Research advances in Front-of-Pack Nutritional Labeling and stages of policy life cycles: A Systematic Review

VALERIA GAMMELLA QUINTERO[1] MARCO FRANCESCO MAZZÙ[2] ANGELO BACCELLONI[3]

Abstract

Over the past years, policymakers and institutions have begun adopting Front-of-Pack Nutritional Labels (FOPLs) as an effective measure to counteract the rise in overweight and obesity, a major concern with negative consequences for individuals and health systems. The current landscape presents a wide variety of FOPL proposals, ranging from more directive to more informative solutions, within a context of varying stages of market implementation.

Through a systematic review of the most recent research on FOPLs (2020-2024), this paper aims to provide a perspective on the latest advances in the research, also showing how research productivity and areas of investigation varies across countries in different stages of the policy lifecycle. Evidence suggests that the effectiveness of FOPLs depends not only on their design and clarity but also on the regulatory framework, consumer familiarity, and broader public health strategies. This underscores the need for continuous research advancements to address varying policymaking priorities at different stages of policy development.

Framing of the research. *Obesity and overweight are major public health concerns that have been rising globally in recent decades, leading to several negative consequences for populations-such as an increase in non-communicable diseases-and placing a growing financial burden on health systems (WHO, 2024). In response, institutions and policymakers have begun implementing various countermeasures to reverse this trend, including the introduction of Front-of-Pack Nutritional Labels (FOPLs), which have been recognized as an effective strategy (Mazzù et al. 2021) to nudge consumers toward healthier and more informed food choices (Mazzù et al., 2023). While the strategic direction of introducing FOPLs is widely acknowledged as effective and necessary, significant differences exist in both "policy maturity" and execution. In more recent years, the European Commission has recognized the need for a harmonized mandatory Front-of-Pack nutrition labeling system. This initiative is part of the Farm to Fork strategy, aiming to standardize FOP labeling across the EU (van der Bende & Lissner, 2019, EU Commission 2020).*

However, as for the current state of things, we are in a fragmented regulatory landscape and market implementation, often influenced by local dietary habits, economic interests, and political priorities. In this fragmented perspective, Scholars have identified and tried to rationalize different approaches and categories of FOPLs, ranging from more directive Summary labels, such as the Nutri-Score-already implemented in several markets, including France, Germany, and the Netherlands-or warning labels, as introduced in Chile, to Nutrient-Specific labels, such as the Multiple Traffic Lights (MTL) system introduced in the UK (Mazzù et al., 2022). Moreover, as different countries are at varying stages of the policymaking lifecycle and extant research has not been conclusive on which FOPL best serves its purpose, multiple research streams seem to coexist-either focusing on validating existing solutions or exploring new ones for market implementation. Research fragmentation and intensity also appear to be linked to different stages of the policy lifecycle. During periods of intense debate and high uncertainty-such as the early stages of FOPL selection or the later stages of assessing FOPL effectiveness after market entry-research activity might increase. Conversely, policymakers rely on research to reach conclusive solutions or to determine whether further exploration of alternatives is needed: an appropriate example of this is the European Commission's decision to slow down the adoption of the NutriScore in 2022, after the collection of additional evidence on consumers decision-making processes in presence of different forms of FOPLs (Italian Food News, 2023).

Consequently, a fundamental question arises regarding researchers' investigative priorities and whether the intensity of research production is linked to different stages of policy development. In other words, the extent to which scientific research can influence policy development and, conversely, how the evolution of policy frameworks shapes researchers' interest in pursuing further investigations within this domain.

Purpose of the paper. *To have some preliminary insights to start exploring this question, we examined the evolution and advancements of FOPL research over the past five years in terms of intensity and quality, and, in parallel, observing*

[1] Luiss University, Rome
e-mail: vgammmellaquintero@luiss.it
[2] Luiss Business School and Luiss University, Rome
e-mail: mmazzu@luiss.it
[3] J ohn Cabot University, Rome
e-mail: angelo.baccelloni@johncabot.edu

Conference Proceedings
ISBN 978-88-94-7136-7-1
DOI 10.7433/SRECP.SP.2025.01

the different stages of the policy lifecycle in multiple countries. By combining (i) a systematic literature review on FOPLs and (ii) a preliminary analysis of the status of FOPL policymaking development across different regions, this study aims to provide very first insights if scientific research and policy development are synchronized in shaping future investigations.

Methodology.

Systematic Literature Review.

We conducted our investigation following the PRISMA guidelines. In the first stage, we used the search query ("= Front AND Pack AND Nutr") on the Scopus and Web of Science databases, limiting the search to peer-reviewed articles published between 2020 and 2024. This resulted in a total of 1,316 papers.*

After removing duplicates and cleaning the data, we proceeded to the second stage by assessing the relevance of the publications using the Scimago ranking (SJR). Only papers published in the top quartile (Q1) based on the SJR were retained, resulting in a subset of 1,161 articles. This subset was further narrowed down to 238 articles by selecting only those with an SJR above the calculated median for the main thematic areas.

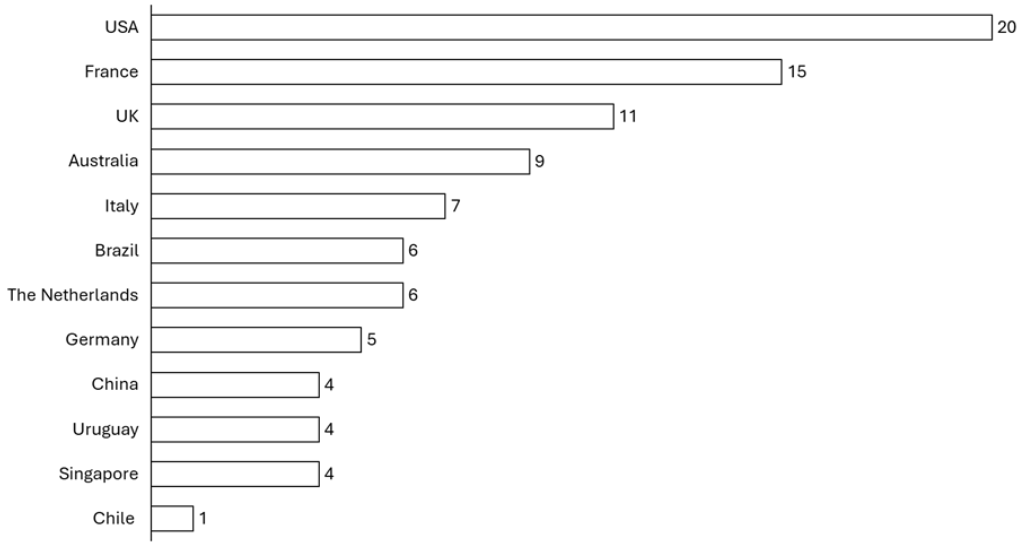
In the third stage, to ensure the inclusion of relevant and high-quality studies, we conducted a comprehensive abstract review. Studies that did not mention FOPLs or had a primary focus that significantly diverged from this topic were automatically excluded. This step ensured that the subsequent analysis was conducted on a coherent and thematically focused body of work. After this stage, the dataset was reduced to 150 articles.

In the last stage we moved to the analysis of the full text; to make the process more straightforward and to have a clearer overview of the data that would emerge from the articles, we relied on a specific classification, based on the inclusion in a dedicated file of some precise information extracted during the reading. After this process, some articles were excluded due to some inconsistencies with the objectives of this research, which did not emerge during the first screening reserved for abstracts. That led to a final pool of 106 articles, 92 of which related to specific countries.

Policy-making lifecycle

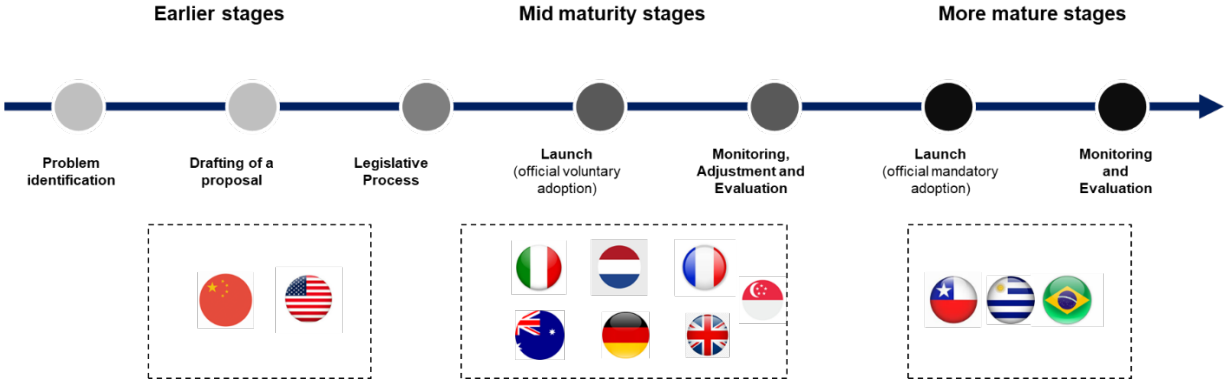
The policy making lifecycle can be articulated in some major phases: (i) Problem identification: recognizing a public health issue such as unhealthy diets and assessing the need for policy interventions, (ii) Drafting of a proposal: development of a policy framework based on research, stakeholder inputs and existing models; (iii) Legislative Process: debate, approval and formalization of the policy through legal and regulatory mechanisms; (iv) FOPL market launch (official voluntary adoption), and subsequent (v) Monitoring, Adjustments, and Evaluation, (vi) FOPL market launch with official mandatory adoption, and (vii) ongoing monitoring of the implementation of the policy, assessment of its impact and creation of the necessary adjustments. The presence of this phases in policy-development is also confirmed by previous research (Robinson, 2010) (Waylen et al. 2019).

Results. *Authors from 12 different countries were active in top journals, advancing FOPL research (Figure 1).*



These include countries at different stages of the policy lifecycle. The USA and China, accounting for a total of 24 papers (26,0%), are connected to countries in the earlier stages of policy development. A second cluster includes countries such as France, Italy, Germany, and the Netherlands, and Singapore, with the UK and Australia who are among the oldest in terms of FOPL voluntary adoption, where the national legislative process has been completed, often with voluntary adoption of an official label, while the supra-regional legislative process - at the EU level in this case - is still underway. This group accounts for a total of 57 papers (62% of the total). A final cluster includes countries where FOPLs have already been launched, and institutions are assessing their real-market effectiveness post-introduction. This last group includes mainly Chile, Uruguay, and Brazil and with a total of 11 papers (12,0% of the total).

Observing the evolution of FOPL policymaking in different countries where scientific production exists, according to the above systematic literature review, we can observe different stages in its development (Figure 2)



More details on the content in the following paragraph, ordered by frequency of occurrence.

USA

The USA is still in the development phase of FOPL. In recent years, institutions and regulatory bodies, such as the FDA, have initiated public research efforts to identify a suitable solution for the market. As of January 14, 2025, the U.S. Food and Drug Administration (FDA) proposed a mandatory FOPL, consisting in a "Nutrition Info Box", which could be able to provide accessible information that helps consumers quickly identify how foods can be part of a healthy diet. Despite that, research appears to be still in an exploratory phase and not polarized toward a specific label, with a primary focus on public health and policy implications and, to a lesser extent, consumer behavior. In addition to comprehensive reviews on the policy evolution of Front-of-Pack labeling in the Americas (Crosbie & Gomes, 2023), authors have investigated existing summary labels, using Chile as their reference country in three instances (Paraje et al. 2021). Other studies have examined responses to advertising regulations on high-calorie or high-sugar products and their effects on children's viewership (Alé-Chilet & Moshary, 2022). Other researchers have focused more on the relevance of extrinsic cues, such as label color (Oswald et al., 2022), as well as the differential effects across various socio-demographic groups (Meng & Chan, 2022). These aspects are particularly relevant as the FDA evaluates different proposals in a country characterized by a diverse range of consumer cluster. More generally, studies within this geographical cluster focus on understanding whether FOP labels have the potential to influence consumers' perceptions and the nutritional quality of their choices (Cimino et al., 2020). A specific subset of research in this cluster examines the potential acceptance of FOPLs already introduced in other markets, such as Nutri-Score (Tachie et al., 2023) or Traffic Lights (Andrews et al., 2021). Although the research is in a mature phase, rather than concentrating on a single label, these studies tend to explore various possibilities across different applications.

France

France introduced its label - the Nutri-Score - in 2017, following a long pre-qualification process. Recent studies continue to focus on the Nutri-Score and its comparative performance against other FOPL proposals, including the Brazilian NOVA classification for ultra-processed foods (Chazelas et al. 2020) the Siga classification (Davidou et al., 2020), and the FSA nutrient profiling score (Egnell et al., 2021; Dubois et al. 2021). Other researches investigate the real-market effectiveness of the Nutri-Score after several years of implementation, including its impact on decision-making influenced by advertising (Courbet et al., 2024) food reformulation (Sarda et al., 2024), and cognitive processing among specific groups, such as mothers with children (Hémar-Nicolas et al., 2024). Another major research stream focuses on supporting the Nutri-Score in EU policy development, particularly in connection with the Farm to Fork initiative. Related studies also explore the potential benefits of the Nutri-Score in other EU countries, such as Portugal (Fialon et al., 2024), among others.

UK

The UK introduced the Multiple Traffic Light (MTL) system in 2013. After an initial period of intense research, focus and interest declined following the UK's departure from the EU, reducing the need to demonstrate its superiority over EU alternatives, such as the Nutri-Score. More recent research streams have examined the use of the Multiple Traffic Lights label as a reference in policy initiatives like food reformulation (Downs & Demmler, 2020) and its interaction with other front-of-pack cues, such as eco-labels (Macdiarmid et al., 2021), green labels (Duckworth et al., 2022), and health symbols in general (Maesen et al., 2022).

Italy

Research has focused on assessing the Italian FOPL proposal - the NutrInform Battery - in comparison to other alternatives, particularly in relation to consumer decision-making. Studies have examined aspects such as understanding, preference, and willingness to adopt the label in purchase processes (Mazzù et al., 2023). While most studies compare

the NutrInform Battery to the two most relevant alternatives within the EU, some research, as recommended by EU institutions, also considers the Australian Health Star Rating (Hasni et al., 2024) and the UK Multiple Traffic Light system (Mauri et al., 2021)

Brazil

Brazil is in an exploratory phase, primarily focused on selecting a summary label that would be effective for the country. One research stream examines Corporate Political Activity (CPA), analyzing the strategies corporations use to influence policy decisions on label adoption in other South American countries, such as Chile and Colombia (Mialon et al., 2020). Other studies have specifically analyzed the "black magnifier" label, which has been in use in Brazil since 2020, investigating how its positive health effects are mitigated by the presence of on-pack claims that enhance health perceptions (França et al., 2025).

The Netherlands

The Netherlands introduced officially the Nutri-Score in 2024. Recently, most studies have focused on the policy impact of FOPLs, highlighting differences between public health and agricultural policies in France (Nutri-Score), the UK (Multiple Traffic Light), and the Netherlands (where no specific label has been officially designated) (Candel et al., 2021). Other studies compare the effectiveness of the Nutri-Score against alternatives, such as the Traffic Light system (Van Doorn et al., 2023) and the Chilean warning label (Pachali et al. 2023).

Germany

Germany adopted NutriScore for voluntary use in 2020. However, as of January 2025, some German food manufacturers have decided not to implement NutriScore, citing concerns that the system may favor products with additives over those with high-quality. Recent research focused on three main areas: (i) an experimental perspective, with works texting the effectiveness of the label through quantitative studies (Hau & Lange, 2024), (ii) policy implications (Ewert, 2024), and (iii) the extension of knowledge to eco-labeling, including the use of traffic lights applied to eco-labels (Bengart & Vogt, 2023).

China

China is also in an exploratory phase of FOPL development. The focus for this research stream is on sustainability/ environmental labeling, partly because of internal scandals concerning the origin of food products (Yang et al., 2021) (Xu et al., 2024). Papers that touch on nutritional labeling also do so by relating it to sustainability labeling (Sun et al., 2024), with a focus on color coded schemes (Liu et al., 2020).

Uruguay

One research strand, led by Gaston Ares, focuses on designing communication campaigns to promote the acceptance and positive effects of warning labels (Ares et al., 2021). Other research explores the effects of FOPLs on different product categories, such as bread (Antúnez et al., 2020) and sugar (Velázquez et al., 2023)

Singapore

Singapore implemented the voluntary Healthier Food Choice initiative in 2015, associating it to the always voluntary NutriGrade for beverages in 2022 (mandatory for C, D level). Recent research has focused on benchmarking the effectiveness of different FOPLs, comparing the country's proposed system with various alternatives, such as Nu-Val, inspired by the Nutri-Score (Li et al., 2022); the Nutritional Traffic Lights (Shin et al., 2022); NutriGrade (Shin et al., 2023); and the Nutri-Score (Shin et al., 2024).

Chile

The study considered is a good resume of the current state of research in this country. It aims at showing the effects of a large-scale mandatory FOPL regulation on consumer behavior, overall showing that the warning label effect is consistent with information disclosure influencing consumers' choices when the advertised information is unexpected (Sebastián et al, 2022)

Discussion. *This study is a preliminary attempt to observe the dynamic evolution of scientific research and policymaking in Front-of-Pack Nutritional Labeling (FOPL), with the aim of activating a reflection and stimulate a further debate on whether research influences policy decisions at different stages and, conversely how evolving regulations shape academic priorities. Findings suggest that there is no real strong link between between research present in high-end journals and policy development stages, and that the intensity of research productivity varies not necessarily based on a country's regulatory maturity. In terms of content, fragmentation appears in the selection of research topics not always aligned to policy priorities. Nevertheless, as countries differ in their FOPL adoption, research varies its focus, either assessing existing models, or exploring new solutions tailored to specific markets. Vast part of the research in all phases of the lifecycle is connected to comparative studies highlight and confronting the effectiveness of different FOPL systems (e.g., Nutri-Score, Multiple Traffic Lights, Warning Labels) in shaping consumer behavior, improving public health, and influencing industry practices. However, a disconnect remains between research timelines and policy needs.*

While institutions require timely insights, academic studies might have different research priorities. Better coordination between researchers and policymakers might be advisable to ensure findings effectively inform regulations.

Research limitations. *The study primarily focuses on articles published in top-tier journals, as classified by Scimago. Future research could expand the analysis to include additional studies, providing a broader perspective on research interests and identifying major research streams across different countries and stages of the policy lifecycle.Furthremore, real-world impact of food manufacturers' and retailers' strategic responses to labeling policies might be assessed, as well as examining how different FoP schemes influence reformulation decisions, innovation processes and practices over time, Longitudinal studies or case analyses across different market contexts could help capture how stakeholders adapt their strategies in response to changing regulatory environments, and changing consumer expectations. Moreover, the current timeriod of the analysis (2020-2024) might be extended, thus helping highlight shifts in research priorities or identify enduring research trends. Furthermore, the analysis could be enhanced by identifying patterns of relevance and the occurrence of specific topics in different phases of policy life cycles. Additionally, it could examine the extent to which research priorities are driven by institutional research calls, such as those within the From Farm to Fork strategy.*

Managerial implications. *The research identifies a shift from policy-driven studies to more applied streams of research in regions where labeling policies are well established, like France. Furthermore, by analyzing studies from marketing, public and health policy, nutrition and behavioral sciences, this work reinforces the importance of cross-disciplinary approaches. This study suggests that more is required to be understood to assess if research in top journal is connected to the policy development lifecycle, and if researchers' commitment to advancing independent, high-quality research, in specific timeframes within which research is conducted may impact policy decision-making and, ultimately, the best interests of end consumers. The findings underscore the need to create mechanisms able to foster timely collaboration between policymakers and academic researchers. Institutions could increase their demand for more diverse and independent research to provide stronger policy support, playing a proactive role and incentivizing responses to evolving societal needs. Additionally, they could formalize processes that include timely requests for research contributions. This also calls to expedite research focus that addresses phenomena that significantly impact consumers' lives and influence corporate investments - such as reformulation efforts - as well as major R&D, production, and communication strategies. The results highlight an opportunity for food manufacturers to strategically align reformulation and product innovation efforts with the consumers' expectations. Deeply understanding how labeling affects perception and choice helps companies offer healtier products without losing appeal, and collaborating with researchers on evidence-based communication can build trust and boost competitiveness. This could also be helped by building labeling standards into the early stages of product development, not just packaging decisions. Also, in the case of retailers, the present insights can inform shelf layout decisions, in-store messaging and promotional strategies aligned with the health-focus given by FoP label-usage; this is even more important if we consider that retailers can also serve as intermediaries between consumers and producers, and promote enabled and informed decision making towards more consistent labeling standards.*

Originality of the paper. *This paper presents initial observations on how research aligns with different stages of the policy lifecycle and, conversely, how various phases of policy development attract the attention of high-quality researchers.*

Although these insights should be considered very preliminary, this research establishes a discussion priority on how research can better serve to impact high-relevance topics. It also highlights the intrinsic call for top researchers to provide insights that contribute to advancing individual well-being. Exploring the reciprocal influence between policymaking and scientific research adds a novel dimension, highlighting how academic advancements can drive regulatory decisions and vice versa. This integrative approach offers fresh insights into the evolving landscape of FOPL and its broader implications.

Keywords: *Front-of-pack labeling (FOPL); Policy lifecycle; Systematic review; Consumer Behavior; Public Health*

References

ALÉ-CHILET J., MOSHARY (2022), "Beyond consumer switching: Supply responses to food packaging and advertising regulations", *Marketing Science*, pp. 243-270.

ANDREWS J.C., NETEMEYER R., BURTON S., KEES J. (2021), "What consumers actually know: The role of objective nutrition knowledge in processing stop sign and traffic light front-of-pack nutrition labels", *Journal of Business Research*, pp. 140-155.

ANTÚNEZ L., ALCAIRE F., GIMÉNEZ A., ARES G. (2020), "Can sodium warnings modify preferences? A case study with white bread", *Food Research International*.

ARES G., VIDAL L., OTTERBRING T., ASCHEMANN-WITZEL J., CURUTCHET M.R., GIMÉNEZ A., BOVE I. (2021), "Communication campaigns to support the use of nutritional warnings: Different messages for different people?", *Health Education & Behavior*, pp. 584-594.

BENGART P., VOGT B. (2023), "Effects and interactions of labels' color scheme and the individual difference variable lay rationalism on pro-environmental choices", *Journal of Environmental Psychology*.

BYRON C.K. (2024), "Aligning front-of-pack labelling with dietary guidelines: Including whole grains in the Health Star Rating", *European Journal of Nutrition*, 23.

CANDEL J., PARSONS K., BARLING D., LOUDIYI S. (2021), "The relationship between Europeanisation and policy styles: A study of agricultural and public health policymaking in three EU Member States", *Journal of European Public Policy*, pp. 1748-1769.

CHAZELAS É., DESCHASAUX M., SROUR B., KESSE-GUYOT E., JULIA C., ALLES B. (2020), "Food additives: distribution and co-occurence in 126.000 food products in the French Market", *Scientific Reports*, 10.

CHEN X.G. (2024), "Do color-coded Nutrition Facts Panels nudge the use of nutrition information?", *Food Policy*, 129.

CIMINO A.E., COWELL A.C., NIESCHWITZ N.C., KERSHAW J.C. (2020), "Subtle sensory and labeling modifications have minimal impact on expected appetitive sensations in chewy bars", *Food Research International*, 137.

COURBET D., JACQUEMIER L., HERCBERG S., TOUVIER M., SARDA B. (2024), "A randomized controlled trial to test the effects of displaying the Nutri-Score in food advertising on consumer perceptions and intentions to purchase and consume", *International Journal of Behavioral Nutrition and Physical Activity*.

CROSBIE E., GOMES F.S. (2023), "A policy study on front-of-pack nutrition labeling in the Americas: Emerging developments and outcomes", *The Lancet Regional Health - Americas*, 18.

DAVIDOU S., CHRISTODOULOU A., FARDET A., FRANK K. (2020), "The holistico-reductionist Siga classification according to degree of food processing: An evaluation of ultra-processed foods in French supermarkets", *Food & Function.*

DOWNS S., DEMMLER K.M. (2020), "Food environment interventions targeting children and adolescents: A scoping review", *Global Food Security*, 27.

DUBOIS P., ALBUQUERQUE P., ALLAIS O., BONNET C., BERTAIL P., COMBRIS P. (2021), "Effects of front-of-pack labels on the nutritional quality of supermarket food purchases: Evidence from a large-scale randomizedn controlled trial", *Journal of the Academy of Marketing Science*, pp. 119-138.

DUCKWORTH J.J., RANDLE M., MCGALE L.S., JONES A., DOHERTY B., HALFORD J.C.G., CHRISTIANSEN P. (2022), "Do front-of-pack 'green labels' increase sustainable food choice and willingness-to-pay in U.K. consumers?", *Journal of Cleaner Production*.

EGNELL M., GALAN P., FIALON M., TOUVIER M., PÉNEAU S., KESSE-GUYOT E., HERCBERG S., JULIA C. (2021), "The impact of the Nutri-Score front-of-pack nutrition label on purchasing intentions of unprocessed and processed foods: Post-hoc analyses from three randomized controlled trials", *International Journal of Behavioral Nutrition and Physical Activity*.

EUROPEAN COMMISSION (2020b), "Presidency conclusions on front-of-pack nutrition labelling, nutrient profiles and origin labelling", [online], available at: https://data.consilium.europa.eu/doc/document/ST-14048-2020-INIT/en/pdf

EWERT B. (2024), "Checkmating the Nutri-Score: Will food patriotism prevent the harmonization of front-of-pack labeling schemes within the EU?", *Journal of Health Politics, Policy and Law*, pp. 885-891.

FIALON M., NABEC L., JULIA C. (2024), "Understanding the influence of stakeholders on the implementation of front-of-pack nutrition labeling in the absence of public debate: The case of Portugal", *Health research Policy and Systems*, 22.

FRANÇA C.G., DE ALCANTARA M., DELIZA R. (2025), "Effect of nutrition warning, brand, and claims on the perception of product healthiness by Brazilian consumers", *Food Research International*.

HARASTANI R.J. (2020), "Tackling obesity: A knowledge-base to enable industrial food reformulation", *Innovative Food Science and Emerging Technologies*, 64.

HASNI M.J.S., MITTONE L., SAVADORI L. (2024), "The impact of the Health Star Rating front-of-packaging label on preferences for food products", *British Food Journal*, pp. 542-558.

HAU R.C., LANGE K.W. (2024), "Learning about good nutrition with the 5-color front-of-package label "Nutri-Score": An experimental study", *Food Science and Human Wellness*, pp. 1195-1200.

HÉMAR-NICOLAS V., GUICHARD N., CLAUZEL A. (2024), "Between dissonance and confusion: When the Nutri-Score as a nutritional signal is misinterpreted", *Food Policy*, 128.

ITALIAN FOOD NEWS. (2023, February 2), "Retrieved from Italian food news: https://news.italianfood.net/2023/02/02/eu-proposal-on-nutriscore-delayed-as-italy-continues-to-oppose-it/

KEANEY M.M. (2024), "Selective industry adoption of a voluntary front-of-pack nutrition label results in low and skewed uptake: 10-year results for the Health Star Rating", *European Journal of Clinical Nutrition*, pp. 916-918.

LI W., FINKELSTEIN E.A., ZHEN C. (2022), "Intended and unintended consequences of salient nutrition labels", *American Journal of Agricultural Economics*, pp. 853-872.

LIM J.H. (2020), "Competitive effects of front-of-package nutrition labeling adoption on nutritional quality: Evidence from Facts Up Front-style labels", *Journal of Marketing*, pp. 3-21.

LIU R., GAO Z., SNELL H.A., MA H. (2020), "Food safety concerns and consumer preferences for food safety attributes: Evidence from China", *Food Control*.

MACDIARMID J.I., CERRONI S., KALENTAKIS D., REYNOLDS C. (2021), "How important is healthiness, carbon footprint and meat content when purchasing a ready meal? Evidence from a non-hypothetical discrete choice experiment", *Journal of Cleaner Production*.

MAESEN S., LAMEY L., TER BRAAK A., JANSEN L. (2022), "Going healthy: How product characteristics influence the sales impact of front-of-pack health symbols", *Journal of the Academy of Marketing Science*, pp. 108-130.

MAGANJA D.D. (2023), "Current food labelling practices in online supermarkets in Australia", *International Journal of Behavioral Nutrition and Physical Activity*, 20.

MATTAR J.B. (2022), "Information displayed on Brazilian food bar labels points to the need to reformulate the current food labelling legislation", *Food Chemistry*.

MAURI C., GRAZZINI L., ULQINAKU A., POLETTI E. (2021), "The effect of front-of-package nutrition labels on the choice of low sugar products", *Psychology & Marketing*, pp. 1323-1339.

MAZZÙ M.F. (2023), "The effects of combining front-of-pack nutritional labels on consumers' subjective understanding, trust, and preferences", *Psychology & Marketing* , pp. 1484-1500.

MAZZÙ M.F., BACCELLONI A., FINISTAURI P. (2022), "Uncovering the effect of European policy-making initiatives in addressing nutrition-related issues: a systematic literature review and bibliometric analysis on front-of-pack labels", *Nutrients*.

MAZZÙ M.F., BACCELLONI A., ROMANI S. (2023), "Counteracting noncommunicable diseases with front-of-pack nutritional labels' informativeness: an inquiry into the effects on food acceptance and portions selection", *British Food Journal*, pp. 562-578.

MAZZÙ M.F., ROMANI S., GAMBICORTI A. (2021), ""Effects on consumers' subjective understanding of a new front-of-pack nutritional label: a study on Italian consumers", *International journal of food sciences and nutrition*, pp. 357-366.

MENG Y., CHAN E.Y. (2022), "Traffic light signals and healthy food choice: Investigating gender differences", *Psychology & Marketing*, pp. 360-369.

MIALON M., CORVALAN C., CEDIEL G., BAEZA SCAGLIUSI F., REYES M. (2020), "Food industry political practices in Chile: "The economy has always been the main concern", *Globalization and Health*.

MIALON M., GAITAN CHARRY D.A., CEDIEL G., CROSBIE E. (2020), "The architecture of the state was transformed in favour of the interests of companies: Corporate political activity of the food industry in Colombia", *Globalization & Health*.

OSWALD C., ADHIKARI K., MOHAN A. (2022), "Effect of front-of-package labels on consumer product evaluation and preferences", *Current Research in Food Science*, pp. 131-140.

PACHALI M.J., KOTSCHEDOFF M.J.W., VAN LIN A., BRONNENBERG B.J., VAN HERPEN E. (2023), "How do nutritional warning labels affect prices?", *Journal of Marketing Research*, pp. 92-109.

PARAJE G., COLCHERO A., WLASIUK J.M., MARTNER SOTA A., POPKIN B.M. (2021), "The effects of the Chilean food policy package on aggregate employment and real wages", *Food Policy*, 100.

PETTIGREW S.J. (2023), "Front-of-pack nutrition labels: An equitable public health intervention", *European Journal of Clinical Nutrition*, pp. 135-137.

ROBINSON S.E., ELLER W.S. (2010), "Participation in policy streams: Testing the separation of problems and solutions in subnational policy systems", *Policy studies journal*, pp. 199-216.

RYBAK G.B. (2021), "Promoted claims on food product packaging: Comparing direct and indirect effects of processing and nutrient content claims", *Journal of Business Research*, 135.

RYBAK G.B. (2024), "Reducing the negative impact of ultra-processed foods: Consumer response to natural claims, organic claims, and processing level disclosures", *Journal of Business Research*, 17.

SARDA B., KESSE-GUYOT E., SROUR B., DESCHASAUX-TANGUY (2024), "How far can reformulation participate in improving the nutritional quality of diets at population level? A modelling study using food market data in France", *BMJ Global Health*, 9.

SEBASTIÁN A., ELBERG A., NOTON C., SCHWARTZ D. (2022), "Identifying Food Labeling Effects on Consumer Behavior", *Marketing Science*, pp. 982-1003.

SHIN S., CHAKRABORTY B., YAN X., VAN DAM R.M., FINKELSTEIN E.A. (2022), "Evaluation of combinations of nudging, pricing, and labeling strategies to improve diet quality: A virtual grocery store experiment employing a multiphase optimization strategy", *Annals of Behavioral Medicine*, pp. 933-945.

SHIN S., GANDHI M., PURI J., FINKELSTEIN E.A. (2024), "Influencing the nutritional quality of grocery purchases: A randomized trial to evaluate the impact of a social norm-based behavioral intervention with and without a loss-framed financial incentive", *Food Policy*.

SHIN S., PURI J., FINKELSTEIN E.A. (2023), "A randomized trial to evaluate the impact of Singapore's forthcoming Nutri-grade front-of-pack beverage label on food and beverage purchases", *International Journal of Behavioral Nutrition and Physical Activity*.

SOUSA I.C. (2023), "Do Brazilian consumers intend to use food labels to make healthy food choices? An assessment before the front-of-package labeling policy", *Food Research International*.

SUN X., WANG R., HE P., LIU B. (2024), "Effects of environmental and nutritional labels on the dietary choices of consumers: Evidence from China", *Environmental Impact Assessment Review*.

TACHIE C., TAWIAH N.A., ARYEE A.N.A. (2023), "Using machine learning models to predict the quality of plant-based foods", *Current Research in Food Science*, 7.

VAN DOORN J., LUITING-DRIJFHOUT M., VAN ITTERSUM K. (2023), "Waste on impulse? Food ordering, calorie intake and waste in out-of-home consumption", *Journal f Business Research*.

VAN DER BEND DLM, LISSNER L. (2019), "Differences and similarities between front-of-pack nutrition labels in Europe: a comparison of functional and visual aspects", Nutrients, vol. 11, n. 3, pp. 626.

VELÁZQUEZ A.L., VIDAL L., ANTÚNEZ L., ALCAIRE F., VARELA P., ARES G. (2023), "Children's reaction to sugar reduced dairy desserts in the context of the implementation of nutritional warning labels: An exploratory study", *Food Research International*.

WAYLEN K.A., BLACKSTOCK K.L., VAN HULST F.J., DAMIAN C., HORVÁTH F., JOHNSON R.K., VAN UYTVANCK J. (2019), "Policy-driven monitoring and evaluation: Does it support adaptive management of socio-ecological systems?", *Science of the total environment*, pp. 373-384.

WHO. (2024), "Health at a Glance: Asia/Pacific", *OECD Publishing*.

XU Y., XIAN B., REN Y., WANG Y., LANG L., WANG B. (2024), "Do carbon labels increase Chinese consumers' willingness to pay for carbon-labeled agricultural products?", *Journal of Cleaner Production*.

YANG X., CHEN Q., XU Z., ZHENG Q., ZHAO R., YANG H., RUAN C., HAN F., CHEN Q. (2021), "Consumers' preferences for health-related and low-carbon attributes of rice: A choice experiment", *Journal of Cleaner Production*.

ZLATEVSKA N.B. (2024), "Navigating through nutrition labeling effects: A second-order meta-analysis", *Journal of Public Policy & Marketing*, pp. 76-94