# Benchmarking the Nutrition-Related Commitments and Practices of Major French Food Companies

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## Abstract

**Background**: To benchmark and quantitatively assess the transparency, specificity and comprehensiveness of nutrition-related commitments and related practices of the major companies within the French food industry.

**Methods**: To evaluate the nutrition-related commitments and practices across policy domains such as product reformulation, labelling, marketing and accessibility, the 'Business Impact Assessment on Obesity and population-level nutrition' (BIA-Obesity) was applied. A total of 33 French companies were selected using Euromonitor 2018 market share data, including major packaged food and non-alcoholic beverage manufacturers (N=20), quick-service restaurants (N=7), and supermarkets (N=6). During 2019-2020 the publicly available commitments were collected for each company, scored according to the BIA-Obesity, and company representatives provided with the opportunity to complete and verify the collected data. Following performance metrics were included to assess company practices: the median Nutri-Score of product portfolios, the proportion of products with Nutri-Score A or B, the percentage of products (not-)permitted to be marketed to children according to the World Health Organisation Europe nutrient profile model and the proportion of ultra-processed food products as determined by the NOVA-classification. In addition supermarket flyers were collected over a 6-month period to assess the healthiness of product promotions. Correlations between commitments and performance metrics were assessed applying the Spearman's rank correlation coefficient.

**Results**: Among the selected companies, 13 companies verified and completed the publicly available data (response rate= 39%). Overall BIA-Obesity scores for company commitments varied between 2% and 74% with a median score of 28%. Scores for packaged food and non-alcoholic beverage manufacturers were higher than those for supermarkets and quick-service restaurants. The median proportion of foods with Nutri-Score A or B within product portfolios was 38% (range=1%-95%), while the median proportion of non-permitted products was 84% (range=7%-100%) and the median proportion of ultra-processed food products 63% (range=5%-100%). Stronger company commitments did not translate into better performance metrics.

**Conclusions**: There is room for significant improvement of both company commitments and performance. Current food industry action does not meet recommended best practices. The French government is urged to regulate food industry practices to create healthier food environments.


## Background

In France about two out of five adults and one in seven adolescents have a body mass index (BMI) above 25kg/m$^2$ and as such can be considered overweight or obese (1). Both overweight and obesity significantly increase the risk of non-communicable diseases (NCDs) (2,3), which are major public health problems in France. A high BMI as well as unhealthy diets are among the top risk factors driving death and disability (4). Nonetheless, French people consume about one third of their energy from ultra-processed food products (5). High consumption of such products has been associated with weight gain, overweight and even increased mortality (6–9).

The high consumption of such food products is driven by the current policy environment, which allows the food industry to affect food environments without taking into account the vast health impact (10–12). Most companies have commitments in place to improve the healthiness of food environments through voluntary marketing codes, reformulation targets and labelling initiatives. However, such voluntary codes often fall short of recommended best practices (13–17). As a result it becomes of utmost importance to monitor and evaluate company commitments as well as their practices to ensure that commitments translate into real-world improvement of marketing practices, healthiness of product portfolios, front-of-pack (FOP) labelling practices and increased accessibility of healthier products across different settings (18,19). Moreover, improving population nutrition is crucial in achieving the United Nations Sustainable Development Goals (SDGs) (20).

While companies make individual commitments as part of their corporate social responsibility, there are also government-led initiatives in place in France. The most well-known policy is the Nutri-Score, the government endorsed FOP labelling system that was introduced in France in 2017 and classifies products in five product categories (A being the most healthy to E being the least healthy category) based on the nutrient composition per 100g/ml (21,22). In terms of reformulation, companies have been encouraged to reduce nutrients of concern such as salt, sugar, fat and trans-fat across product portfolios by the 'Voluntary Commitment Charter for Nutritional Progress' (*'La charte d'engagement volontaires de progrès nutritionnel'*). Through this charter voluntary company commitments to improve the nutritional quality of products are validated by public authorities (23). In contrast to several other countries, there is no overarching industry pledge in place in France to limit the marketing of unhealthy food products to children (24–26). Companies can however sign up to the European wide initiative, the EU-Pledge, through which commitments are made to not market products to children below the age of 12 years that do not meet the set out nutrition criteria (27,28). Still, these nutrition criteria have been under scrutiny for not adequately protecting children from unhealthy food marketing (29,30). An alternative model, the World Health Organisation Regional Office for Europe nutrient profile model (WHO-model), with much stricter nutrition criteria has however been developed to overcome aforementioned shortcoming (30,31).

This study set out to, for the first time, benchmark and quantitatively assess the commitments and practices related to obesity prevention and population nutrition of the largest French food companies. The study included four industry sectors: packaged food manufacturers, non-alcoholic beverage manufacturers, supermarkets and quick-service restaurants. The objective was to highlight where French companies are demonstrating leadership in relation to obesity prevention and nutrition, and to identify areas for improvement. In addition, this study aimed to assess whether or not stronger nutrition-related commitments translated into stronger practices and performance.

## Methods

To assess food industry commitments and practices, the 'Business Impact Assessment on Obesity and population-level nutrition' (BIA-Obesity) was applied, as developed by the International Network for Food and Obesity/Non-communicable Diseases Research, Monitoring and Action Support (INFORMAS) and

previously described in detail by Sacks et al. (10,18). The tool assesses the transparency, comprehensiveness and specificity of commitments as well as practices across six domains, namely: 'Corporate nutrition strategy', 'Product formulation', 'Nutrition labelling', 'Product and brand promotion', 'Product accessibility and eventually 'Relationships with other organisations' (18).

All indicators within these domains relate to commitments that go beyond legislative requirements. As a result indicators and scoring criteria need to be adapted to the local context prior to implementation of the tool. Indicators related to the on-pack disclosure of the ingredients list and nutritional declaration were removed as this is regulated by the European Union (32). As it is not common in France for supermarkets to have in-store restaurants, indicators relating to menu-labelling were removed for this food industry. Furthermore, non-alcoholic beverages containing added sugars or sweeteners in France are subject to a tax (33). Consequently, commitments to increase prices of sugary beverages compared to healthier drinks were not taken into account. Since the provision of unlimited refills was banned in France in 2017 (34) the indicator relating to commitments of quick-service restaurants to not provide free refills was removed. Lastly, the indicator regarding the publication of political donations was removed as in France legal persons (including, and in particular, companies) are not authorized to pay any donation or any benefit in kind to political parties (35). The remaining indicators were adapted to suit the French regulatory environment and take into account relevant industry pledges and voluntary government-led initiatives (i.e. Nutri-Score).

This study was approved by the Human Ethics Committee of the University of Ghent (number: 2019/0780). Informed consent to participate in the study was obtained from relevant company representatives.

### Selection of food companies

Food companies with a combined market share of over 34% among packaged food manufacturers (35%), non-alcoholic beverage manufacturers (52%), supermarkets (48%) and quick-service restaurants (50%) were selected using French Euromonitor 2018 market share data (Table 1) (36). For packaged food manufactures, an additional selection was conducted based on companies' market share within specific food categories to ensure that the most prominent companies per food category were covered by the selection (*'Breakfast cereals', 'Baked goods' 'Confectionery', 'Ice-cream and frozen desserts', 'Processed Fruit and Vegetables', 'Processed Meat and Seafood', 'Sweet biscuits and cereal bars', 'Drinking milk products', 'Yoghurts', 'Savoury snacks' and 'Ready meals'*). Three additional companies were included based on this extra selection (Kellogg's, Barilla and Bonduelle).

Table 1: The market shares per food industry as determined by Euromonitor and most sold product categories of companies included in the study (France, Euromonitor, 2018).

| Packaged food manufacturers | | |
|---|---|---|
| Companies | Market share (%) | Most sold (own-brand) product categories |
| *Lactalis* | 3.4 | Dairy |
| *Mondelēz* | 2.9 | Bread & bakery products, Confectionary, Savoury snack foods |
| *Nestlé* | 2.6 | Dairy, Confectionary, Non-alcoholic beverages |
| *Ferrero* | 2.1 | Confectionary, Bread & bakery products, Cereal & grain products |
| *Fleury Michon* | 1.9 | Meat & fish products, Convenience foods |
| *Danone* | 1.6 | Dairy, Non-alcoholic beverages |
| *Unilever* | 1.3 | Dairy, Sauces, Convenience foods |
| *Savencia* | 1.3 | Dairy, Confectionary, Meat & fish products |
| *Bel* | 1.2 | Fruit & vegetable products, Dairy |
| *Panzani* | 1.0 | Cereal & grain products, Convenience foods, Sauces |
| *Barilla* [1] | 0.9 | Bread & bakery products, Cereal & grain products, Sauces |
| *Bonduelle* [2] | 0.6 | Fruit & vegetable products, Convenience foods |
| *Kellogg's* [3] | 0.5 | Cereal & grain products, Savoury snack foods |
| *William Saurin* | 0.3 | Convenience foods, Meat & fish products |
| *N=14* | *21.6* [4] | |
| Non-alcoholic beverage manufacturers | | |
| *Coca-Cola* | 17.2 | Non-alcoholic beverages |
| *PepsiCo* | 8.8 | Non-alcoholic beverages, Savoury snack foods, Cereal & grain products |
| *Orangina Suntory* | 7.6 | Non-alcoholic beverages |
| *Eckes-Granini* | 3.9 | Non-alcoholic beverages |
| *Fruité Entreprises* | 4.0 | Non-alcoholic beverages |
| *Andros* | 2.0 | Fruit & vegetable products, Dairy, Bread & bakery products, Non-alcoholic beverages |
| *N= 6* | *43.5* [5] | |
| Supermarkets | | |
| *E. Leclerc* | 11.1 | Dairy, Fruit & vegetable products, Meat & fish products |
| *Intermarché* | 9.8 | Dairy, Fruit & vegetable products, Bread & bakery products |
| *Carrefour* | 8.8 | Dairy, Fruit & vegetable products, Meat & fish products |
| *Auchan* | 8.2 | Meat & fish products, Fruit & vegetable products, Dairy |
| *Super U* | 5.2 | Meat & fish products, Fruit & vegetable products, Dairy |
| *Lidl* | 4.4 | |
| *N= 6* | *47.5* | |
| Quick-service restaurants | | |
| *McDonald's* | 32.2 | Burgers |
| *KFC* | 4.1 | Burgers |
| *Quick* | 3.9 | Burgers |
| *Burger King* | 2.9 | Burgers |
| *Paul* | 2.6 | Bread & bakery products, Convenience foods |
| *La Brioche Dorée* | 2.1 | Bread & bakery products, Convenience foods |
| *Domino's Pizza* | 1.9 | Pizza |
| *N = 7* | *49.7* | |

*1: The largest market share within the Euromonitor food category 'Baked goods'.*

*2: The largest market share within the Euromonitor food category 'Processed Fruit and Vegetables'.*

*3: The largest market share within the Euromonitor food category 'Breakfast cereals'.*

*4 and 5: Excluding the supermarkets as food and beverage manufacturers (market share foods: 13.2%; market share beverages: 8.2%).*

### Data collection and analyses

#### Nutrition-related commitments

Publicly available commitments and policies were collected between June 2019 and December 2020. Relevant information was collected from company websites, company reports, brand websites and relevant industry pledges and initiatives. Per selected company, screenshots were taken of relevant webpages and relevant documents were downloaded.

Subsequently, the information was entered in an Excel spreadsheet per BIA-Obesity indicator. A report summarizing the collected information as well as the preliminary scoring was compiled per company. Company representatives were contacted via various channels, including meetings with industry associations (ANIA and L'Alliance 7), phone call inquiries, contact information on company/brand websites and LinkedIn. Companies willing to verify and complete the collected data were sent the summary reports after signing a written informed consent. For all additional information some kind of evidence was required. Upon request companies could sign non-disclosure agreements prior to sharing sensitive internal documents. For companies that refused participation or failed to share feedback in time, the assessment was based solely on publicly available information. Supermarkets were assessed as both retailers and food manufacturers (own-brand products).

The nutrition-related commitments were scored in Excel. Supplementary file 1 provides examples of how scores were assigned for BIA-Obesity indicators. All company commitments were scored by IVD and two companies per food industry (a total of eight companies) were blindly re-scored by YZ. Discrepancies were discussed till an agreement was obtained. The final BIA-Obesity scores per domain were weighted as recommended by INFORMAS (Supplementary file 2).

Median scores (range), overall and per BIA-Obesity domain, were calculated for each food industry and across food industries. For companies that verified and completed the public information, median scores before and after participation were calculated. A one-tailed Wilcoxon signed-rank test was conducted to compare scores before and after participation. A two-tailed Wilcoxon rank-sum test was used to compare scores of companies that engaged with the process to scores of those that did not engage.

#### Practices

For some of the BIA-Obesity policy domains, a set of key performance indicators was selected to assess company practices on population nutrition. The selected indicators, as well as the sources where the data were derived from and the years, are presented in below in table 2. For the domains on 'Corporate nutrition strategy' and 'Relationships with other organisations', no performance indicators were included. For the domains 'Nutrition labelling' and 'Product accessibility' no performance data were available at the time of assessment. For the other BIA-Obesity domains, specific indicators were included, dependent on data availability and feasibility of the assessment. An overview of the different performance indicators can be found in table 2.

Table 2: An overview of the performance indicators per food industry and 'Business Impact assessment on Obesity and Population Nutrition' (BIA-Obesity) domain. The data source and the year of data collection are specified per indicator.

| Food Industry | BIA-Obesity Domain | Performance indicators | Data sources | Years |
|---|---|---|---|---|
| **Food and beverage manufacturers** | **Product formulation** | *For full product portfolio:*<br>• Median Nutri-Score<br>• % of products with Nutri-Score A and B<br>• % of products with Nutri-Score D and E<br>• % of products that are ultra-processed | Open Food Facts data France [1] | 2018 |
| | **Product and brand promotion** | *For full product portfolio:*<br>• % of products not-permitted to be marketed to children according to the World Health Organisation Regional Office for Europe nutrient profile model (WHO-Model) | Open Food Facts data France [1] | 2018 |
| **Supermarkets** | **Product formulation** | *For full own-brand product portfolio:*<br>• Median Nutri-Score<br>• % of Nutri-Score A and B<br>• % of Nutri-Score D and E<br>• % of products that are ultra-processed | Open Food Facts data France [1] | 2018 |
| | **Product and brand promotion** | *For full own-brand product portfolio:*<br>• % of products not permitted to be marketed to children according to the WHO-Model<br>*For all food products:*<br>• % of promotions for foods that are ultra-processed<br>• % of promotions for fresh fruit and vegetables<br>• % of promotions with promotional characters<br>• % of promotions with discounts<br>• % of promotions with incentive offers | Open Food Facts data France [1]<br>Supermarket circulars | 2018<br>October 2019 – March 2020 |
| **Quick-service restaurants** | **Product formulation** | *For meals and food portfolio online:*<br>• Median Nutri-Score<br>• % of meals with Nutri-Score A and B<br>• % of meals with Nutri-Score D and E | Company websites | 2019 [2] |
| | **Product and brand promotion** | *For meals and food portfolio online:*<br>• % of foods and meals not-permitted to be marketed to children according to the WHO-Model | Company websites | 2019 [2] |

1. *Verified using Mintel GNPD (Global New Products Database) data or nutritional values from brand or supermarket websites.*
2. *2018 for KFC. No data available for Brioche Dorée and Quick.*

***Product formulation***

For packaged food and non-alcoholic beverage manufacturers and supermarkets (own-brand products), the healthiness of the complete product portfolios was analysed using Open Food Facts data for France in 2018. As Open Food Facts cannot guarantee the accuracy and completeness of the data, the nutritional data of all products that could be found on Mintel GNPD (Global New Products Database), on brand websites or supermarket websites were verified using aforementioned sources. Duplication of products was avoided by ensuring that each barcode appeared only once.

For quick-service restaurants, the nutritional information per 100g was obtained from the national brand websites in 2019, where possible (Burger King, Domino's Pizza, McDonald's and Paul). For KFC no nutritional information was available per 100g and no portion sizes were specified on the national website, so an online table with nutritional information from 2018 was used. On the website of Brioche Dorée and Quick no nutritional information was available per 100g and portion sizes were not defined. As a result the product portfolios of Brioche Dorée and Quick could not be analysed.

The healthiness of the entire portfolios or menus of all selected food companies was analysed using the Nutri-Score, which is the official front-of-pack labelling system in place in France since March 2017 (21). The proportion of products with Nutri-Score A, B, C, D and E was determined, as well as the median Nutri-Score across the company's portfolio or menu. When calculating the Nutri-Score for non-alcoholic beverages, it was assumed that no juices had a fruit and vegetable content above 40% as the data sources and product ingredient lists did not allow for a distinction to be made between the fruit and vegetable content of different juices. To check the viability of this assumption, a Pearson correlation coefficient was calculated between the Nutri-Score available through Open Food Facts and the calculated Nutri-Score for non-alcoholic beverages. A strong correlation was observed between both Nutri-scores ($R=0.84$, $p<0.0001$). In addition, a correlation between the Open Food Facts Nutri-Score and the calculated Nutri-Score was also conducted for the entire dataset. A very strong correlation was observed between the calculated Nutri-Score and the Nutri-Score displayed within Open Food Facts ($R=0.98$, $p<0.0001$).

The company's portfolios were also analysed in relation to the proportion of ultra-processed foods (according to the NOVA classification (37)) and products not-permitted to be marketed to children according to the World Health Organisation Europe nutrient profile model (WHO-Model (31)). The NOVA-classification

distinguishes products based on their level of processing (unprocessed or minimally processed foods, processed culinary ingredients, processed foods and ultra-processed foods) (37). The proportion of portfolios that are ultra-processed (NOVA), the proportion of products not-permitted to be marketed to children (WHO-Model), as well as the median Nutri-Score and the proportion of products with Nutri-Score A and B and D and E, were examined by company.

*Product and brand promotion*

Food promotions in the flyers of the six biggest supermarkets in France were collected online from the weekly/two-weekly circulars over a six month period (October 2019 – March 2020). All promotions were entered into a database and manually classified according to the NOVA-classification and the 17 food categories of the WHO-model (Supplementary file 3). Per product the following information was recorded: product- and brand name, type of promotional character, the level of discount, type of incentive offer, if the product was a fresh fruit or vegetable, whether the product was a fresh meat or fish product and the Nutri-Score (38). The proportion of promotions for ultra-processed foods, foods with promotional characters, incentive offers or discounts and the proportion of promotions for fresh fruits and vegetables were calculated. Data were analysed separately per supermarket.

### The relationship between commitments and practices

Correlations between commitments and practices were calculated applying the Spearman's rank correlation coefficient. Correlations were calculated between commitments made within the domain ‘Product formulation’ and the proportion of products within the portfolio with Nutri-Score A and B and D and E. Correlations between the domain ‘Product formulation’ and the proportion of ultra-processed products were also calculated. Lastly, correlations between commitments within the domain ‘Product and brand promotion’ and the proportion of products not-permitted to be marketed to children according to the WHO-model were assessed. No correlation could be calculated between the healthiness of products promoted in supermarket flyers and commitments to have a minimum proportion of products promoted in regular catalogues to be healthier products as no such commitments were in place among selected supermarkets in France.

R-values >0.5 were considered to represent a strong correlation. P-values <0.05 were considered statistically significant. All analyses were performed using Microsoft Excel and SAS 9.4 (Cary, USA, 2018).

## Results

### Nutrition-related commitments

Out of the 33 selected companies, 13 verified and completed the publicly available information, 11 accepted participation but did not provide feedback in time, five declined participation and four companies were unreachable (Figure 1).

French food companies demonstrated some commitment to improving population nutrition, but much stronger action is needed across sectors and across BIA-Obesity policy domains. The overall scores ranged from 2% up to 74% with a median overall score of 28%. The best performing domain was ‘Corporate nutrition strategy’ (median score = 53%, range= 0-93%) while the worst performing domain was ‘Product accessibility’ (median score = 6%, range= -10-50%). The median overall score was 12% for supermarkets (range= 7-20% ), 11% for quick-service restaurants (range= 5-39%) and 44% for packaged food and beverage manufacturers (range= 2-74%). Generally, overall scores and domain-specific scores were lower for quick-service restaurants and supermarkets (considered as both retailer and packaged food and non-alcoholic manufacturer) than for packaged food and beverage manufacturers. In particular the median score for both the domains ‘Product and brand promotion’ and ‘Product accessibility’ was 0 for quick-service restaurants and supermarkets.

Scores per BIA-Obesity domain and per company are presented in Table 3. For the 13 companies that participated (response rate= 39%), the median overall BIA-Obesity score significantly increased from 38% (scoring based on public information only) to 50% (scoring after full participation) ($p<0.001$). Overall BIA-Obesity scores were significantly higher for companies that participated compared to companies that did not ($p<0.05$) (data not shown).

Within the ‘Corporate nutrition strategy’ domain seven out of the 33 companies had no commitments in place. Packaged food and beverage companies (median= 63%) performed better than supermarkets (median= 33%) and quick-service restaurants (median= 0%) for this domain. Some companies recognized both national (i.e. Nutri-Score) as well as international (i.e. The United Nations Sustainable Development Goals or the World Health Organization global NCD action plan) priorities within their corporate nutrition strategy. Others published annual national reports detailing their progress against objectives and targets. The lowest performing companies made little or no mention of nutrition-related issues and did not identify population nutrition as a clear priority focus area

Within the ‘Product accessibility’ domain only a limited number of companies made commitments to address the accessibility of healthy compared to ‘less healthy’ products (12 out of the 33 companies). Packaged food and beverage manufactures had the highest median score (10%) while supermarkets and quick-service restaurants had a median score of 0%, lacking all commitments regarding best practice actions in this domain, such as confectionary free checkouts for supermarkets or commitments to limit supersizing among quick-service restaurants. The implementation of taxes on some unhealthy food products was supported by three companies and opposed by seven. Supermarkets neither opposed or supported the implementation of such taxes.

The median score within the domain ‘Product formulation’ was 29% (0-89%) with food and beverage manufacturers scoring the highest (58%) followed by supermarkets (9%) and quick-service restaurants (5%). Five companies made no commitments in this area. 11 out of 20 food and beverage manufacturers and two supermarkets had targets in relation to reducing the sodium content, while 14 out of 20 food and beverage manufacturers and two supermarkets had targets in relation to reducing the added sugar content. Eight out of 20 food and beverage manufacturers and one out of five supermarkets had targets in relation to reducing portion sizes. Only one out of seven quick-service restaurants had such targets. Three out of the 20 food and beverage manufacturers applied the Nutri-Score to guide reformulation. This was not the case for any quick-service restaurants or supermarkets.

The domain 'Nutrition labelling' obtained a median score of 33% (0-79%). All companies apart from one made commitments within this area. When comparing food industries, food and beverage manufactures (median= 35%) and quick-service restaurants (median= 36%) performed better than supermarkets (median= 30%). The top performer in this domain publicly committed to link the use of nutrition and health claims to the healthiness of products as determined by their own classification system. Two additional companies had a similar commitment in place, but this was not publicly available. 12 out of 20 packaged food and beverage manufacturers and all six supermarkets committed to implement the government-endorsed Nutri-Score on their (own-brand) products. All quick-service restaurants provided nutritional information about food and meals online to some extent, although sometimes only per serving (without indication of portion size) instead of per 100g. In addition, four out of seven quick-service restaurants committed to labelling their menu boards in-store.

The domain 'Product and brand promotion' obtained a median score of 8% (range= 0-68%) and was the second worst scoring BIA-Obesity domain in France. Food and beverage manufacturers obtained a median score of 29%, while supermarkets and quick-service restaurants obtained a median score of 0%. 15 out of all 33 companies had no commitments within this domain, including all six supermarkets and five out of the seven quick-service restaurants. None of the selected companies developed marketing policies for children up to the age of 18 years and only three packaged food and beverage manufacturers committed not to sponsor children's sporting, cultural or other activities using unhealthy foods and brands.

Lastly, the median score for the domain 'Relationships with other organisations' was 38% (range= 0-94%). Only four companies did not have any commitments within this domain. Median scores per food industry ranged from 13% for quick-service restaurants up to 25% for supermarkets and 44% for food and beverage manufacturers.

### Practices

The performance results per indicator and per company are shown in Table 3.

#### *Product formulation*

Across all selected companies, the proportion of portfolios consisting of A and B Nutri-Score products ranged from 0.6% to 95% (median= 38%). One food and beverage company had a median Nutri-Score A across its entire portfolio while two companies had a median Nutri-Score E. The product portfolios of supermarket own-brand products and quick-service restaurants all had a median Nutri-Score C apart from one supermarket and two quick-service restaurants. The proportion of products within portfolios with Nutri-Score A and B ranged from 1% to 95% for food and beverage manufacturers (median=43%), 26% to 48% for supermarkets (median=41%) and from 13% to 29% for quick-service restaurants (median=23%). The median proportion of ultra-processed food products within portfolios of selected food and beverage manufacturers was 73% (range= 5-100%). For supermarkets this was 61% (range= 53-64%).

#### *Product and brand promotion*

According to the WHO-model, the median proportion of products within portfolios across food and beverage manufactures not-permitted to be marketed to children was 93% (range= 7-100%). For quick-service restaurants this was 84% (range= 74-94), and for supermarkets this was 72% (range= 66-82%).

For the food promotions in the supermarket flyers, it was found that promotions were mostly for ultra-processed foods (median= 52%). Nonetheless, considerable variation was observed between the different supermarkets with the proportion of promotions for ultra-processed foods ranging from 49% up to 61% of all promotions. Across the entire circular, Carrefour most frequently promoted fresh fruits and vegetables (7% of all promotions) and Auchan least frequently (3% of all promotions). Throughout the flyers only around 5% (range= 0-9%) of promotions had promotional characters while 68% of products were discounted (range= 29-73%) (Table 3).

### The association between commitments and practices

No significant correlations were observed between commitments within the domains 'Product formulation' and 'Product and brand promotion' and respective performance indicators. As no supermarkets and only two out of five quick-service restaurants made commitments to limit marketing to children within the domain 'Product and brand promotion', no correlations with practices, as assessed by the WHO-model, could be calculated for these food industries.

From Table 3 it can be observed that companies within the top third for commitments within the domain of 'Product formulation' don't necessarily have the healthiest portfolios as determined by the Nutri-Score and NOVA-classification. On the contrary, there are companies within the lowest third for commitments that still have among the heathiest portfolios. The same can be observed for commitments and practices within the domain 'Product and brand promotion'.

Table 3: An overview of the French 'Business Impact assessment on Obesity and Population Nutrition' (BIA-Obesity) scores for commitments and practices per company. Data are sorted by descending total BIA-Obesity score per food industry (food and beverage manufacturers, supermarkets and quick-service restaurants). Green indicates a score within the top third of companies per food industry and red indicates a score within the lowest third of companies per food industry. Yellow indicates the companies in between.

| Company | Commitments | | | | | | Practices | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total BIA-Score | Corporate nutrition strategy | Product formulation | Nutrition labelling | Product and brand promotion | Product accessibility | Relationships with other organisations | # Products | Median Nutri-Score | % Nutri-Score A+B | % Nutri-Score D+E |
| Food and beverage manufacturers | | | | | | | | | | | |
| Danone | 73.9 | 75.0 | 82.4 | 76.7 | 67.1 | 50.0 | 75.0 | 603 | B | 60.0 | 9.6 |
| Unilever | 73.1 | 86.7 | 86.8 | 79.4 | 62.1 | 26.7 | 50.0 | 780 | C | 19.5 | 46.9 |
| Coca-Cola | 68.7 | 93.3 | 84.6 | 52.9 | 58.3 | 25.0 | 93.8 | 238 | B | 52.1 | 45.4 |
| Nestlé | 66.4 | 93.3 | 89.5 | 53.3 | 56.3 | 10.0 | 43.8 | 2095 | D | 19.4 | 53.6 |
| Mondelēz | 58.5 | 60.0 | 71.1 | 38.2 | 68.3 | 10.0 | 50.0 | 640 | E | 6.4 | 81.7 |
| PepsiCo | 53.8 | 86.7 | 81.6 | 32.4 | 44.2 | 0.0 | 18.8 | 1188 | C | 29.9 | 45.7 |
| Fleury Michon | 49.7 | 86.7 | 68.4 | 60.0 | 8.3 | 33.3 | 87.5 | 395 | C | 41.0 | 11.4 |
| Kellogg's | 47.6 | 48.3 | 60.5 | 33.3 | 50.0 | 8.3 | 50.0 | 516 | D | 9.9 | 61.6 |
| Bel | 45.2 | 93.3 | 52.6 | 11.8 | 50.0 | 10.0 | 43.8 | 682 | C | 45.3 | 43.1 |
| Eckes-Granini | 43.9 | 63.3 | 69.2 | 36.7 | 20.8 | 20.0 | 43.8 | 235 | B | 95.3 | 4.7 |
| Bonduelle | 43.6 | 78.3 | 55.9 | 76.7 | 0.0 | 16.7 | 56.3 | 415 | A | 90.6 | 0.5 |
| Savencia | 39.3 | 63.3 | 68.4 | 41.2 | 6.3 | 10.0 | 37.5 | 1059 | D | 5.3 | 83.1 |
| Orangina Suntory | 34.2 | 86.7 | 46.2 | 11.8 | 25.4 | -10.0 | 43.8 | 331 | D | 13.3 | 82.8 |
| Ferrero | 30.7 | 56.7 | 21.1 | 14.7 | 40.0 | 0.0 | 75.0 | 165 | E | 0.6 | 97.6 |
| Barilla | 30.5 | 53.3 | 28.9 | 17.6 | 31.3 | 8.3 | 62.5 | 334 | B | 57.5 | 23.4 |
| Andros | 28.0 | 31.7 | 30.8 | 36.7 | 22.5 | 5.0 | 25.0 | 739 | C | 44.52 | 33.42 |
| Fruité Entreprises | 24.1 | 60.0 | 26.9 | 0.0 | 27.1 | 12.0 | 25.0 | 266 | C | 47.8 | 47.0 |
| Panzani | 10.4 | 36.7 | 0.0 | 26.7 | 0.0 | 8.3 | 18.8 | 546 | B | 68.2 | 12.3 |
| William Saurin | 5.8 | 0.0 | 10.5 | 13.3 | 0.0 | 0.0 | 0.0 | 87 | B | 81.6 | 11.5 |
| Lactalis | 2.1 | 0.0 | 0.0 | 5.9 | 0.0 | 0.0 | 18.8 | 772 | D | 22.8 | 64.6 |
| Median (Min – Max) | **44 (2-74)** | **63 (0-93)** | **58 (0-89)** | **35 (0-79)** | **29 (0-68)** | **10 (-10-50)** | **44 (0-94)** | **531 (87-2095)** | **C (A-E)** | **43 (1-95)** | **46 (0-98)** |
| Supermarkets | | | | | | | | | | | |
| Lidl | 20.3 | 76.7 | 39.5 | 10.0 | 0.0 | 0.0 | 25.0 | 4683 | D | 26.3 | 51.7 |
| Intermarché | 17.8 | 48.3 | 18.4 | 47.5 | 0.0 | 0.0 | 25.0 | 512 | C | 47.7 | 35.2 |
| E. Leclerc | 13.0 | 33.3 | 5.3 | 47.5 | 0.0 | 0.0 | 25.0 | 2322 | C | 40.2 | 39.8 |
| Carrefour | 11.6 | 16.7 | 7.9 | 30.0 | 0.0 | 6.3 | 43.8 | 1842 | C | 41.2 | 41.4 |
| Auchan | 10.8 | 33.3 | 2.6 | 30.0 | 0.0 | 2.1 | 37.5 | 4417 | C | 37.5 | 43.7 |
| Super U | 6.8 | 0.0 | 10.5 | 27.5 | 0.0 | 0.0 | 0.0 | 1879 | C | 45.5 | 38.4 |
| Median (Min – Max) | **12 (7-20)** | **33 (0-77)** | **9 (3-39)** | **30 (10-48)** | **0 (0-0)** | **0 (0-6)** | **25 (0-44)** | **2101 (512-4683)** | **C (C-D)** | **41 (26-48)** | **41 (35-52)** |
| Quick-service restaurants | | | | | | | | | | | |
| McDonald's | 39.0 | 66.7 | 42.5 | 72.7 | 26.9 | 13.9 | 25.0 | 111.0 | C | 27.1 | 46.7 |
| Quick | 13.8 | 0.0 | 15.0 | 47.3 | 0.0 | 5.6 | 37.5 | / | / | / | / |
| KFC | 11.8 | 36.7 | 10.0 | 18.2 | 0.0 | 8.3 | 25.0 | 98.0 | C | 28.7 | 41.5 |
| Burger King | 11.0 | 0.0 | 0.0 | 18.2 | 30.8 | 0.0 | 12.5 | 69.0 | D | 13.2 | 50.9 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Paul** | 6.7 | 0.0 | 2.6 | 36.4 | 0.0 | 0.0 | 12.5 | 80.0 | C/D | 23.1 | 50.0 |
| **Domino's Pizza** | 5.5 | 0.0 | 0.0 | 36.4 | 0.0 | 0.0 | 0.0 | 243.0 | C | 12.6 | 40.0 |
| **Brioche Dorée** | 5.0 | 16.7 | 5.3 | 13.6 | 0.0 | 0.0 | 0.0 | / | / | / | / |
| **Median (Min – Max)** | **11 (5-39)** | **0 (0-67)** | **5 (0-43)** | **36 (14-73)** | **0 (0-31)** | **0 (0-14)** | **13 (0-38)** | **98 (69-243)** | **C (C-D)** | **23 (13-29)** | **47 (40-51)** |
| **Overall median across industries (Min – Max)** | **28 (2-74)** | **53 (0-93)** | **29 (0-89)** | **33 (0-79)** | **8 (0-68)** | **6 (-10-50)** | **38 (0-94)** | **516 (69-4683)** | **C (A-E)** | **38 (1-95)** | **44 (0-98)** |

## Discussion

This study quantitatively assessed for the first time the commitments and practices related to obesity prevention and population nutrition of the major food companies in France. The findings showed a large variation between companies based on the overall scores for the transparency, comprehensiveness and specificity of commitments as well as the performance indicators. Overall BIA-Obesity scores ranged from 2% to 74% (median=28%). The median overall score was 11% for quick-service restaurants, 12% for supermarkets and 44% for packaged food and non-alcoholic beverage manufacturers. The best performing domain was 'Corporate nutrition strategy' while the worst performing domain was 'Product accessibility'. The performance indicators indicated that the majority of portfolios consisted of ultra-processed foods (63%) and products not-permitted to be marketed to children according to WHO (84%). Only a limited proportion of the promotions in supermarket flyers was for fresh fruits and vegetables while more than half of the promotions were for ultra-processed foods. Performance metrics relating to food formulation and marketing were not associated with the overall BIA-Obesity score on commitments.

The overall BIA-Obesity scores in France were lower than the scores obtained in previous studies in Australia, New Zealand and Belgium, but higher than the scores in Malaysia. This observation matches the response rates which were higher than in Malaysia, but lower than in the other countries where companies had the opportunity to complete and verify the data (13–15,17). BIA-scores and response rates are presented in Supplementary file 4. As previous research has shown that the BIA-Obesity scores significantly increase for companies that engage with the process (13,14,17), the lower response rate in France might be able to explain the lower BIA-Obesity scores. Since this is the first assessment in France, it is anticipated that more companies will engage with future assessments.

Across all abovementioned countries, 'Corporate nutrition strategy' was the best performing BIA-Obesity domain and 'Product accessibility' the worst (13–15,17), findings similar to what was observed at global level by the 'Access To Nutrition Index' (ATNI) in 2018 and 2021 (39,40). The ATNI benchmarks food company commitments and practices in a similar way to the BIA-Obesity, but does this at global level for only food and beverage manufacturers. As it is a global assessment, the ATNI looks at both over- and undernutrition, something that is not the case for BIA-Obesity (18,19,41). France however scored notably lower in the domain 'Product and brand promotion' compared to other countries. Most likely this can be attributed to the lack of a (voluntary) code to restrict marketing to children in France, something that is in place in Belgium, New Zealand and Australia (24–26).

Similar across all studies and countries however, company commitments fell short of recommended best practices. To improve commitments companies should use an official nutrient profiling system (such as the Nutri-Score) to guide reformulation of products and ensure time-bound reduction of nutrients of concern such as salt, sugar, trans-fat, saturated fat and the energy content. Furthermore it is recommended for companies to limit marketing to all children below the age of 18 to products that meet the WHO-model nutrition criteria. Specifically for packaged food and beverage manufacturers it is advised to limit the use of nutrition and health claims to products that are healthy according to an official nutrient profiling system such as the Nutri-Score. For quick-service restaurants it would be desirable to make nutritional information available on menus. Preferably, quick-service restaurants would also commit to not open new outlets within walking distance of schools. Finally, French supermarkets need to step up their commitments in the areas of 'Product and brand promotion' and 'Product accessibility' as none of the selected supermarkets made commitments to limit marketing to children, to limit the in-store promotion of less healthy products or to increase the accessibility of healthier products compared to less healthy alternatives. Underlying the importance of strengthening the commitments lies the assumption that stronger commitments will translate into improved practices and performance. Similar to earlier research however, this study found no relationship between voluntary commitments and healthier product portfolios (16,42). As such, towards future research, this assumption needs to be closely monitored and it must be ensured that adequate performance metrics are taken into account to assess the effectiveness of company commitments.

When comparing performance indicators across Belgium and France it is observed that overall median product portfolios have a higher proportion of products with Nutri-Score A and B (17). This could potentially be explained by the fact that the Nutri-Score became the government endorsed FOP labelling system in France in 2017 (21) while it was only introduced in Belgium in 2019 (22,43). Also the proportion of product portfolios consisting of ultra-processed products was slightly lower in France (63%) than what was observed in Belgium (75%) (17). This observation is in line with previous research that found a significant higher household availability of ultra-processed food products in Belgium than in France (7). Nonetheless, such numbers are of concern as a recent study in France found a probable association between the consumption of ultra-processed foods and a higher mortality risk (9). This association is however merely part of the growing body of literature highlighting the risks of ultra-processed food consumption (6–8). Eventually, the proportion of products permitted to be marketed to children were similar across these neighbouring countries, standing at 16% in France and 19% in Belgium (17). These findings are also similar to

those of ATNI in 2018 and 2021 that found that only 14% and 9%, respectively, of product portfolios of the major multinational companies consisted of products that permitted to be marketed to children according to WHO (39,40). The lower percentage in 2021 might be because the latest ATNI study used the regional WHO nutrient profile models instead of the European WHO-Model that was used in the 2018 ATNI and the abovementioned BIA-Obesity studies (17,39,40).

An important strength of this study is that it allows for a first intra-European country comparison of BIA-Obesity data in regards of both commitments and performance. Nonetheless, towards the future a more in-depth analysis comparing BIA-Obesity data across a wider range of European countries would be recommended, especially including countries from different European regions. An important limitation of this French BIA-Obesity study is the low response rate of company representatives (39%). As less than half of the companies verified and completed the publicly available data it might be that in reality the BIA-Obesity scores is higher than what was observed in the study. Even so, it is expected that response rates will increase during future iterations. Concerning the performance data, Open Food Facts data had to be used. Consequently it cannot be guaranteed that all products present on the market in 2018 were included in the study. Moreover, some level of data duplication might be possible. Even though it was ensured that each barcode appeared only once in the database, products that changed barcode throughout the year or had wrong barcodes assigned within the Open Food Facts database might be accounted for multiple times. Another limitation is the fact that performance indicators were not able to capture changes overtime in the healthiness of product portfolios of selected companies potentially resulting from the commitments in place. To overcome this limitation it is recommended for following studies to assess the associations between commitments in place and the changes of performance indicators over time. Eventually, due to data availability and time constraints, this study did not capture practices related to corporate political activities (such as lobbying or research funding) that may affect food policies. Including performance data on such practices might however be able to partially explain why no association can be found between commitments and practices.

## Conclusions

In conclusion, although French food companies have taken a few steps as part of a societal response to unhealthy diets and obesity, there is a much greater role for them to play. The overall and domain-specific BIA-Obesity scores showed that there is a lot of room for food companies across all four industries to improve comprehensiveness, specificity and transparency of their nutrition-related commitments, as well as their practices related to population nutrition, in particular 'Product reformulation' and 'Product and brand promotion'. The next iterations of the BIA-Obesity should include a wider list of performance metrics of companies in relation to product formulation, labelling, promotion and accessibility. In view of these results, it is clear that stronger government regulations on food environments will be essential to achieve the goals of the World Health Organization action plan on chronic diseases as well as the Sustainable Development Goals.

## List Of Abbreviations

ATNI: Access To Nutrition Index

BIA-Obesity: Business Impact Assessment on Obesity and population-level nutrition

BMI: Body Mass Index

INFORMAS: International Network for Food and Obesity/Non-communicable Disease Research, Monitoring and Action Support

GNPD: Global New Products Database

NCDs: Non-Communicable Diseases

SMART: Specific, Measurable, Achievable, Relevant and Time bound

WHO-model: World Health Organisation Regional Office for Europe nutrient profile model

## Declarations

**Ethics approval and consent to participate**: Written informed consent was obtained from company representatives. All protocols and consent forms were approved by the Human Ethics Committee of the University of Ghent (number: 2019/0780). Study procedures conformed to the international standards set by the Declaration of Helsinki.

**Consent for publication**: Not applicable

**Availability of data and materials:** - The datasets generated and/or analysed during the current study are not publicly available due to the wide variety of data sources used, but are available from the corresponding author on reasonable request.

**Competing interests:** The authors declare that they have no competing interests.

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The funding body had no role in the design of the study and collection, analysis, and interpretation of data and in writing the manuscript.

**Author Contributions:** SV and IVD designed the study. IVD collected and analysed the data. All authors contributed to the interpretation of the data and critically reviewed draft versions of the article. All authors approved the final version of the article for submission.

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## Figures

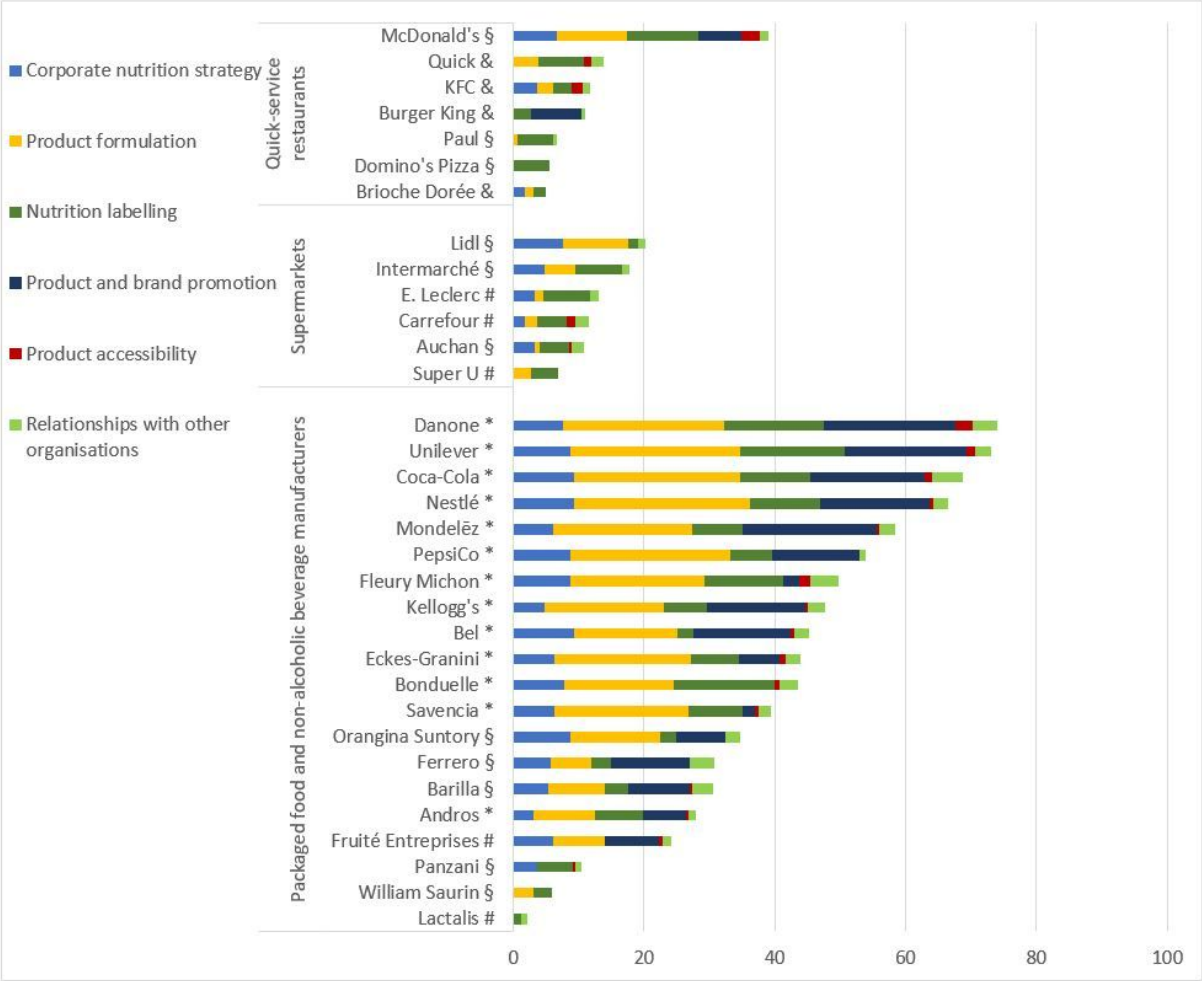


**Figure 1**

**Business Impact Assessment on Obesity and Population Nutrition (BIA-Obesity), France 2020 – Overall and domain-specific scores for quick-service restaurants, supermarkets and packaged food and non-alcoholic beverage manufacturers.** ** Full engagement with the process (N=13); # Declined participation (N=5); § Accepted participation, but contributions not received in time (N=11); & Not able to contact the company (N=4); For #, § and &: Assessment of commitments was based on publically available information only.*

## Supplementary Files

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