latinos in the United States and among Mexicans: Results from the International Food Policy Study, 2017. Int J Behav Nutr Phys Act 2019; 16(1):87.

73. Vargas-Meza J, Jáuregui A, Contreras-Manzano A, Nieto C, Barquera S. (2019). Acceptability and understanding of front-of-pack nutritional labels: an experimental study in Mexican consumers. BMC Public Health 2019;19(1):1751.

74. Taillie LS, Hall MG, Popkin BM, Ng SW, Murukutla N. (2020). Experimental Studies of Front-of-Package Nutrient Warning Labels on Sugar-Sweetened Beverages and Ultra-Processed Foods: A Scoping Review. Nutrients 2020; 12(2):569.

75. Acton RB, Jones AC, Kirkpatrick SI, Roberto CA, Hammond D. (2019). Taxes and front-of-package labels improve the healthiness of beverage and snack purchases: a randomized experimental marketplace. International Journal of Behavioral Nutrition and Physical Activity 2019; 16:46.

76. Pan American Health Organization (2016). Nutrient Profile Model. Washington, DC: PAHO.

77. World Health Organization (2011). Guidelines for drinking-water quality, 4th ed. Geneva: WHO.

78. Reyes M, Garmendia ML, Olivares S, Aqueveque C, Zacarías I, Corvalán C. (2019). Development of the Chilean front-of-package food warning label. BMC Public Health 2019; 19(1):906.

79. Correa T, Fierro C, Reyes M, Dillman Carpentier FR, Taillie LS, Corvalan C. (2019). Responses to the Chilean law of food labeling and advertising: exploring knowledge, perceptions and behaviors of mothers of young children. Int J Behav Nutr Phys Act 2019;16(1):21.

80. Gearhardt AN, Davis C, Kuschner R, Brownell KD. (2011). The addiction potential of hyperpalatable foods. Curr Drug Abuse Rev. 2011;4(3):140-145.

81. Scrinis G, Monteiro CA. (2018). Ultra-processed foods and the limits of product reformulation. Public Health Nutr 2018; 21(1):247-252.

82. Hall KD, Ayuketah A, Brychta R, et al. (2019). Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of Ad Libitum Food Intake. Cell Metab 2019;30(1):67-77.

83. André Q, Chandon P, Haws K. (2019). Healthy through presence or absence, nature or science?: a framework for understanding front-of-package food claims. Journal of Public Policy & Marketing 2019; 38(2):172-91.

84. Monteiro CA, Cannon G, Lawrence M, Costa Louzada ML, Pereira Machado P. (2019). Ultra-processed foods, diet quality, and health using the NOVA classification system. Rome: FAO.

85. Adams J, White M. (2015). Characterisation of UK diets according to degree of food processing and associations with socio-demographics and obesity: cross-sectional analysis of UK National Diet and Nutrition Survey (2008-12). International Journal of Behavioral Nutrition and Physical Activity 2015; 12(160):1-12.

86. Moubarac JC, Batal M, Louzada ML, Martinez Steele E, Monteiro CA. (2017). Consumption of ultra-processed foods predicts diet quality in Canada. Appetite 2017; 108:512-20.

87. Steele EM, Popkin BM, Swinburn B, Monteiro CA. (2017). The share of ultra-processed foods and the overall nutritional quality of diets in the US: evidence from a nationally representative cross-sectional study. Population Health Metrics 2017; 15(1):6.

88. Louzada MLC, Ricardo CZ, Steele EM, Levy RB, Cannon G, Monteiro CA. (2017). The share of ultra-processed foods determines the overall nutritional quality of diets in Brazil. Public Health Nutrition 2017; 21(1):94-102.

89. Steele EM, Monteiro CA. (2017). Association between dietary share of ultra-processed foods and urinary concentrations of phytoestrogens in the U.S. Nutrients 2017; 9(3):1-15.

90. Rauber F, Louzada MLC, Steele EM, Millett C, Monteiro CA, Levy RB. (2018). Ultraprocessed food consumption and chronic non-communicable diseases-related dietary nutrient profile in the UK (2008-2014). Nutrients 2018; 10(5):E587.

91. Chen YC, Huang YC, Lo YTC, Wu HJ, Wahlqvist ML, Lee MS. (2018). Secular trend towards ultra-processed food consumption and expenditure compromises dietary quality among Taiwanese adolescents. Food & Nutrition Research 2018; 62:1565.

92. Parra DC, Louzada MLC, Moubarac JC, Levy RB, Khandpur N, Cediel G, Monteiro CA. (2019). The association between ultra-processed food consumption and the nutrient profile of the Colombian diet in 2005. Salud Pública de México 2019; 61(2):147-54.

93. Machado PP, Steele EM, Levy RB, et al. (2019). Ultra-processed foods and recommended intake levels of nutrients linked to non-communicable diseases in Australia: evidence from a nationally representative cross-sectional study. BMJ Open 2019; 9(8):e029544.

94. Marrón-Ponce JA, Flores M, Cediel G, Monteiro CA, Batis C. (2019). Associations between Consumption of Ultra-Processed Foods and Intake of Nutrients Related to Chronic Non-Communicable Diseases in Mexico. J Acad Nutr Diet. 2019;119(11):1852-1865.

95. Cediel G, Reyes M, Corvalán C, Levy RB, Uauy R, Monteiro CA. (2020). Ultra-processed foods drive to unhealthy diets: evidence from Chile. Public Health Nutr 2020; 1-10. doi: https://doi.org/10.1017/S1368980019004737.

96. Institute of Medicine (US) Committee on Examination of Front-of-Package Nutrition Rating Systems and Symbols; Wartella EA, Lichtenstein AH, Boon CS, editors. Front-of-Package Nutrition Rating Systems and Symbols: Phase I Report. Washington (DC): National Academies Press (US); 2010.

97. Balasubramanian SK, Cole C. (2000). Consumers' search and use of nutrition information: the challenge and promise of the nutrition labeling and education act. Journal of Marketing 2000; 66(3):112-27.

98. McCullough J, Best R. (1980). Consumer preferences for food label information: a basis for segmentation. Journal of Consumer Affairs 1980; 14(1):180-92.

99. Gracia A, Loureiro M, Nayga RM. (2007). Do consumers perceive benefits from the implementation of a EU mandatory nutritional labelling program? Food Policy 2007; 32(2):160-74.

100. Wansink B, Sonka ST, Hasler CM. (2004). Front-label health claims: when less is more. Food Policy 2004; 29(6):659-67.

101. Daly PA. (1976). The response of consumers to nutrition labeling. Journal of Consumer Affairs 1976; 10(2):170-8.

102. Gorski Findling MT, Werth PM, Musicus AA, et al. (2018). Comparing five front-of-pack nutrition labels' influence on consumers' perceptions and purchase intentions. Prev Med 2018; 106:114-121.

103. Black A, Rayner M. (1992). Just Read the Label. London, UK: Stationery Office.

104. World Health Organization/World Trade Organization (2002). WTO agreements and public health: a joint study by the WHO and WTO Secretariat. Geneva: WHO/WTO.

105. Tovar Ramírez A, Ríos B, Barbosa B, Medina-Arellano M de J, Gutiérrez Rivas R, Serrano Guzmán S, Cabrera OA. (2020). Etiquetado frontal de advertencia en productos comestibles. Materialización de obligaciones de los Estados en derechos humanos. Global Center for Legal Innovation on Food Environments - O'Neill Institute, Georgetown University; Instituto de Investigaciones Jurídicas - Universidad Nacional Autónoma de México: Ciudad de México.

106. Van Camp DJ, Hooker NH, Souza-Monteiro DM. (2010). Adoption of voluntary front of package nutrition schemes in UK food innovations. British Food Journal 2010; 112(6):580-91.

107. Kelly B, Jewell J. (2018). What is the evidence on the policy specifications, development processes and effectiveness of existing front-of-pack food labelling policies in the WHO European Region? Copenhagen: WHO Regional Office for Europe. (Health Evidence Network Synthesis Report, No. 61.)

108. Jones A, Shahid M, Neal B. (2018). Uptake of Australia's Health Star Rating System. Nutrients 2018; 10(8):997.

109. Mhurchu CN, Eyles H, Choi YH. (2017). Effects of a Voluntary Front-of-Pack Nutrition Labelling System on Packaged Food Reformulation: The Health Star Rating System in New Zealand. Nutrients 2017; 9(8):918.

110. Storcksdieck genannt Bonsmann S, Marandola G, Ciriolo E, van Bavel R, Wollgast J. (2020). Front-of-pack nutrition labelling schemes: a comprehensive review. EUR 29811 EN. Luxembourg: Publications Office of the European Union. doi:10.2760/436998.

111. Department for Environment, Food and Rural Affairs (2010). Developing a framework for assessing the costs of labelling changes in the UK. Gloucestershire: Campden BRI. Available at: https://webarchive.nationalarchives.gov.uk/20130404011920/http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/documents/labelling-changes.pdf

112. World Health Organization (2017). 'Best buys' and other recommended interventions for the prevention and control of noncommunicable diseases. Geneva: World Health Organization.

113. World Health Organization (2017). Technical Briefing. Dietary Interventions for the Appendix 3 of the Global Action Plan for Non-Communicable Disease. Geneva: WHO.

114. Powell LM, Wada R, Persky JJ, Chaloupka FJ. (2014). Employment impact of sugar-sweetened beverage taxes. Am J Public Health 2014; 104(4):672-77.

115. Guerrero-López CM, Molina M, Colchero MA. (2017). Employment changes associated with the introduction of taxes on sugar-sweetened beverages and nonessential energy-dense food in Mexico. Prev Med. 2017;105S:S43-S49.

116. World Trade Organization (2020). Australia – Certain measures concerning trademarks, geographical indications and other plain packaging requirements applicable to tobacco products and packaging. Reports of Appellate Body. WT/DS435/AB/R. WT/DS441/AB/R. Geneva: WTO; 2020. Available at: https://www.wto.org/english/tratop_e/dispu_e/435_441abr_e.pdf

117. MERCOSUR (2018). XLII Meeting of the Ministers of Health of the MERCOSUR. MERCOSUR/RMS/ACTA No 01/18. 15 June 2018. Available at: https://documentos.mercosur.int/simfiles/docreuniones/69154_RMS_2018_ACTA01_ES.pdf

118. United Nations Human Rights Office of the High Commissioner. Statement by the UN Special Rapporteur on the right to health on the adoption of front-of-package warning labelling to tackle NCDs. 27 July 2020. Available at: https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=26130&LangID=E.

High blood pressure, high fasting blood sugar levels, and overweight/obesity are the top three risk factors for mortality in the Americas. Unhealthy eating is closely linked to these top three risk factors in the Americas, driven largely by excess intake of sugars, total fats, saturated fats, trans fats, and sodium. The excess intake of these nutrients has been driven largely by the widespread availability, affordability, and promotion of processed and ultra-processed food products that are excessive in sugars, fats, and sodium. As such, an essential part of the solution requires the use of laws and regulations to reduce the demand for and offer of products that contain excessive amounts of critical nutrients. One of the key policy tools to regulate such products to prevent them from unbalancing diets is the use of front-of-package labeling (FOPL) to indicate to consumers which products contain excessive amounts of sugars, total fats, saturated fats, trans fats, and/or sodium. To support populations in the Americas in their efforts to meet the World Health Organization recommendations and protect them from the top risk factors harming their health and development, the regulatory objective of a FOPL system should aim at allowing consumers to correctly, quickly, and easily identify products that contain excessive amount of sugars, total fats, saturated fats, trans fats, and sodium.

This technical brief summarizes the evidence on the performance of FOPL systems in meeting this purpose and provides a list of frequently asked questions about the nutrition warning system.

PAHO Pan American Health Organization
World Health Organization
REGIONAL OFFICE FOR THE mericas