# The Nutri-Score as an extended nutrition labeling model in food retailing

## A stocktaking

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## Introduction and goals

Under EU Regulation No 1169/2011 all foods must be labeled with a nutrition facts table [1]. This is intended to increase transparency and enable consumers to make informed purchase decisions. Despite this information, studies show that some consumers find it hard to assess food by its nutritional properties and therefore would prefer an expanded and simpler food labeling model [2]. In addition to ingredients lists and nutrition facts tables, EU countries can choose to add new simpler labeling models using graphic symbols [3]. In France, the Nutri-Score was approved as an expanded nutrition labeling model at the end of 2017 [4]. The goal of the Nutri-Score is to provide intuitively understandable information that enables consumers to assess the nutritional quality of processed and packaged food at a glance. Since the German legislation introducing the Nutri-Score came into effect on 6 November 2020, German companies can now also use the labeling model with legal certainty [5].

Expanding the Nutri-Score to more and more food products is intended to improve comparability between foods in the same product category as regards their nutritional value or nutrient content, regardless of the consumer's nutrition knowledge. This is intended to foster healthier choices without limiting access to less healthy products [3, 6].

The voluntary nature of the labeling model means that up to now only a limited number of food products carry a Nutri-Score label. However, if a manufacturer or retailer decides to introduce the Nutri Score, within two years

## Abstract

The Nutri-Score has been available for use with legal certainty by companies in France since the end of 2017 and in Germany since November 2020. Based on data from the Mintel Group's Global New Product Database (GNPD), this study compares which products have been labeled with the Nutri-Score by which distributor (manufacturer or food retailer) in France and Germany up to now, and whether specific patterns can be identified in this respect. The results show that A and B labels currently dominate in Germany as well as in France. Nevertheless, the data for France show that over time the proportion of products with an unfavourable D or E label has increased to a statistically significant extent, and this development can also be expected on the German market. In both countries most labels are found on dairy products, main dishes and ready meals, as well as fish, meat and egg products. In terms of distributors, manufacturers dominated in both countries in the first few months after introduction of the Nutri-Score. Over time, however, the proportion of private labels increased significantly in France from around a third to just under half of all labeled products.

**Keywords:** front-of-pack nutrition label, Nutri-Score, retailers, national brands, private labels

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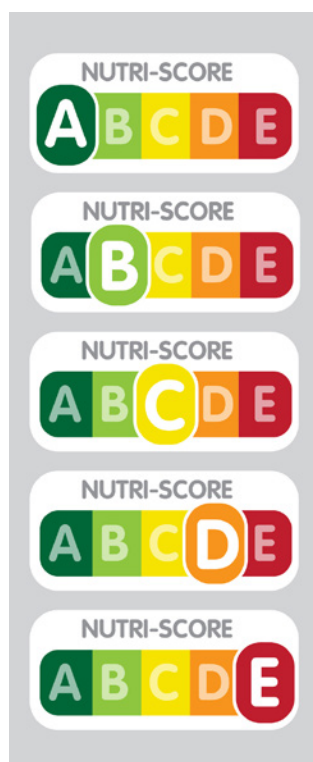Senckenbergstr. 3, 35390 Gießen

Fig. 1: **The range of Nutri-Score classifications** [9]

they must ensure that the brand's whole product range carries a Nutri-Score label. This is intended to prevent labeling of only healthy products [5]. Thus, the Nutri-Score also represents an incentive to reformulate products. Gerlach (2020), e.g., considers the Nutri-Score already as a health policy instrument, envisaging, for instance, that only products with an A or B label can be marketed for children, or that on products with a D or E label an additional consumer tax will be imposed [7].

At the same time, consumers may consider the rapid and comprehensive labeling of a whole product range as a signal of manufacturers and retailers to fulfil their social responsibility and ensure transparency.

Against this background, the present paper investigates which food products have been labeled with the Nutri-Score by which distributor (manufacturer or retailer) in Germany and France up to now and whether specific patterns can be identified in this respect.

This study therefore examines in a country comparison

I.  whether there are more products labeled with favourable nutritional assessments, i.e. Nutri-Scores A and B, than with unfavourable assessments, i.e. Nutri-Scores D and E, and if so, to which extent,
II.  whether there are differences between product segments in which the Nutri-Score is used, and
III. whether there are differences in how the Nutri-Score is used by retailers and manufacturers.

The last aspect is particularly interesting since the introduction of the Nutri-Score label can also be seen as an innovation in the labeling sector. National brands are typically seen as the forerunners when it comes to innovations (quality leadership) and these are then adopted by private labels, i.e. retailers' own brands. However, particularly in recent years, this leadership by national brands has been called into question [8], so this analysis will also provide up-to-date empirical data on this issue.

### Design of the Nutri-Score

The simple design of the Nutri-Score consists of a sequence of letters from A to E set against traffic light colour codes ranging from dark green to red (⬥ Figure 1). The Nutri-Score compares and assesses the overall nutritional value or nutrient composition within a product category. A product labeled with a dark green A is therefore a product with a favourable nutrient profile within the relevant product category, whereas the nutritional value decreases along the letter sequence B, C, D and E within the product category [6].

The Nutri-Score classification is awarded based on an overall evaluation of the constituent nutrients per 100 g or 100 ml which could have a positive or negative effect on health if consumed in large quantities in a daily diet. The positive components are the proportions of protein and fibre (in g) and of fruit, vegetables, pulses, nuts and special oils (rapeseed, walnut and olive oil) in % of the food product. The negative components comprise the energy density (in kJ) and the proportions of unsaturated fatty acids, sugar and salt (sodium content[1]) (all in g).

From the sum of points for the negative and positive components, the difference is calculated using the formula nutritional score = total negative points – total positive points. The result represents the overall number of points used to allocate a Nutri-Score classification to the evaluated food product. Hence, the lower the overall number of points achieved, the more favourable the Nutri-Score classification. The underlying points tables and calculated overall points are specific to the product category and vary for other foods, drinks, fats and cheeses [10]. It is important to stress that the Nutri-Score is designed for food products which are also required to carry a nutrient value declaration under EU Regulation No 1169/2011.

## Empirical research

### Data and methodology

The primary data for the comparison was generated from the Mintel Group's Global New Product Database (GNPD) [11]. The GNPD records new products such as product innovations, product developments or relaunches across a large number of food markets worldwide. A change in the packaging by addition of a front-of-pack label such as the Nutri-Score label falls into the category of a relaunch and is therefore recorded in the database as a new product.[2]

In order to compare the products labeled with the Nutri-Score in the countries studied a GNPD search was conducted using the search term "Nutri-Score". By adding various filters for region (Europe) and country-specific markets (Germany and France) and limiting the data collection period to the time of initial in-

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[1] Sodium content in mg/100g (calculated from salt content in (g/100 g) divided by a factor of 2.5).

[2] Nevertheless, it cannot be guaranteed that the database comprises all products labeled with the Nutri-Score. But since no systematic non-inclusion is to be expected within the product segments or countries studied, the database is still considered a suitable database for the intended analysis.
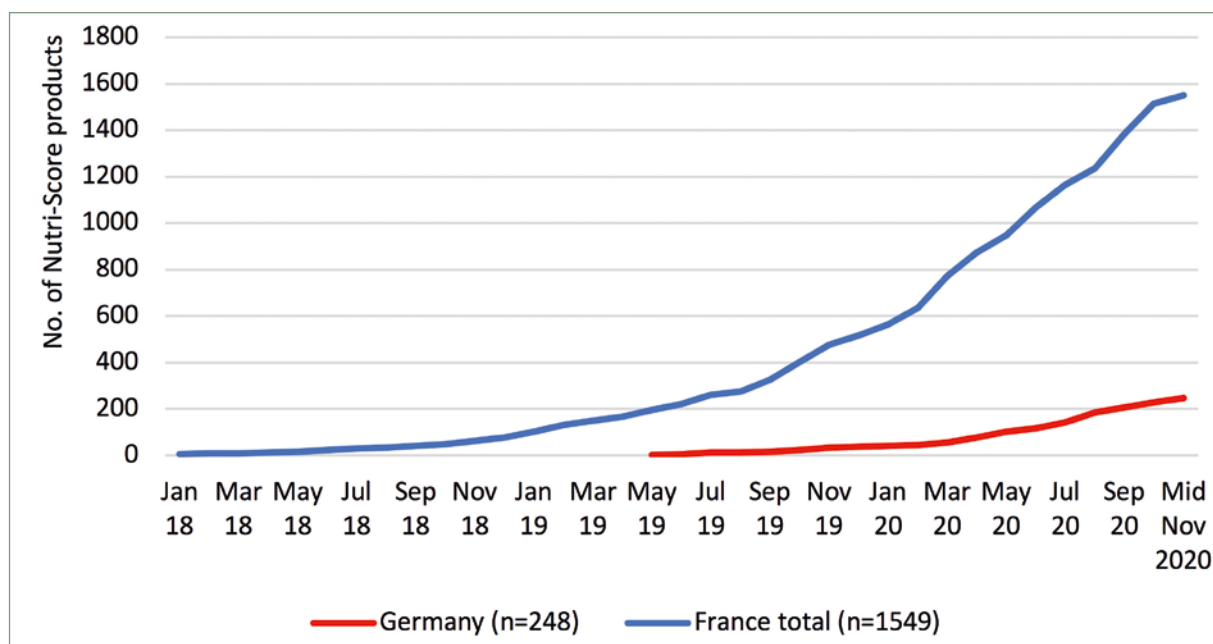
Fig. 2: **Development of the German and French markets for products with Nutri-Score label over the period following initial introduction** (own diagram)

troduction of Nutri-Score products in the relevant country and the scheduled end of data collection on 15.11.2020, products from the food and drink sector newly labeled with the Nutri-Score were identified in the target markets. Based on this, individual data sets were created for the relevant country markets.

For each new product, alongside ID and product description, the data set also includes the following product characteristics: Nutri-Score classification, type of brand (private label/national brand), product segment and product category, date of Nutri-Score labeling and responsible distributor. The software IBM SPSS Statistics Version 26 was used for the statistical analysis.

Since the variables of interest were neither metric nor normally distributed, non-parametric tests, such as the chi-squared test (examination of the even distribution of Nutri-Score evaluations), the Mann-Whitney U test (comparison between countries) and the sign test (comparison of different time periods), were used for statistical confirmation of descriptively established differences and similarities.

In our following analyses, the Nutri-Score evaluations A and B are referred to as "favourable A/B labels" and the evaluations D and E as "unfavourable D/E labels". All analyses are based exclusively on the GNPD 2020 database. Two separate comparisons were made:

a) Labeling practice approx. 19 months after introduction of the Nutri-Score in Germany and France to examine country-specific differences.
b) Labeling practice in France at two different points in time, i.e. July 2019 (19 months after introduction) and November 2020 (35 months after introduction).

Comparison a) enables an analysis of Germany and France which covers the same time period after the first introduction of the Nutri-Score label in the market. For each country the first 19 months after introduction are compared. For France this period is January 2018 (initial introduction of the Nutri-Score) to July 2019, and for Germany it is May 2019 to November 2020[3].

Comparison b) enables us to analyse dynamic changes in labeling patterns over time. This can only be done for France, since the Nutri-Score was introduced earlier there. At the same time, this analysis can also show possible development patterns which could potentially be expected for the German market.

## Results

◆ Figure 2 shows the development of products labeled with the Nutri-Score in a country comparison. In France, the initial introduction of the Nutri-Score took place in January 2018 with five products, in Germany the first two products were labeled in May 2019. Since the labeling model was introduced, the number

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[3] Some companies in Germany have been using the Nutri-Score already since May 2019, i.e., prior to its legally compliant use since the end of 2020.
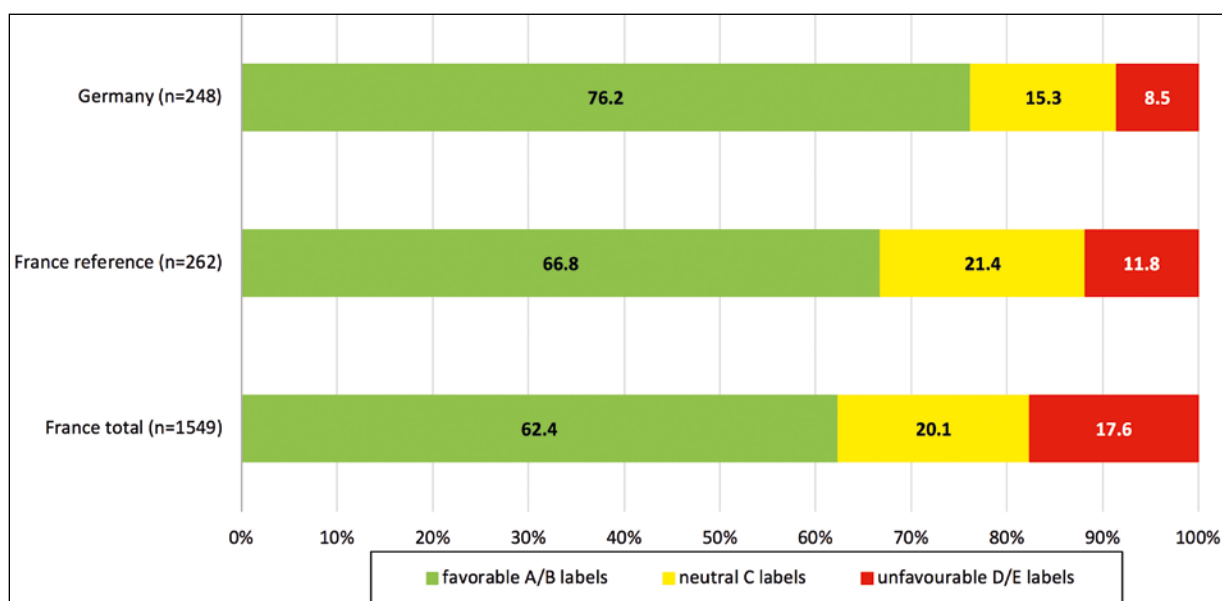
Fig. 3: **Labelling practice on products with Nutri-Score label compared by country and time period** [in %] (own diagram)

of products labeled with the Nutri-Score has steadily increased in both countries. In a comparison of the reference period (i. e. 19 months after the initial introduction), 262 products in France (January 2018 to July 2019) and 248 products in Germany (May 2019 to November 2020) were labeled with the Nutri-Score, respectively. The number of labeled products in France had increased to 1549 products by the date of final data collection (15.11.2020).

In both countries and at every point in time, the proportion of favourable A or B labels dominated (p ≤ 0.0001). 19 months after the introduction of the Nutri-Score (reference period), 76.2 % of all Nutri-Score labels in Germany and 66.8 % of all Nutri-Score labels in France were either A or B (♦ Figure 3); the difference in labeling practice, however, is not statistically significant (p = 0.873).

Over time in France the proportion of unfavourable D or E labels increased considerably and to a statistically significant extent (p ≤ 0.0001). At the end of the study period almost a fifth of the labeled products carried an unfavourable score, whereas during the reference period only 11.8 % of the products carried a D or E label.

| Product segments | Germany (n=248) | | | France reference (n=262) | | | France total (n=1549) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Rank[a] | Proportion of segment (in %) | Proportion of favourable A/B labels in segment (in %) | Rank | Proportion of segment (in %) | Proportion of favourable A/B labels in segment (in %) | Rank | Proportion of segment (in %) | Proportion of favourable A/B labels in segment (in %) |
| Milk products | 1 (n = 89) | 35.9 | 91 | 3 (n = 34) | 13 | 64.7 | 2 (n = 210) | 13.6 | 63.8 |
| Ready meals and main dishes | 2 (n = 28) | 11.3 | 57.1 | 2 (n = 53) | 20.2 | 69.8 | 3 (n = 179) | 11.6 | 65.4 |
| Fish, meat and egg products | 3 (n = 27) | 10.9 | 92.6 | 1 (n = 74) | 28.2 | 67.6 | 1 (n = 333) | 21.5 | 68.5 |
| Bakery products | 4 (n = 23) | 9.3 | 73.4 | | | | 4 (n = 134) | 8.7 | 48.5 |
| Snacks | | | | 5 (n = 18) | 6.9 | 44.4 | 4 (n = 134) | 8.7 | 40.3 |
| Desserts and ice cream | 5 (n = 15) | 6.0 | 46.7 | 5 (n = 18) | 6.9 | 66.7 | | | |
| Side dishes | | | | 4 (n = 24) | 9.2 | 95.8 | | | |

Tab. 1: **Top 5 product segments compared by country and time period** (own calculations)
[a] Rank based on the absolute number of labeled products in this product segment.

The distribution of Nutri-Score labels in the product segments most frequently labeled (Top 5 product segments) is shown in ◆ Table 1. In both countries most of the labels during the reference period were on milk products, main dishes and ready meals, as well as fish, meat and egg products. In Germany 58.1 % of all labels fell into these three product segments, in France 61.4 %. A comparatively large proportion of labeled products in Germany were bakery products as well as desserts and ice cream, whilst in France snacks, desserts and ice cream, and side dishes were rather frequently labeled. The proportion of favourable A/B labels in the top 3 segments was higher in Germany than in France, with exception of the segment ready meals and main dishes. Thus, in Germany nine out of ten labeled milk products carried the more favourable A or B label, whereas in France only around two thirds of labeled milk products were labeled either with an A or B.

Looking at the data for France over time few changes can be detected. Bakery products were labeled with the Nutri-Score later, so that at the end of the study period they ranked 4th together with snacks, whereas in the reference period they had not been among the top 5 product segments.

The results are also interesting as regards the distributors of the Nutri-Score. In the reference period national brands dominated in both countries: the proportion of national brands of all labeled products was 78.6 % in Germany and 65.3 % in France, respectively (both p ≤ 0.0001). Over time, however, the proportion of private labels in France rose considerably from around a third to just under half of all labeled products (◆ Figure 4).

## Discussion

Since, according to the latest nutrition report, a little over half of German consumers pay attention to the product information on packaging [12], expanded and simpler nutrition labeling scheme in France and Germany is to be welcomed. The high proportion of favourable A/B labels in both countries confirms that companies tend to label first products with a better nutritional profile. But, since all the products of a brand registered for the Nutri-Score must be labeled [5], the time comparison in France already shows that the proportion of unfavourable D/E labels will rise in the future. In contrast to the mainly voluntary agreements between government institutions and manufacturers, which in Germany include, for instance, a reduction of sugar content in breakfast cereals, soft drinks and children's yoghurts by 2025 [13], the Nutri-Score may offer a stronger incentive to reformulate products. This would be particularly likely if, for instance, a favourable nutrition label was a precondition for e.g. advertising foods for children [7]. The idea of a colour-coded nutrition label like the Nutri-Score in red, yellow and green was already favourably received about a decade ago during discussions on the traffic light labeling model. At that time, besides the clear and eye-catching consumer information aspect, the educational effect on manufacturers was also highlighted [14].

The comparison of countries and time periods yields interesting information on the different distributor situations: although in Germany private labels play a more important role than in France [8, 15], in the reference period in France around a third of the products were labeled by food retailers, whereas in Germany only around a quarter of the labeled products were private labels. The comparison overtime in France shows that the proportion of private labels increased considerably from around a third to just under half of all labeled products. Food retailers in France thus seem to increasingly use the Nutri-Score as a marketing tool to differentiate themselves from national brands. The legal certainty achieved in Germany in November 2020 [5] led to action by more food retailers and manufacturers, so that by as early as the beginning of January 2021 almost 100 companies had registered to use the Nutri-Scores [16]. Therefore, it is to be expected that the proportion of private labels will steadily increase. REWE, for instance, recently declared the Nutri-Score as an
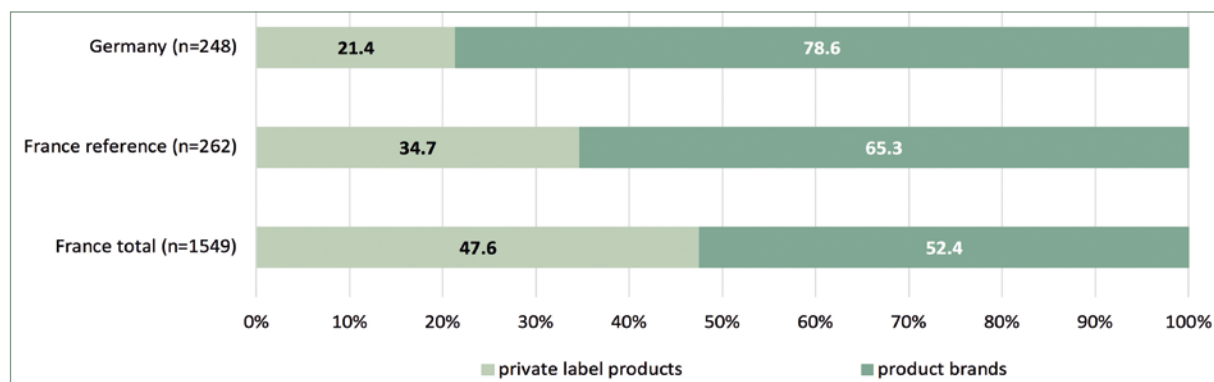


Fig. 4: **Brand distribution of products with Nutri-Score label compared by country and time period [in %]** (own diagram)

explicit part of its branding strategy and has been labeling its own brands since mid-January 2021 [17]. The growing popularity of the Nutri-Score among manufacturers and food retailers led Delhomme (2020) to envisage the Nutri-Score being used as an instrument to simplify nutrition labeling on the European food market [3].

Finally, it should be stressed one more time that, although the Mintel database is often used in empirical studies on product innovations in the food sector [cf. 11, 18, 19], it does not guarantee a 100 % market coverage. Even though no systematic distortions are to be expected from non-inclusion of labeled products over time or across countries, this limitation should be taken into account when interpreting the results.

## Conclusion

The Nutri-Score labeling model provides consumers the opportunity to compare quick and easy the nutritional value of various products within a product category. Following the introduction of this labeling model in France, as the first European member state, Germany can also expect to see a steadily increasing usage by all parties involved. The empirical results presented here already indicate this.

However, it remains to be seen to what extent the goal of supplementing other political measures and encouraging reformulation of products for a more favourable food environment in Germany can be achieved via the Nutri-Score. Hence, systematic monitoring is needed to enable researchers to observe and evaluate the effects of this expanded nutrition labeling model.

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