

Evaluation of the Nutri-Score algorithm

To: the State Secretary of Health, Welfare and Sport
No. 2022/29e, The Hague, 29 November 2022

Health Council of the Netherlands



contents

01 Introduction	6	04 Advice	26
1.1 Background	6	4.1 Improvement of conformity with dietary recommendations in the Netherlands	26
1.2 Nutri-Score	7	4.2 Prevention of undesirable effects	28
1.3 Committee and methodology	8	4.3 Transparency	29
1.4 Reading guide	11	4.4 Rules for plant-based substitutes for similar products	30
02 Nutri-Score	12	4.5 General recommendation for using a front-of-pack nutrition label	30
2.1 Nutri-Score label and algorithm	12	Literature	34
2.2 Nutri-Score, Dutch dietary guidelines and Wheel of Five	13		
2.3 Differences in establishment of Nutri-Score and Wheel of Five	14		
2.4 Adjustments to the algorithm	17		
03 Evaluation of the algorithm	19		
3.1 Improvements to the algorithm	19		
3.2 Conformity with Dutch dietary guidelines and Wheel of Five	19		



summary

In the 2018 National Prevention Agreement it was agreed to introduce a front-of-pack nutrition label in the Netherlands. The aim of this is to help consumers make healthy choices and to encourage producers to improve their products. The Ministry of Health, Welfare and Sport has chosen the Nutri-Score as a means of doing this, provided that this label complies sufficiently with dietary recommendations in the Netherlands. As of February 2021, an international committee of scientists (*Scientific committee of the Nutri-Score*) has been working on improving the algorithm of the Nutri-Score. The revised algorithm was published at the end of July 2022, although the section on drinks has not yet been published. The State Secretary of Health, Welfare and Sport asked the Health Council of the Netherlands to evaluate the extent to which the revised algorithm is an improvement, to reflect on how the Nutri-Score fits in with dietary recommendations in the

Netherlands and to advise on any further adjustments. The Committee on Nutrition considered these questions.

Comparison with Dutch dietary guidelines and Wheel of Five

The Nutri-Score is a label on the front of the packaging of foods and translates information on the label of a product into a colour and a letter, from the dark green A to the red E.

The score is based on the amount of energy, salt, saturated fat, fibre, protein and the quantity of vegetables, fruit and legumes. Using the Nutri-Score, the consumer can compare the composition of products. The Committee calculated for each product group what Nutri-Scores products in the supermarket would get and compared those scores with the recommendations of the Dutch dietary guidelines (*Richtlijnen goede voeding*) of the Health Council of the Netherlands and the

Wheel of Five (*in Dutch: Schijf van Vijf*) of the Netherlands Nutrition Centre. These will never correspond fully, not least because the Dutch dietary guidelines, Wheel of Five and the Nutri-Score differ in terms of their objectives and the systems they use. However, too many discrepancies are undesirable. The Committee sees a discrepancy if the Nutri-Score is green (A or B) whereas the product is not recommended in the Dutch dietary guidelines or is not included in the Wheel of Five, or alternatively if a product that is correctly recommended is given a C, D or E score (hereinafter referred to as 'red scores').

Nutri-Score has improved; red scores correspond largely with dietary recommendations

The Committee has established that the revised algorithm represents an improvement compared to the current algorithm. In particular, the Nutri-Score clearly identifies which products



have a less healthy composition, and these are given a red score. These include product groups such as sauces, cakes, pastries, sweets, chocolate, crisps, salts, various snacks and a range of spreads. Within these product groups, the label also distinguishes between products with a slightly unfavourable composition (C) and those with a very unfavourable composition (E).

In particular, green scores are not always in line with dietary recommendations

With the product groups that are given a green score, the Nutri-Score and the Dutch dietary recommendations usually line up quite well, but that is not always the case. For instance, within such a product group the Nutri-Score will not always make enough of a distinction between products that are healthier or less healthy in terms of their composition. As a result, white and brown rice get the same Nutri-Scores, just like refined and whole grain pasta. This does not fit with the dietary guidelines, which recommend the high-fibre varieties. In addition, more vegetable oils and soft margarines and low-fat

margarines should get a green Nutri-Score than is currently the case, due to their better fatty acid composition. A greater distinction between products with a healthier and less healthy composition would also be desirable for cheese and meat.

Algorithm offers too much scope for adding salt and sugar

Due to the algorithm of the Nutri-Score, there is relatively much room for unhealthy additives such as salt and sugar to products in the green category in particular, such as fruit, vegetables, legumes and meals based on these. This can have undesirable effects (for example adding more salt or sugar while the Nutri-Score remains unchanged, or taking away incentives to lower salt, sugar and saturated fat). The Committee believes that it is important to counter this as much as possible. The addition of salt to canned greens and legumes with a B Nutri-Score is a particular point of concern. Although canned vegetables are on average consumed less than fresh vegetables, these products can on an

individual level contribute significantly to the overall salt intake on a given day. Sugar added to canned fruit is also a point of interest: a relatively large amount of sugar can be added without the product losing its A Nutri-Score.

Limit Nutri-Score for meal kits to the contents of the package

The Committee believes that the Nutri-Score for meal kits should be based solely on the products contained in the package and not on products that the consumer may add independently (apart from water). The Nutri-Score can now be based on the preparation instructions on the packaging, which may include, for example, the addition of vegetables or meat. It is possible that the Consumer may not follow the preparation instructions and, for example, adds less vegetables or replaces the chicken specified in the preparation instructions with sausage. The Nutri-Score for such a package is then too positive.



Nutri-Score has added value besides existing nutritional information

A front-of-pack nutrition label is intended as an addition to the existing nutritional information. It can help consumers make a healthier choice as they can easily compare the composition of foods. Taking everything into consideration, the Committee recognises the added value of the Nutri-Score in this respect. This is particularly true for people with limited knowledge of nutrition who may be hard to reach with current nutritional information and who more often have an unhealthy diet. The Nutri-Score is an intuitive and visually powerful label that also has a level of recognition as the logo is already on a number of products. In addition, it has been introduced in the countries immediately around the Netherlands and is arriving on the Dutch market via these countries.

Further improvement and monitoring essential

The logo is not perfect, but the Committee sees sufficient possibilities for further improvement of

the label. Furthermore, the Committee believes that it is unlikely that a front-of-pack nutrition label will become available that does fully meet requirements. The Committee believes that it is essential that the areas where the Nutri-Score does not line up with the dietary recommendations are being resolved. It recommends focusing on ensuring that the Scientific Committee of the Nutri-Score makes progress on enacting recommendations. At the same time, it is important for the Netherlands to actively push for adaptation of European regulations and legislation regarding labelling and front-of-pack nutrition labels, as not all areas for consideration can be solved with the algorithm alone. On the introduction of the label, the Committee believes that it is essential to examine the effect it has on the behaviour of consumers and producers to consider to what extent it is actually contributing to healthier diets.

Broader nutritional information remains important

Nutritional information is carefully compiled in the Netherlands using the Dutch dietary guidelines, dietary reference values and the Wheel of Five. This information focuses on nutritional completeness, sustainability and safety. The Committee believes that it is important that communication with consumers clearly states that the Nutri-Score represents an addition to the existing nutritional information, with the label allowing the composition of products to be compared while shopping. A healthy diet is more than merely a choice of products with a green score. The Committee believes that clear explanations are important to prevent the Nutri-Score (or another label) from detracting from the importance of broader nutritional information. The Committee is aware of the challenge posed in particular by clarifying the scores that are not sufficiently in line with dietary recommendations.



01 Introduction

1.1 Background

In the 2018 National Prevention Agreement it was agreed to introduce a front-of-pack nutrition label in the Netherlands.¹ The aim of this was to help consumers to make healthy food choices. After weighing up a few alternatives, the Ministry of Health, Welfare and Sport (VWS) chose² the Nutri-Score, which originated from France, as the system it would adopt.^{3,4} Other European countries (Belgium, Luxembourg, Germany, Spain and Switzerland) are also using this label or are considering doing so.

The State Secretary of the Ministry of Health, Welfare and Sport specified as a condition for introduction in the Netherlands that it had to sufficiently match Dutch dietary recommendations (the Dutch dietary guidelines and the Wheel of Five).² An international organisation was set up in 2020 (see box) to revise the algorithm of the Nutri-Score to improve its alignment with the national guidelines of the participating countries. The algorithm was evaluated by an international committee of scientists (Scientific Committee of the Nutri-Score; ScC) and adopted on 29 July 2022 and published by the steering group.⁵ The State Secretary asked the Health Council of the Netherlands to assess the revised algorithm to establish how it fits with dietary recommendations in the Netherlands and to advise on any further adjustments of the Nutri-Score.

The Nutri-Score can currently already be seen on products in Dutch shops. There are two reasons for this. These products can be imported from countries that are already using the Nutri-Score. In addition, it was recently permissible in the Netherlands to carry out pilot trials to test the introduction of the Nutri-Score.

International deliberation over Nutri-Score

In 2020, COEN (*Countries Officially Engaged in Nutri-Score*) was set up in to consider the revised Nutri-Score. COEN set up a steering group with representatives from the ministries of member countries. In addition, there is also a Scientific Committee of the Nutri-Score (ScC) with (a maximum of two) independent scientists from the participating countries who can bring in their knowledge independently and without instruction or consultation. The members of the ScC have been elected for three years. The ScC reports to the steering group. The Netherlands is represented on the ScC by Prof. J.W.J. Beulens and Dr E.H.M. Temme.

Not only the Netherlands, but also the European Commission expressed an intention to introduce a front-of-pack nutrition. The label for the European Union is to be a mandatory label for the whole of the European Union. An agreement on which label exactly is to be chosen has not yet been reached: the Nutri-Score may be chosen, but alternatively another logo may be used. It will become clear in time what the decision on this will be.



1.2 Nutri-Score

The Nutri-Score is a label on the front of the packaging. A colour and letter indicate the assessment of the nutritional composition of the food: the dark green A has the healthiest composition, the red E the least healthy. In the interest of readability, the Committee refers in this advisory report to ‘healthy’ and ‘less healthy’, although the Nutri-Score is in reality not an assessment of the healthiness of a product, but provides an assessment of the nutritional composition of the product based on the energy content and the contents of a number of nutrients and ingredients.

The components of the algorithm have been chosen on the basis of the health effects of the individual components of the score. The score is relative as it is intended to help consumers to compare products.

A product with a green Nutri-Score does not automatically mean a healthy choice, as a person’s overall diet plays a role. The Committee goes into the Nutri-Score and how the label relates to the Dutch dietary guidelines and the Wheel of Five in more detail in Chapter 2.

The Nutri-Score works on the basis of a scoring system. Unhealthy nutrients (sugar, saturated fat and salt) and energy/calories add points; if a food contains healthy nutrients (dietary fibre and protein) or healthy ingredients (vegetables, fruit and legumes), then points will be deducted. The total number of points determines the colour and letter that a product is given: the Nutri-Score. The higher the number of points, the more the Nutri-Score shifts from A to E. This methodology is referred to as the

Nutri-Score algorithm.^a With the current algorithm, some products have a poor Nutri-Score. For example, white bread can get a Nutri-Score of A, the same as sugary breakfast cereals or processed vegetables with a high salt content. Some healthy products such as vegetable oils on the other hand score too low. For this reason, work has been done on revising the algorithm.



Figure 1 The Nutri-Score logo for Nutri-Score A

As the Nutri-Score and the dietary recommendations in the Netherlands were produced separately, they will never correspond fully (see Chapter 2). Another reason why full parity between the Nutri-Score and recommendations in the Netherlands is not always achievable is that the revised Nutri-Score is derived on the basis of the dietary guidelines of all participating countries, International guidelines correspond in many points, but there are also differences. Furthermore, the Nutri-Score remains a model, therefore a simplification of the reality that will never be perfect.

^a The Committee notices that with regard to the Nutri-Score the term ‘algorithm’ is used for ‘a set of clear and unambiguously calculation rules’. Within the field of artificial intelligence algorithm has a different connotation.



1.3 Committee and methodology

The Council's permanent Committee on Nutrition has evaluated the revised algorithm. It will answer the following questions in this advisory report.

- To what extent does the revised algorithm represent an improvement?
- To what extent does the revised Nutri-Score correspond to dietary recommendations in the Netherlands.
- What other improvements to the Nutri-Score algorithm would also be desirable in the future.

1.3.1 Algorithm revised by the Scientific Committee of the Nutri-Score (ScC)

The purpose of the revision of the algorithm by the ScC was to optimise the correspondence between the Nutri-Score and the existing dietary guidelines of the participating countries. A number of important considerations for the instrument had to be taken into account as part of this. What is referred to as the *across the board* principle had to be upheld; this means that the same algorithm should be used for all product groups as far as possible. In addition, no nutrients should be added to the algorithm that do not appear on the label of foods and the calculation should be performed on the basis of 100 grammes or 100 millilitres of product as stated on the label. Finally, the appearance of the logo should not change.

Using an analysis of the various dietary guidelines of the participating countries, the ScC analysed the areas in which the Nutri-Score should be adapted and which areas should be prioritised. This concerned the following matters:

- Fats and oils
- Fish and seafood
- Whole grain products
- Allocation of points for salt
- Allocation of points for sugar
- Dairy
- Drinks

The ScC has mapped the current state of science on the basis of the prioritisation for a number of product groups.⁶ In addition, using modelling and calculations, the ScC worked on adapting the algorithm so that the optimum outcome overall is achieved. The report with the proposal of the ScC was published on 29 July 2022.⁵ It should be pointed out that drinks (including dairy drinks) have not yet been included in this adaptation; a proposal to cover this is expected later this year. The COEN countries have indicated they would not implement the adapted algorithm (hereafter referred to as the revised algorithm) before the algorithm for drinks has been revised.



1.3.2 Methodology of Committee

To compare the revised algorithm with the Dutch dietary guidelines and the Wheel of Five, the Committee set up a working group consisting of a number of members of the Committee. The two Dutch members of the ScC took part in this working group as regularly consulted experts and also sat on the Committee in this capacity. In this way, the Committee could use their knowledge without taking part in the decision making on the advisory report. A list of the Committee's members and the working group can be found at the end of this advisory report. The Committee formulated its advisory report on the basis of the findings of the working group. The report has been reviewed by the Health Council's standing committee.

The National Institute for Public Health and the Environment calculated the Nutri-Scores in consultation with the working group in accordance with both the current and revised algorithm for products in Dutch supermarkets and compared these scores against the Dutch dietary guidelines and the Wheel of Five. Data from two databases was used for this (see box).

When assessing the comparison between the Nutri-Scores and the dietary recommendations in the Netherlands, the Committee combined the green scores (A and B), in the same way as the yellow, orange and red scores (C, D and E, hereafter referred to as red scores). A dichotomy was necessary as the Wheel of Five has a dichotomous system. The dichotomy chosen by the Committee puts the consumer perspective of 'healthy'

Nutri-Scores at the centre. The Committee thus works on the basis that a green score should mean that the product has a healthy composition.

Use of Dutch branded food database (LEDA) and Dutch Food Composition Database (NEVO)

The Dutch branded food database (LEDA)⁷ contains brand-level data about products available on the Dutch market at any given time based on information from participating supermarkets (covering approximately 75% of the total offering). The data from 2020 was used for this advisory report. Multiple variants of some foods are available on the market (under different brands or in different packing quantities). Each variant is recorded as a separate product in this dataset. The Dutch Food Composition Database (NEVO) is what is known as a generic dataset in which average compositions of comparable similar are calculated (therefore for all brands together); this dataset therefore contains virtually no brand-level information. NEVO can sometimes distinguish between the types of products, which the LEDA cannot do. NEVO was consulted, for example, to look more closely at the types of nuts and oils, as this was too complicated with the LEDA. The Committee has noticed that neither dataset provides information about which products the consumer will see on supermarket shelves. Whether or not a product is included in the range, as well as the volumes and the positioning of products, will be determined by the supermarket. These datasets also do not provide any information about the extent to which products are consumed; the Committee has formed an impression of this on the basis of the Dutch Food Consumption Survey.



As a first step assessing the correspondence of the Nutri-Score to the Dutch dietary guidelines or Wheel of Five, the Committee has divided all foods into product groups. For each product group to which dietary guidelines apply, the percentage distribution of Nutri-Scores is calculated to examine the extent to which the scores are consistent with the dietary guidelines. If a product gets a Nutri-Score of A or B, whereas the recommendation is to limit the consumption of that product as much as possible, then there is a discrepancy. Conversely, there is a discrepancy if products that are actually recommended get a score of C, D or E. When comparing the Nutri-Score against the Wheel of Five, there is deemed to be a discrepancy where products get a Nutri-Score of A or B but are excluded from the Wheel of Five, and similarly for products that score a C, D, or E but are in the Wheel of Five. It is important to limit discrepancies as far as possible to prevent consumers from incorrectly thinking that they are making healthy choices and to avoid confusion among consumers. The analyses were carried out by the National Institute for Public Health and the Environment, as the National Institute for Public Health and the Environment has access to the Dutch branded food database, whereas the Health Council of the Netherlands does not. For this advisory report, the Committee had access to the Dutch branded food database results for each product group, not for each product.

The (provisional) qualification of the correspondence of the Nutri-Score to the Dutch dietary guidelines or Wheel of Five is ‘good’ if there is more than

80% correspondence, ‘reasonable’ if correspondence was between 60% and 80% lag, and ‘not good’ if correspondence was below 60%.

Discrepancies between the Nutri-Score and the Dutch dietary guidelines and/or Wheel of Five can sometimes be explained by the differences between the labelling system and the guidelines (see also Chapter 2) and sometimes an imperfect dataset is also a factor.

Not all discrepancies are by definition a problem. In some cases, the Committee believes that the Nutri-Score may actually provide consumers with useful additional information, despite the discrepancy with the Wheel of Five. For this reason, the second step carried out by the Committee was to look at each product group to see whether there were any additional arguments for adjusting the qualification of the Nutri-Score on the basis of the extent of conformity with the Dutch dietary guidelines and Wheel of Five (step 1). For example, the Committee believes that it is good that dried fruit, which is in the Wheel of Five, gets an orange or red Nutri-Score, as dried fruit has a high sugar content and there are plenty of other fruits with a green score. For some product groups, the Dutch dietary guidelines and Wheel of Five do not distinguish between variants with a healthier or less healthy composition, but the Committee believes that it is useful for the consumer that the Nutri-Score does this, in the case of fish for example.



The other aspect the Committee considered in the assessment was the scope offered by the algorithm for intended or unintentional changes to the product composition without these affecting the Nutri-Score for this product. In the case of low-fat quark, for example, which often gets an A or B score, the Committee finds that there is relatively much (undesirable) room for adding sugar. In addition, the Committee has sometimes also considered the importance of the product group for the intake of certain nutrients in the Netherlands or the number of Dutch branded food database products on which the assessment of a product group is based.

A concise summary of the analysis of the correspondence between the Nutri-Score and dietary recommendations in the Netherlands, including the Committee's qualifications for it, can be found in the background document for this advisory report.

1.4 Reading guide

In Chapter 2, the Committee looks in more detail at the methodology behind the algorithm of the Nutri-Score and the methodology for the Dutch dietary guidelines and the Wheel of Five. This chapter also briefly describes what adjustments have been made to the algorithm. In Chapter 3, the Committee discusses the extent of conformity of the Nutri-Scores with the Dutch dietary guidelines and the Wheel of Five, and any other additional considerations. In Chapter 4, the Committee finishes by setting

out some areas for consideration to refine the Nutri-Score and introduce a front-of-pack nutrition label in the Netherlands.



02 Nutri-Score

The Nutri-Score is what is known as a front-of-pack nutrition label that is intended to help consumers to make healthier choices and to encourage manufacturers to improve their products. The Nutri-Score gives a judgement on the nutritional composition of individual products and is not a substitute for the dietary recommendations in the Netherlands but can form an addition to these. The algorithm was changed in a number of ways in 2022 in order to map better onto the dietary guidelines of the countries that are thinking of introducing it.

2.1 Nutri-Score label and algorithm

The Nutri-Score has two objectives: 1) Informing the consumer, 2) encouraging product improvements by manufacturers.

The Nutri-Score gives a judgement on the composition of a food based on the energy content, a number of nutrients, and the amount of vegetables, fruit and legumes. As such, the label is subject to European legislation on nutrition claims made on foods (EU Directive 1924/2006). The Nutri-Score assesses a selection of nutrients that play an important role in public health. This selection is largely in line with a recent opinion of the European Food Safety Authority (EFSA) that prioritised energy content, saturated fat, fibre, salt and sugar (free sugar/added sugar) as elements for a front-of-pack nutrition label.⁸ Other elements that play a role in healthy nutrition, such as vitamin and mineral contents, and the presence

of substances with a proven unfavourable effect are therefore not taken into account in the Nutri-Score. As a result, (sugar-free) liquorice with glycyrrhizic acid, which raises blood pressure, can score a good Nutri-Score, for example. Sustainability also is not included in the label.

The Nutri-Score visualises a numerical statement of a number of nutrients and ingredients on the packaging of a food product and gives an overall assessment of these. The European Regulation on the provision of food information to consumers (Directive 1169/2011) sets down rules on food labelling. For example, the nutrient composition of 100 grammes or 100 ml of the product must be stated on the label. Sometimes, a label also indicates the composition of a portion, but that is not mandatory.

The Nutri-Score therefore does not calculate on the basis of portions, but on the basis of 100 gramme or 100 ml. In addition, the Nutri-Score also includes dietary fibre and the portion of vegetables/fruit/legumes in a product in its calculation. As this information is often not included on the label, the calculation of the score is not totally transparent for consumers and supervisory authority. The Nutri-Score is calculated on the basis of the nutrient declaration for the product as stated on the label which usually is the product as purchased. One example: Pasta and rice are often sold uncooked (in dry form) and the Nutri-Score is then calculated on the basis of the uncooked product. As preparation instructions for a product are given on the packaging of the product, such as for dried soup to which a



fixed quantity of water must be added, then the product in its prepared state is used as a basis for calculation.

The current and revised algorithm also assess the protein content. Protein is primarily included in the algorithm as a proxy for the content of, in particular, iron (for meat), calcium (for dairy) and fish fatty acids (for fatty fish).⁹ Indicating these nutrients on the label is not mandatory.

The forerunner to the Nutri-Score did include calcium, iron and n-3 fatty acids, but the adjustment was made in order to simplify the algorithm, and as a result of concerns about the fortification of foods.⁹

The quantity of vegetables, fruit and legumes (per 100 gramme or 100 ml) is not routinely stated on the label of a product. In the analyses for this advisory report, the Committee therefore made an assumption for this content for products where vegetables, fruit or legumes are present. It is possible that these assumptions are not optimal in every instance. In addition, these quantities will in reality often differ between the products within the group. The manufacturer is of course aware of the product-specific content and must also use this to calculate the Nutri-Score. As a result, there will be some discrepancy between the Nutri-Scores as calculated by manufacturers and the Nutri-Scores that have been used for the analyses in this advisory report.

Products with and without Nutri-Score

Mandatory declaration of nutritional values only applies to pre-packaged foods. Unpackaged foods, without a declaration of nutrients, therefore generally do not have a Nutri-Score. The European Regulation on Food information to consumers does not apply to a number of product groups (which may actually be pre-packed), and these products therefore do not have a Nutri-Score. This is the case for coffee, tea, eggs, alcoholic drinks or the alcohol-free version of these drinks, herbs and spices, salt and food supplements.

The Nutri-Score uses the same algorithm for the product groups as far as possible (*across-the-board* algorithm). A few food groups are subject to adjustments: 1) fats, oils and nuts, 2) cheese, 3) red meat and 4) drinks (this last group is not addressed in this advisory report). Using the label is voluntary and free of charge, although a company will have to register. If a company carries the label, then the label must be included on all products of the same brand. A company that has multiple brands does not have to carry the label on all brands.¹⁰

2.2 Nutri-Score, Dutch dietary guidelines and Wheel of Five

There are two independent government organisations in the Netherlands that are involved in advising on healthy food.

- The routine task of the Health Council of the Netherlands is to publish the Dutch guidelines (food intake to prevent chronic diseases)¹¹ and to advise on dietary reference values (nutrient intakes for optimal



functioning).¹²⁻¹⁵ The advice given by the Health Council of the Netherlands is based on the current state of science.

- The Netherlands Nutrition Centre focuses on the nutritional information given to consumers. The Netherlands Nutrition Centre informs consumers about a healthy, safe and sustainable diet (<https://www.voedingscentrum.nl/nl/service/english.aspx>). Both the Dutch dietary guidelines and dietary reference values) are translated into practical advice for consumers in the Wheel of Five and a range of apps.¹⁶

The Dutch dietary guidelines are intended to provide recommendations for a diet that reduces the risk of chronic diseases. The recommendations are formulated at the level of product groups (vegetables, fruit, meat, fish, grains, dairy etc.). The guidelines indicate whether or not these product groups belong in a healthy diet and, where possible, also the quantities in which they should be consumed to achieve an optimal health effect. In addition, there is also a recommendation on the dietary pattern and on salt intake through a diet as a whole.

The Wheel of Five describes on the one hand what a complete diet might look like (which product groups in what quantities) and on the other hand which specific products do or do not fit in this diet. The Wheel of Five is based both on the Dutch dietary guidelines and the dietary reference values, as a complete diet meets both of these. The Wheel of Five is intended to match the standard diet of various target groups as closely as

possible, as consumers can only move to a healthier diet if the specific (combination of) foods bears relation to them and their reality. For this reason, consideration was given when devising the Wheel of Five to usual diets in the Netherlands as established in the Dutch food consumption surveys, as well as to Turkish, Moroccan and Surinamese diets and, for example, a meat-free diet.

A front-of-pack nutrition label such as the Nutri-Score provides information about a specific food and therefore enables products to be compared. A label of this kind does not provide information about what constitutes a healthy diet. Someone who only eats products with an A Nutri-Score may still have an imbalanced diet or be eating too much. This person may not be following certain dietary guidelines (for example, not eating enough vegetables), not getting enough of certain proteins, vitamins and minerals) or consuming more energy than necessary. The label is thus also intended as a addition to the Dutch dietary guidelines and the Wheel of Five.

2.3 Differences in establishment of Nutri-Score and Wheel of Five

The common feature of the Wheel of Five and the Nutri-Score is that they both assess individual foods.¹⁷ The way in which the assessment is produced and purpose for which this is done differ greatly, however (see Figure 2). The most important difference is that a product must meet all criteria to be included in the Wheel of Five, whereas unhealthy aspects



can be offset against healthy aspects when establishing the Nutri-Score. A product with a higher salt content (unhealthy) combined with, for example, a high content of fibre or vegetables and fruit (healthy) might still get a good Nutri-Score even though it would be placed outside the Wheel of Five due to the high salt content or because it involves added salt. Furthermore, the Wheel of Five is dichotomous (a product is either included or it is not), whereas the Nutri-Score is gradual (score A to E). Another difference is that the Nutri-Score was developed for packaged articles (the Nutri-Score is a translation of the nutritional value information on the label, whereas the Wheel of Five also applies to unpackaged foods. Some of the elements assessed in the weighting are identical: protein, energy, sugar, salt, saturated fat and fibre. In addition, the Nutri-Score also takes account of the content of vegetables/fruit/legumes in a product, while the Wheel of Five takes into account various nutrients (with a view to dietary reference values). Another difference is that the Wheel of Five works with criteria that are specific to a product group, which means that consideration can be given to the role of the product in a diet, while the Nutri-Score applies the same criteria to all product groups as far as possible. As a result, the Nutri-Score in principle allows comparisons not only within product groups but also between product groups (although the organization of the Nutri-Score would stress that the label is mainly intended for comparison within product groups).⁴ The Nutri-Score makes exceptions to the main rule of the across-the-board algorithm for some product groups for which the main algorithm

does not work sufficiently well, namely for cheese, oils, fats, nuts and seeds, and red meats. The algorithm for drinks has not yet been adjusted, but it will again differ from the main algorithm. Finally, as already mentioned, the Nutri-Score is always calculated on the basis of 100 grammes or 100 ml of product, as the composition of foods must be indicated in these units according to European legislation.



Systems and objectives of Wheel of Five and Nutri-Score differ

The *Wheel of Five* makes a distinction between healthy and less healthy food groups and is based on the *Dutch dietary guidelines 2015*.

Chart adapted from the factsheet *Healthy nutrition: a closer look at labels* (in Dutch: *Voedselkeuzelogo's onder de loep*) published by the National Institute for Public Health and the Environment (2019).¹⁷

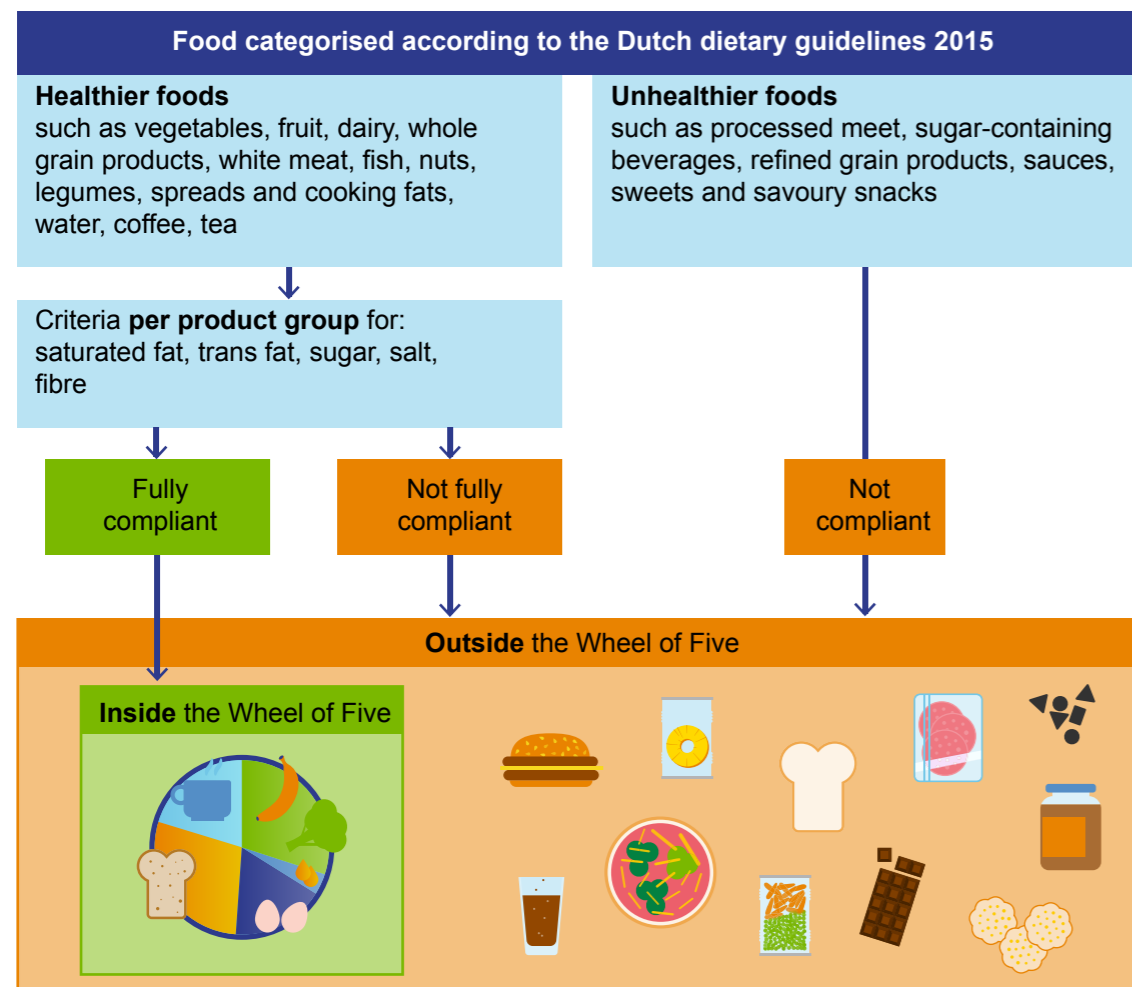
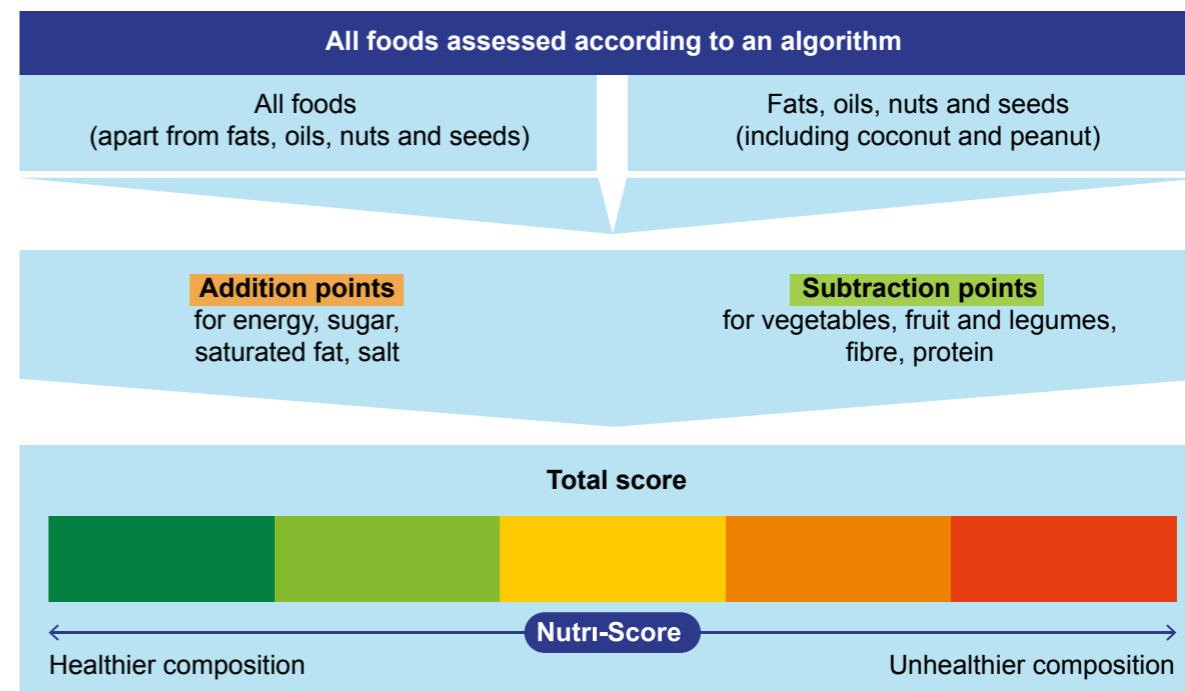
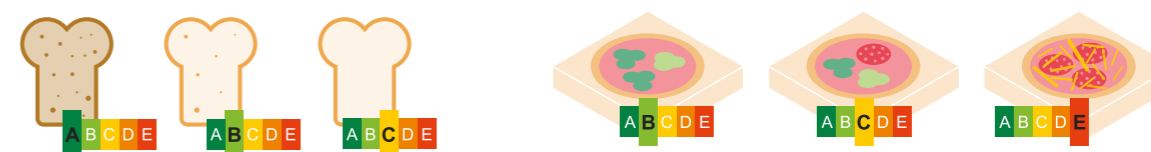


Figure 2 Systems and objectives of Wheel of Five and Nutri-Score

Nutri-Score uses food profiles. It provides an overall assessment of the food, based on the difference between 'unfavourable' and 'favourable' components (addition points and subtraction points). The total score is reflected on a scale using a letter (A to E) and a matching colour.



With **Nutri-Score** you can compare products and thus make a healthier choice (e.g.: which type of bread or which pizza has a more healthy composition?)



2.4 Adjustments to the algorithm

The revised Nutri-Score algorithm differs from the current one on quite a number of points. This involves both adjustments to the route followed within the algorithm and the exceptions thereto and adjustments to the cut-off values (number of points for each of the scores A to E) and the number of points that can be obtained for each component. What is known as the vegetables and fruit component has also been adjusted and the possibility of subtracting protein points for red meat has been restricted (see box and background document).

Figure 3 shows the revised algorithm. Finally, the addition points and subtraction points are offset against each other. The total range of points is -17 to +55 points. It is relevant here that the points to be deducted for protein can only be included if the number of addition points is less than 11. The potential to improve the score through (added) protein is therefore limited. The only exception to this is cheese, where the protein content is always included. For the category of fats, oils, nuts and seeds, this boundary was moved from 11 to 7. The boundary was moved due to the change in the energy component for these products. The result of these changes is that, overall, sugar and salt contents are judged more strictly: with the revised algorithm, less salt and sugar generate addition points. This fits with (international) guidelines, which advise against consuming too much sugar and salt and sugary and salty products.^{8,11,18,19} In addition, fats, oils, nuts and seeds are judged less strictly for their generally high

energy density and are actually judged more strictly on the proportion of saturated fatty acids. This is in line with the guideline to replace saturated fatty acids with unsaturated fatty acids as far as possible. The fact that under the revised algorithm more fibre is needed to get subtraction points for fibre corresponds to the aim to encourage consumption of whole grain products. Finally, the adjustment of the deduction of protein points for red meat fits with the guideline not to eat too much red meat.

The main changes at a glance

- Nuts have been moved from the main algorithm to the separate algorithm for fats and oils, now referred to as the algorithm for fats, oils, nuts and seeds.
- In the algorithm for fats, oils and nuts, only the energy from saturated fat is included in the energy component.
- The total number of addition points has been increased from 10 to 15 for sugar and from 10 to 20 for salt.
- The maximum number of subtraction points obtainable for protein has been increased from 5 to 7 points.
- The vegetables and fruit component has been made less extensive and now only includes vegetables, fruit and legumes. Another change is that oils of these products can also score points, such as olive oil, avocado oil and soya oil,
- Red meat can get a maximum of 2 of the 7 points for protein.
- Finally, the value boundaries for scores A to E were adjusted.



The higher the score, the more unhealthy the composition

Main algorithm

Addition points		Subtraction points	
Energy	0-10	Fruit, vegetables, legumes	0-5
Saturated fat	0-10	Fibre	0-5
Sugar	0-15	Protein	0-7
Salt	0-20	(Red meat: maximum of 2 points)	
+		+	
Total addition points	0-55	Total subtraction points	0-17

Algorithm for fats, oils, nuts and seeds

Addition points		Subtraction points	
Saturated fat as % of energy	0-10	Oils from fruit, vegetables, legumes	0-5
Saturated fat as % of total fat	0-10	Fibre	0-5
Sugar	0-15	Protein	0-7
Salt	0-20		
+		+	
Total addition points	0-55	Total subtraction points	0-17

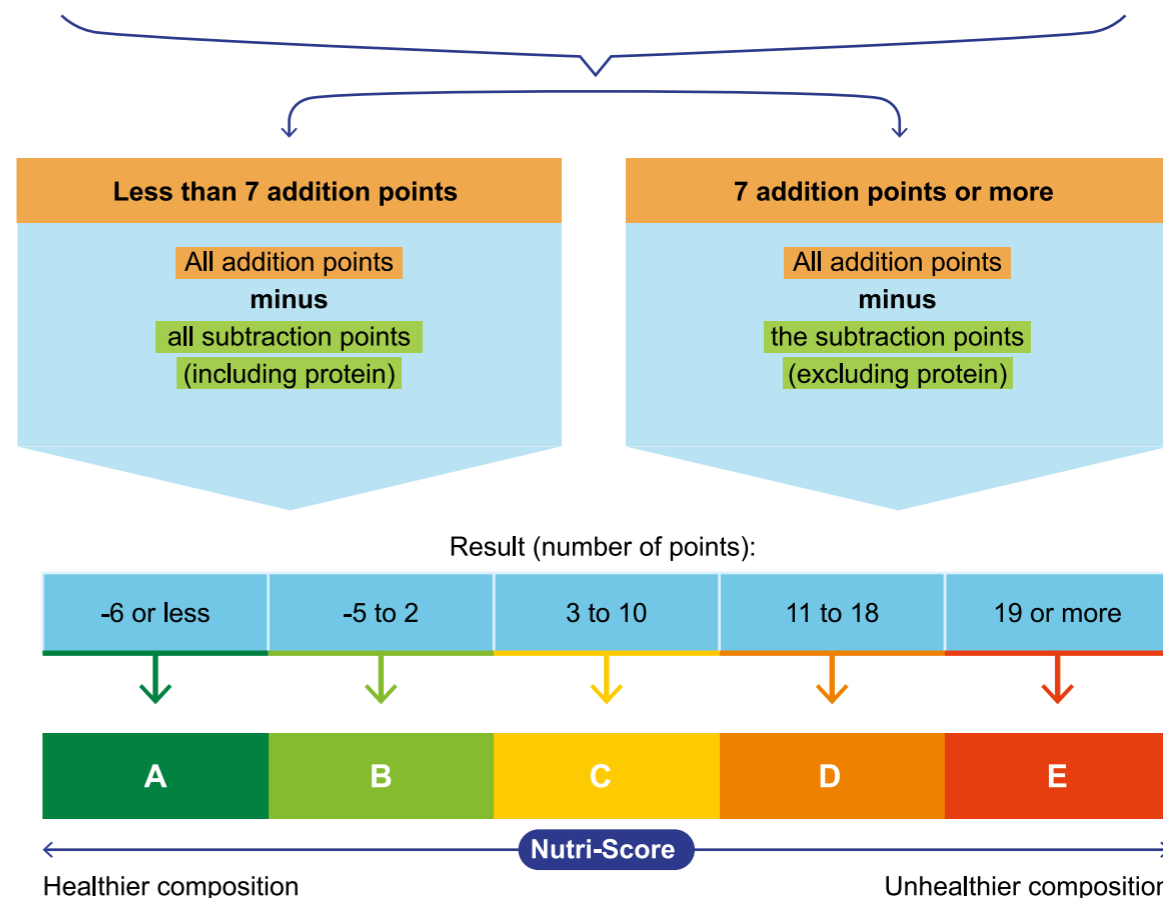
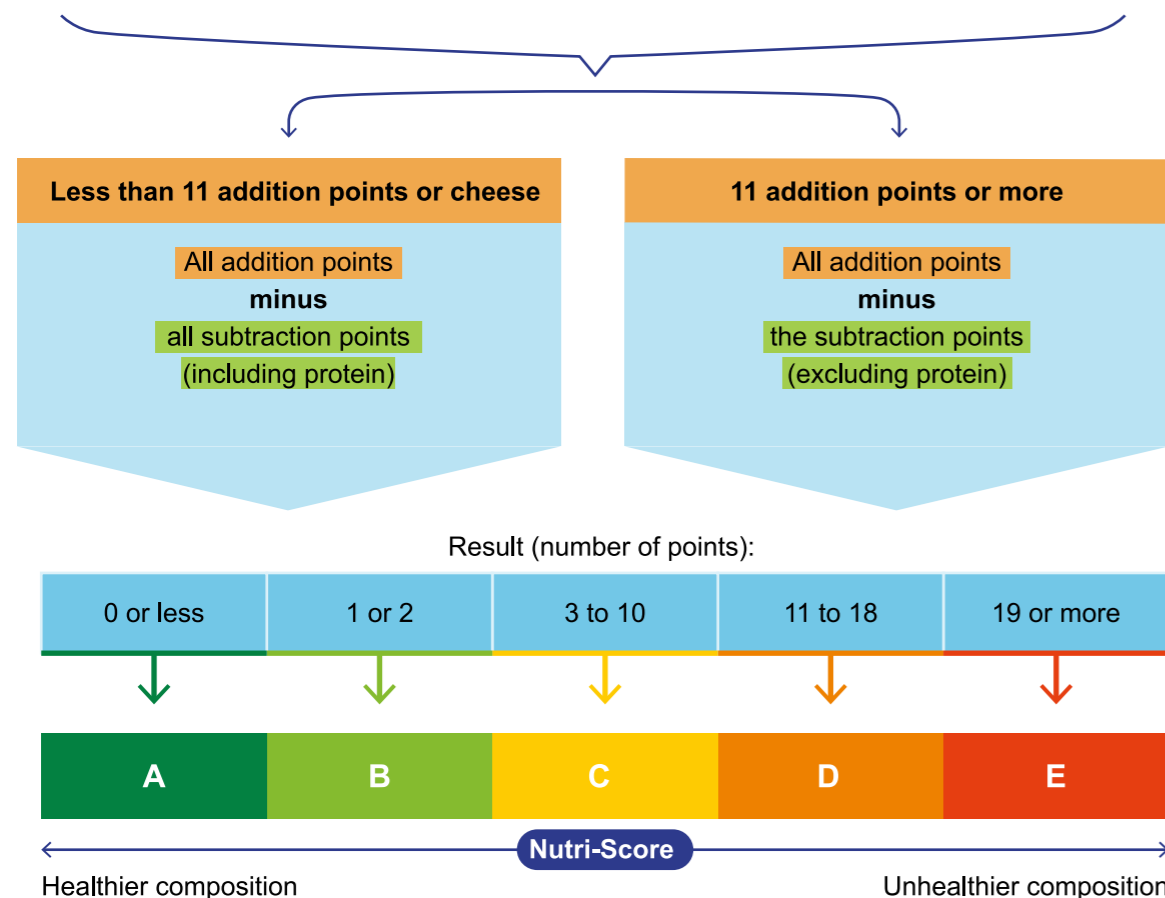


Figure 3 Revised algorithm of the Nutri-Score



03 evaluation of the algorithm

The revised Nutri-Score algorithm represents an improvement compared to the current algorithm. In particular, the Nutri-Score clearly identifies which products are less healthy (red score). Within this, the label also shows the variation in the degree of unhealthy composition (C, D and E). With the product groups that are given a green score, the Nutri-Score and the Dutch dietary recommendations usually line up quite well, but that is not always the case. For example, products with a green score may still have an undesirable high amount of sugar or little dietary fibre. Therefore, a product with a green score does not always have a healthy composition.

3.1 Improvements to the algorithm

The Committee has established that the revised algorithm represents an improvement compared to the current algorithm. The Nutri-Scores for all product groups that the ScC has prioritised are moving in the anticipated direction. For the product groups that have not been prioritised by the ScC, the Nutri-Scores have remained unchanged or they are generally also moving in the anticipated direction. At the same time, the Committee has noticed that the score for some of the products is not yet ideal and there is room for further improvement.

3.2 Conformity with Dutch dietary guidelines and Wheel of Five

The Nutri-Scores were compared with both the Dutch dietary guidelines and Wheel of Five. In this paragraph, the Committee focuses on drawing the most relevant comparisons. In one instance this could be a comparison with the Dutch dietary guidelines, yet in another instance a comparison with the Wheel of Five might be more appropriate. See the background document for a more extensive description of the methodology and results.

For product groups such as sauces, cakes, pastries, sweets, chocolate, crisps, salty snacks, various snacks and a range of spreads, with the revised algorithm the Nutri-Scores correspond largely to the Wheel of Five: 95-100% of the products in these groups has a red score (C, D or E) and virtually all of these products are excluded from the Wheel of Five. In the case of products that are excluded from the Wheel of Five, the Nutri-Score helps to distinguish for products with a less favourable composition between those that are slightly unfavourable and those that are very unfavourable (see box for illustration). Sugar-free liquorice is a point of concern: it can get a green Nutri-Score, but due to the blood pressure-raising properties of liquorice, this is undesirable.



Nutri-Score helps consumers choose the less unhealthy composition with scores C, D and E

With more unhealthy product groups, the Nutri-Score helps to choose the variant with the least unhealthy composition. Cakes and pastries are, as a group, excluded from the Wheel of Five. The Nutri-Score shows, however, that the products in these food groups can vary in their composition. Granola bars, egg cakes, tarts and pastries vary between Nutri-Scores C, D and E, for example. Large biscuits (such as filled biscuits and *stroopwafel* [syrup waffles]) and smaller biscuits (such as *speculaas* [ginger biscuit] and lady fingers) are mainly given a Nutri-Score of E and sometimes D.

A similar situation applies to crisps, and various salty or fried snacks.

For example, the Nutri-Score distinguishes between types of popcorn: this product is available with Nutri-Scores ranging from A to E. This also applies to crisps and salted nuts, which have a Nutri-Score of C, D or E. The Nutri-Score also shows how the snacks compare to each other: where popcorn, salted nuts and crisps are available with various scores, salted biscuits, cheese biscuits, and pretzels are almost always less healthy: these usually get an E Nutri-Score.

The correspondence between the Nutri-Score and the dietary recommendations in the Netherlands is not always strong for the core products that the Dutch dietary guidelines recommend to be eaten regularly: fruit, vegetables, legumes, nuts, whole grain products and cereal products, fish, (semi-)liquid fats and oils, dairy. For these products, the Nutri-Score often does offer the anticipated differentiation between products, but not always. The Committee has highlighted six main areas for consideration. For the assessment of the other product groups (some

of which are still open for improvement), the Committee would refer to the background document.

3.2.1 Salt

Particularly with the healthier products, Nutri-Score leaves relatively much room for unhealthy additives. This arises as a result of the subtraction points for the content of vegetables, fruit and legumes, the fibre content and the protein content. Products that score these subtraction points can have more addition points for salt, sugar or saturated fat without losing their A or B Nutri-Score. Salt is a serious point for consideration, as the average salt intake in the Netherlands is too high. The Dutch dietary guidelines (restriction of cooking salt intake to a maximum of 6 grammes per day) relates to salt intake through the entire diet and therefore cannot be translated directly to specific products. This is a complicating factor in the assessment of the correspondence between the Nutri-Score and the recommended salt intake.

To assess whether the Nutri-Score is consistent with the recommended salt intake, the Committee has estimated the intake of salt in a diet, based on an example of breakfast, lunch and evening meal (Figure 4). It should be noted here that a complete diet contains more food than the chosen combination of products and can therefore result in a higher salt intake. Calculations are based on standard consumption quantities and median salt contents (P50). The table illustrates how a diet consisting of products



with a B Nutri-Score can already result in too high a salt intake. Although canned vegetables are on average consumed less than fresh vegetables, the table shows that canned vegetables can on an individual level contribute significantly to the overall salt intake on a given day. On the other hand, the majority of canned vegetables are given an A Nutri-Score. Using these products should mean that salt intake does not get too high as quickly.

Within each Nutri-Score, the salt content varies between the various products of the product category concerned. The values in the table are calculated on the basis of the median salt contents for each Nutri-Score (P50). The calculations are also performed on the basis of the higher salt contents found for each Nutri-Score (P90 and P95 instead of P50); see the background document. These values show that the salt intake for 200 grammes of canned vegetables with an A Nutri-Score can run to up to 1.7 grammes per day (or more). The salt content in current canned vegetables with a Nutri-Score of A is therefore generally significantly lower than allowed for with the Nutri-Score. The Committee has therefore noted that the Nutri-Score for canned vegetables offers considerable room for (for example) added salt without this having any consequences for the score. As a result, it would provide little to no incentive to improve products in that regard. This also applies to various other products, including legumes in tins, glass or bags.

Food with a B Nutri-Score can result in too high a salt intake

Food database (LEDA) product group	Quantity of salt (in grammes) in the specified quantity of product, per Nutri-Score					Number of products within the product group, per Nutri-Score				
	A	B	C	D	E	A	B	C	D	E
200 g canned vegetables	0.66	3.00	3.00	6.00	3.40	1,288	129	138	65	32
25 g salted nuts	0.18	0.20	0.20	0.38	0.73 ^a	51	79	365	19	1
100 g seasoned minced meat	0.00	1.57	0.54	1.27	2.09	6	26	53	96	15
200 g fries or similar	0.10	0.20	1.40	2.32	8.60 ^a	139	395	424	20	3
20 g peanut butter	0.06	0.11	0.12	0.06	0.24 ^a	25	21	102	4	1
30 g cottage cheese or similar	0.21 ^a	0.21	0.18	0.38	0.51 ^a	2	19	54	34	1
20 g hummus	0.18	0.19	0.24	0.29	0.87 ^a	10	67	192	14	3
20 g chicken breast (sandwich topping)	0.24	0.34	0.34	0.44	0.60 ^a	5	12	40	188	3
120 g whole grain bread	1.12	1.17	1.32	2.63 ^a	(2.63) ^b	507	73	10	3	0
150 g semi-skimmed yogurt	0.19	0.23 ^a	(0.23) ^b	(0.23) ^b	(0.23) ^b	23	3	0	0	0
40 g crunchy muesli	0.04	0.03	0.04	0.04	0.25 ^a	25	21	122	46	1
Total salt	2.97	7.25	7.61	14.03	20.15					

Guideline on salt intake from the *Dutch dietary guidelines 2015*: **'Limit salt intake to 6 grammes daily'**

^a This value is based on a very small number of products (see table on right).
^b No products with this Nutri-Score within this product group. The value from the next column is used for the missing value.

Figure 4 Salt content of a selection of foods



3.2.2 Cereal products

The ScC has mentioned the minimal distinction between refined and whole grain pasta and rice in terms of their fibre contents as a significant limitation of the revised algorithm.^{5,11} Although whole grain pasta and brown rice are advised in six of the seven COEN countries, the algorithm produces a similarly favourable Nutri-Score (A or B) for the refined variants as the whole grain variants. The ScC went down a range of routes to find a solution, but could not find one. A major limitation was that not all countries have definitions of what whole grain is, and where they do exist for whole grain bread, they do not always match. For example, whole grain bread in Germany contains 90% whole grain, whereas it 100% whole grain in the Netherlands, Belgium and Spain. Even fewer boundary values have been agreed for cereal products other than bread. As a result, it was not possible to create a separate item for whole grain products.

The Committee has endorsed the conclusion of the ScC with regard to the moderate differentiation based on fibre contents between refined and whole grain variants of pasta and rice. Whole grain cereal products are also recommended in the Netherlands, and the Committee would like to see whole grain variants getting a better Nutri-Score than the refined variants. For bread, the Committee has noted that the revised algorithm does result in a good differentiation. This primarily due to the fact that differences in fibre content between types of bread are much greater than those between types of rice and pasta. Bread also scores addition points

for salt, which is not the case for (uncooked) rice and pasta. The Nutri-Scores for bread correspond well to the Wheel of Five. For example, whole grain bread mainly achieves an A Nutri-Score, sometimes B, but rarely C, D or E. White bread, on the other hand, mainly scores a C Nutri-Score.

3.2.3 Sugar in canned fruits and dairy

The Dutch dietary guidelines do not distinguish between types of fruit, as the research on which the guidelines are based relate to all fruit (fresh, canned and dried fruit, but particularly fresh fruit). The Wheel of Five on the other hand does differentiate between fresh fruit and fruit with added sugar. The reasoning behind this is that extra sugar in fruit is unnecessary and there are plenty of fruits available without added sugar. In this perspective, the Nutri-Score is not consistent with the Wheel of Five, as not only fresh fruit and canned fruit in their own juice (without added sugar), but also almost all canned fruit in syrup (with added sugar) are given an A Nutri-Score. The fact that the Nutri-Score for fruit does not provide any insight into the amount of added sugar compared with sugar that is naturally present is because only the total sugar content has to be declared on the label as a mandatory requirement. However, the World Health Organisation and the EFSA^{18,19} advise that the quantity of free or added sugars should be limited (as much as possible). Free sugars are all added sugars plus the sugars that are naturally present in honey, syrups, fruit juices and fruit concentrate.



The Committee has noted that the Nutri-Score for canned fruit offers relatively much room for added sugar. As with fresh fruit, canned fruit is also allocated 5 subtraction points for the fruit, vegetables and legumes component. As a result, fruit is eligible for an A or B Nutri-Score for a sugar content of up to 20 and 27 grammes per 100 grammes, respectively. If the fruit also gets points for fibre, even higher sugar contents are possible for A and B Nutri-Scores. Particularly for fruit types with a relatively low natural sugar content, there is room for adding extra sugar, as the limits for sugar content relates to the total content (natural plus added sugars). The Committee noticed something similar for dairy: skimmed and semi-skimmed fruit yogurt and vanilla yogurt generally get an A or B Nutri-Score even though the total sugar content can rise to up to 6 (Nutri-Score A) and 14 grammes (Nutri-Score B) per 100 grammes. The room for adding sugar is particularly an issue with low-fat and semi-skimmed yogurt, as the algorithm leaves more room for other unfavourable substances (such as sugar) due to the lower fat content (compared to full-fat yogurt).

For canned fruit, an additional point for consideration is that the nutritional declaration, and therefore also the Nutri-Score, is often based solely on the drained fruit, whereas the juice or syrup is also edible. If people also use the juice or syrup, the Nutri-Score gives an unrealistically positive assessment.

3.2.4 Oils, low-fat margarines and margarines

The ScC prioritised the differentiation between fats on the basis of their fatty acid composition when revising the algorithm. This has resulted in improved differentiation of the oils compared to more solid fats (solid fats have more saturated and less unsaturated fat). For olive oil, the Nutri-Score is consistent with the Wheel of Five. For other vegetable oils, the correspondence between the two is not optimal. Only approximately 10% of sunflower oils and 25% of other oils get a Nutri-Score of B, the others mostly score a C. To be consistent with Dutch recommendations, these oils should get a green Nutri-Score, with the exception of coconut oil and palm oil, for example.

Furthermore, most margarines and low-fat margarines get a C score. This does not correspond well with the Wheel of Five, which includes the soft variants of low-fat margarines and margarines (from a tub), whereas the solid variants (in a wrapper) are not included. To achieve greater consistency, soft variants should get a green Nutri-Score. On the other hand, within the range of C, D and E Nutri-Scores, the label clearly indicates which low-fat margarines and margarines have a better or alternatively less favourable fatty acid composition. The Nutri-Score also produces adequate differentiation with regard to full-cream butter and full-cream butter blends, which generally get a E Nutri-Score and D Nutri-Score, respectively.



3.2.5 Cheese

Cheese makes a valuable contribution to calcium, vitamin B12 and protein intake in the Netherlands, but the high contents of saturated fat and often also salt are unfavourable. For this reason, both the Wheel of Five and Nutri-Score score cheese very strictly. However, the contribution to calcium intake in particular is important, as the recommended intake of this nutrient should preferably be provided through dietary sources, in view of the indications that calcium supplements increase the risk of coronary heart disease.¹¹ The Nutri-Score uses the protein points for cheese and other dairy as an proxy for the calcium content.

The Netherlands Nutrition Centre has set up the criteria for cheese such that a limited part is included in the Wheel of Five, namely 20+ cheese, 30+ cheese with less salt, soft goat's cheese, mozzarella and dairy spread.

Nearly all cheeses get a C, D or E Nutri-Score, and the majority (nearly 90%) of them get a D Nutri-Score. Only a small percentage of cottage cheeses and ricotta cheeses get a green Nutri-Score. These are types of cheese with a relatively high moisture content and therefore a relatively low protein and calcium content. These types of cheese contain relatively little energy, saturated fat or salt, but they are not the types that are the most useful for calcium and vitamin B12 intake.

The types of cheese that get a D Nutri-Score seem to be distributed across the whole range of fat contents, from 20+ tot 60+. This is due to the fact that cheese contains relatively large quantities of saturated fat, energy and salt, but the maximum 10 points for saturated fat is already reached from what is a relatively low fat content for cheese (namely at 30+ cheese). Fat contents that are higher therefore do not result in additional points for saturated fat. Within the algorithm, an adjustment is made to always factor in the subtraction points for protein for cheese, regardless of the total number of addition points for saturated fat, salt and energy. Nevertheless, almost all cheese gets the same Nutri-Score.

The Committee believes that greater differentiation within the Nutri-Scores for cheese, breaking them down into a C, D or E score based on their saturated fat content, would be desirable.

3.2.6 Meat

In accordance with the international dietary guidelines, the ScC adjusted the algorithm, making it harder for red meat to get a good Nutri-Score: red meat can get a maximum of 2 protein points. However, the Committee has noticed that a lot of red meat can still get a green Nutri-Score. That is the case for unprocessed lean red meat that is also included in the Wheel of Five. However, fattier types of unprocessed red meat that are excluded from the Wheel of Five can also get a green score.



Green Nutri-Scores can also be obtained by processed meat and meat products, which are not included in the Wheel of Five, particularly for the leaner variants. In addition, for seasoned and processed lean white meat (white meat can be allocated up to 7 protein points) the Nutri-Score can offer relatively much room for a high salt content. That is not consistent with the Dutch dietary guidelines, which do not distinguish between processed red and processed white meat.

3.2.7 Ready-made meals, meal kits

The Wheel of Five includes hardly any ready-made meals: 4 of the 4,000 Dutch branded food database products are in the Wheel in Five. This is due to the fact that the Wheel of Five uses an extensive set of (strict) criteria for a healthy composition and completeness of such meals, such as the minimum and maximum energy contents and the minimum quantity of vegetables.

In this category, the Nutri-Score again offers consumers the option to choose a meal with a healthier composition, as the scores vary. As with various other product groups, the Committee has noticed that for some types of ready-made meals the Nutri-Score leaves relatively much room for salt, sugar and saturated fat. For example, meals with beans and salads (either as a main meal or a side dish) can contain relatively high amounts of salt, yet get a green score because of the subtraction points for vegetables, fruit and legumes and for fibres.

One important note for meal products is that the nutritional value of a product with clear, unambiguous preparation instructions may be based on those preparation instructions. This relates to products such as dried soup to which a certain quantity of water must first be added before it can be eaten. In terms of the Nutri-Score, it is therefore recommended that the score be calculated on the basis of the prepared product in this case. However, legislation allows for this principle (of assessing the nutritional values of cooked food) be applied more broadly, for example on meal kits. There are meal kits to which the consumer is supposed to add their own meat, cooking fat or salt. There are also meal kits to which the consumer is meant to add vegetables. However, it is possible that the consumer may prepare the meal product differently, for example using less vegetables than stated in the preparation instructions, using sausage instead of chicken, or using full-cream butter instead of olive oil. In this case, the Nutri-Score will give too positive a picture of the nutritional value of the meal product. The various meal products are therefore less easy to compare.



04 advice

A front-of-pack nutrition label is intended as an addition to the existing nutritional information. It can help consumers make a healthier choice as they can easily compare the composition of foods. Taking everything into consideration, the Committee recognises the added value of the Nutri-Score in this respect. This is particularly true for people with limited knowledge of nutrition who may be hard to reach with current nutritional information and who more often have a less healthy diet. The Nutri-Score is an intuitive and visually powerful label that also has a level of recognition²⁰ as it is already shown on a number of products. In addition, it has been introduced in the countries immediately around the Netherlands and is arriving on the Dutch market via these countries.

The label is not perfect, but the Committee sees sufficient possibilities for further improvement of the label. Furthermore, the Committee believes that it is unlikely that a front-of-pack nutrition label will become available that does fully meet requirements. The Committee believes that it is essential that the areas where the Nutri-Score does not line up with the dietary recommendations are being resolved. It recommends focusing on ensuring that the ScC makes progress on enacting recommendations. At the same time, it is important for the Netherlands to actively push for adaptation of European regulations and legislation regarding labelling and front-of-pack nutrition labels, as not all areas for consideration can be

solved with the algorithm alone. On the introduction of the label, the Committee believes that it is essential to examine the effect it has on the behaviour of consumers and producers to consider to what extent it is actually contributing to healthier diets.

4.1 Improvement of conformity with dietary recommendations in the Netherlands

The Committee advises that the conformity with Dutch dietary recommendations be improved further in various ways. This relates to desired changes to the algorithm, to regulations around the use of the Nutri-Score and to adjustments to legislation relating to labelling.

Salt in canned vegetables and legumes

Although salt is generally penalised more heavily in the revised algorithm, the Nutri-Score algorithm provides too much room in the B category for salt, as in the case of canned legumes, for example (see 3.2.1). As a result, these products can have a high salt content, which can result in too high a salt intake. The ScC focused in its evaluation in relation to salt on a large number of products, but not on vegetables and legumes.

The Committee believes that it is important that this is still done in a future revision. However, it could be investigated whether the algorithm could penalise the addition of salt (and sugar) by capping the subtraction points for canned vegetables, fruit and legumes. The ScC has already indicated in its report in June 2022 that it will look into the (rules for) allocating



points for the portion of vegetables, fruits and legumes. A report on this is expected in 2023.⁵

Distinction between whole grain and refined cereal products

With certain cereal products such as rice and pasta, the difference in fibre content between refined and whole grain variants is minor. As a result of this, and because different meanings are used for the term whole grain internationally, it has seemed to be difficult to date to formulate the algorithm such that the Nutri-Score can distinguish between, for example, white rice and brown rice and between white pasta and whole wheat pasta. This notwithstanding the fact that there is overwhelming scientific evidence that whole grain foods provide health benefits and international guidelines are consistent in this area.⁵ The Committee therefore advises that agreements still be made at a European level on what constitutes whole grain and that this be set down in labelling legislation. It will then be possible to revise the Nutri-Score algorithm to incorporate this.

Sugar in canned fruit

As described above, the ScC indicated in its report in June 2022 that it will look into the (rules for) allocating points for the portion of vegetables, fruits and legumes. The algorithm may penalise the addition of sugar to canned fruit by capping the subtraction points for vegetables, fruit and legumes. A report on this is expected in 2023.⁵ If this does not produce the anticipated result, the Committee advises considering whether European

labelling regulations can be adapted in such a way that it is mandatory to declare free/added sugar on the label. The Nutri-Score can then be calculated with this information. The Health Council of the Netherlands has previously advised using free sugars to calculate Nutri-Scores on labels on foods.²¹

Furthermore, the Committee advises explicitly stating on the Nutri-Score label whether the juice or syrup has been included in the calculation.

Distinction between types of fats and oils

The Committee is of the opinion that vegetable oils (apart, for example, of coconut and palm oil) should be able to get a good score (A or B). This is now not the case for many types (C). Furthermore, it is the case that most margarines and low-fat margarines receive a Nutri-Score of C, regardless of the total fat content and fatty acid composition, whereas soft fats should get a green score. The Committee advises a more detailed analysis within the possibilities offered by the algorithm for fats in order to achieve this. The Committee has noticed that low-fat margarines and margarines are more important for the Netherlands than for most other countries that use the Nutri-Score (or plan to do so) as they are consumed a lot in the Netherlands. Unlike oils, they are also a valuable source of vitamins A and D.



Cheese

As described in 3.2.5, the vast majority of cheeses get a Nutri-Score of D, whereas fat contents differ significantly. The Committee advises looking for a solution in the algorithm where cheeses are better distributed across Nutri-Scores C, D and E in proportion to both their saturated fat and salt contents. As there has already been a (limited) adjustment of the algorithm for cheese, the mandate possibly offers opportunities to improve the algorithm.

Meat

The committee advises improving the algorithm in such a way that a more accurate distinction is made between unprocessed red meat and unprocessed white meat, with less favourable Nutri-Scores for red meat than white meat. In addition, it would like to see that both processed red meat and processed white meat getting a less favourable Nutri-Score; particularly processed white meat and lean processed red meat can currently still get a green Nutri-Score.

Meal kits

The Nutri-Score can be used in various ways on meal kits. The Committee is of the opinion that labelling legislation, apart from the addition of water, should not leave room for calculating the composition of a product, *including* products that have to be added by the consumer.

4.2 Prevention of undesirable effects

The Nutri-Score is a calculation of various components. The score can encourage manufacturers to improve their products (one of the objectives of the Nutri-Score). On the other hand, there is room for offsetting components. Using this possibility (for example for flavour, costs or shelf life reasons) can result in a deterioration in the nutrient composition while the Nutri-Score remains unchanged. The Committee believes that it is important to counter this latter point as much as possible.

4.2.1 Addition of fibre, salt or sugar

Particularly in the case of canned vegetables and legumes, the algorithm offers room for adding salt without this causing the Nutri-Score to deteriorate. The same applies to sugar in the case of fruit (purée, compote, fruit in tins or glass), some vegetables (for example red cabbage) and low-fat dairy products. As a way of (further) restricting this possibility, in addition to the suggestion in 4.1, the Committee also advises establishing criteria within the National Approach to Product Improvement (Nationale Aanpak Productverbetering (NAPV), see box) for salt and sugar contents in canned fruit, vegetables and legumes. This agreement for improving products only apply nationally and do not affect products that enter the Dutch market from abroad. The Committee therefore advises that the salt and sugar contents of all products (continue to) be monitored to analyse whether the label is resulting in undesirable shifts in the product composition.



National Approach to Product Improvement (Nationale Aanpak Productverbetering (NAPV))

In addition to agreements on the introduction of a front-of-pack nutrition label, the National Approach to Product Improvement also includes an approach to improving the composition of processed products: the National Approach to Product Improvement (Nationale Aanpak Productverbetering (NAPV)).^{22,23}

With this, the government wants to encourage manufacturers to add less salt and sugar to foods and to reduce the saturated fat content by, for example, replacing some of the saturated fat with unsaturated fat. If people continue the same consumption pattern, they will nevertheless consume less of these nutrients.

New criteria for improving products have been drawn up for 14 food groups with 62 sub-groups. These are the sub-groups in which improvements to products are possible and contribute to at least 3% of the average daily intake of salt, sugar and/or saturated fat. Certain groups make up less than 3% of both salt, sugar and saturated fat, and for that reason no product criteria have been drawn up for these groups. This concerns, for example, processed vegetables and fruit, legumes and pasta.

Another example of undesirable offsetting is the addition of fibre instead of reducing salt, sugar or saturated fat. However, because the threshold value for rewarding fibre in a product has been raised in the revised algorithm, this form of undesirable offsetting is expected to diminish.

Besides, adding dietary fibre does not always make the product healthier.

The scientific evidence for the relationship between fibre and health primarily relates to fibre naturally found in foods (as in vegetables, fruit and cereal products, for example). Furthermore, in terms of its physiological effects, fibre types are not equal.

4.2.2 Replacing sugar with artificial sweeteners

‘Penalising’ sugar by the algorithm can result in artificial sweeteners being used more often. Intervention studies into the replacement of artificial sweeteners showed favourable effects in the short-term, such as a lower overall intake of energy and a reduction in body weight. On the other hand, observational studies suggest that an increased intake of artificial sweeteners are associated with increased risks of longer-term outcomes, such as the risk of obesity, diabetes, cardiovascular disease, (premature) death and, in relation to pregnancy, a risk of a lower birth weight of the baby and obesity later in life. It is as yet unclear whether the use of artificial sweeteners actually increases the risk of these outcomes, or whether the results are biased because people who are at greater risk of these illnesses are simply opting for products with artificial sweeteners more often.²⁴ The Committee advises monitoring the development of products and intake in relation to artificial sweeteners and continuing to follow scientific developments in this field. The World Health Organization is expected to publish an advisory report on the use of artificial sweeteners shortly.

4.3 Transparency

For consumer confidence in a front-of-pack nutrition label, it is important that an independent party such as the government is responsible for the label and that it is based on scientific research.²⁵ An international committee of (independent) scientists (ScC of the Nutri-Score) has



considered improvements to the algorithm that are based on the latest scientific insights. The Nutri-Score steering group is responsible for the conditions for using the Nutri-Score. The Committee believes that it is important that the Nutri-Score calculations are transparent. As with the contents of vegetables, fruit and legumes, the dietary fibre content is not mandatory to include on the label but is used to calculate the Nutri-Score. The ScC, and therefore the Committee as well, therefore had to make assumptions about these contents in order to calculate the Nutri-Scores. If a company uses the Nutri-Score, then the Committee believes that it is imperative that there is an ability to check the calculations.

4.4 Rules for plant-based substitutes for similar products

The Nutri-Score is not intended for and is also not capable of assessing whether plant-based products are full substitutes for meat, dairy or fish. For consumers who only use these plant-based alternatives every now and then, this is not so important, but it is an issue for consumers who (nearly) always choose plant-based substitutes. The Netherlands Nutrition Centre has set up criteria for plant-based substitute products (in particular whether the products provide sufficient calcium, vitamin B12, iron and protein), but there is no (European) legislation to cover this. The Committee recommends reaching international agreements on this, so that these can be used in future for the purpose of labelling.

4.5 General recommendation for using a front-of-pack nutrition label

The Committee has provided some advice on visibility, communication and monitoring in relation to the Nutri-Score that also applies generally when introducing a front-of-pack nutrition label.

4.5.1 Visibility

It is important for the effectiveness of a front-of-pack nutrition label that the label is on all products, as previously recommended by the Health Council.²¹ Ideally, such a label would be mandatory.²⁶ A green label is of particular interest from a marketing perspective, which means that less favourable Nutri-Scores may be used less if there is no obligation to use them. The Committee realises that an obligation for use cannot be enforced at national level but must be achieved at European level. Visibility is also important to create familiarity with the label and then be able to influence consumption behaviour on the basis of the label.



Research into labels

Limited research has been conducted into the impact of a mandatory label compared to a voluntary label. This is concluded in a 2022²⁷ systematic review by the European Union's scientific knowledge centre (Joint Research Centre). A large-scale questionnaire survey of over 12,000 participants from 12 countries showed that, on average, the participants preferred a mandatory label, and there was a strong preference for this from a third of participants. The Nutri-Score was one of the labels investigated, but the results did not differ between the labels in terms of this aspect.²⁸ Swiss (online) research (in which over 1300 participants had to indicate the healthier of two savoury snacks in each selection) showed that the effect of the Nutri-Score was diluted if only half of the savoury snacks examined had a Nutri-Score.²⁹

With a label that is based on the nutritional declaration (such as the Nutri-Score) on the packaging, the fact that many product groups are outside the primary scope of the label is also an important factor. A label of this kind is in fact only mandatory for pre-packaged foods. In addition, as described in Chapter 1, some of the products in supermarkets are not subject to European regulations for mandatory disclosure of the nutritional composition. The Committee believes that it is important that as many products as possible indicate whether they have a healthy composition. This applies, for example, to fresh vegetables and fruit. On the other hand, the Committee believes that it is important to also put a label on products such as sugar, salt and honey. After all, many unsweetened or unsalted products are still seasoned by consumers when they are prepared at home. Otherwise, a plain yoghurt to which sugar or honey is added or

vegetables that are salted at home could give an unjustified healthier perception than the shop-bought sweetened yoghurt or canned vegetables. The Committee can imagine that when it comes to unpackaged products, products may be chosen on the basis of the information given on the label on the shelves. With online shopping, there are also plenty of options for displaying a label, for both packaged and unpackaged products. If the composition is not known for unpackaged products in such a situation, using the composition as stated in the Dutch food composition database as a basis for calculation is an option for consideration.

4.5.2 Communication to consumers

The nutritional information is carefully compiled in the Netherlands using the Dutch dietary guidelines, population reference values and the Wheel of Five. This information focuses on completeness, sustainability and safety. The Committee believes that it is important that communication with consumers clearly states that the Nutri-Score represents an addition to the existing nutritional information, with the label allowing the composition of products to be compared while shopping. The Committee believes that this explanation is important to prevent the Nutri-Score (or another label) from detracting from the importance of broader nutritional information. For people with specific dietary needs, support from a dietician will still be required.



With regard to communication about the Nutri-Score, it is relevant, for example, that consumers understand that someone who only selects category A or B products is not always following a responsible diet (full, varied and not too full). Also for products with a Nutri-Score A or B it is the case that overconsumption and an overly imbalanced consumption are undesirable. In addition, the salt intake for products with an A or B Nutri-Score can be higher than recommended in the guidelines. On top of that, whilst the algorithm has been improved, the Nutri-Score is still a model that is not always adequate in all circumstances. The Committee is aware of the challenge from an information perspective posed in particular by clarifying the scores that are not sufficiently in line with existing dietary information.

4.5.3 Monitoring and research

Although the results from research into the effects of front-of-pack nutrition labels on consumers are hopeful, this research is primarily research into the *intentions* behind purchasing behaviour in controlled (experimental) circumstances. There is still little research into the effect of front-of-pack nutrition labels on actual purchasing behaviour in supermarkets.^{26,27}

Actual effects are often much smaller than predicted, as so many other factors come into play when shopping, such as price, flavour, habits and fatigue. It does seem that many consumers would value a front-of-pack nutrition label. It is important that the label is simple and that it ideally provides an overall assessment of the products nutritional value and uses

colour. The Nutri-Score does all this. This is shown by research reports with systematic reviews (based on research published up to and including February 2021) of the European Union's scientific knowledge centre (Joint Research Centre).^{27,30} A recent meta-analysis based on 156 studies also concluded that labels that use colour, like the Nutri-Score, can be effective in guiding consumers towards healthier choices.²⁶

The effect of a front-of-pack nutrition label on *actual* purchasing behaviour of consumers is still largely unknown. Is a consumer who normally buys unsalted nuts choosing a salted variant which also has a good score (an undesirable change) or is a consumer who primarily goes for salty snacks now more often opting for less salty or unsalted nuts (a desirable change)? Both the perspective of the population as a whole (where is the greatest shift/improvement in health to be expected) and the perspective of the individual are important here. It is also important whether people are going to compensate within their choices, for example whether they are going to take extra large quantities (over-consume) healthy products, which would again negate the potential positive effect. When introducing a front-of-pack nutrition label in the Netherlands, it is important to carefully monitor the effects on the purchasing behaviour of consumers in practice, the implications for a complete, sustainable and safe diet, and (as far as possible) the ultimate consequences for the health of the population. Both the average health effects of the Dutch population as a whole but also the effects within specific groups, based on level of education, age,



sex, (over)weight, medical history, cultural background, etc. A label can be particularly useful for people with limited knowledge of nutrition who may be hard to reach with nutritional information and who more often have an unhealthy diet.²⁶

Another area to monitor is the effect of a label on product ranges and on the visibility of the label. To what extent is the introduction of the label resulting in products being reformulated and have the changes to the product composition all been desirable ones, or have there been some undesirable changes as well? Will the label and National Approach to Product Improvement strengthen or complement each other, or will they undermine each other? To what extent is the label, having been permitted, being used voluntarily? If a front-of-pack nutrition label is introduced, the Committee believes that it is necessary to evaluate these matters.



literature

- ¹ Ministerie van Volksgezondheid, Welzijn en Sport. *Nationaal Preventieakkoord - Naar een gezonder Nederland*. Den Haag, 23 november 2018. www.nationaalpreventieakkoord.nl.
- ² Tweede Kamer. *Brief van de staatssecretaris van Volksgezondheid, Welzijn en Sport aan de Voorzitter van de Tweede Kamer der Staten-Generaal van 28 november 2019*. Den Haag: Tweede Kamer. Vergaderjaar 28 november 2019, 1614540-198914-VGP,
- ³ Julia C, Hercberg S. *Nutri-Score: Evidence of the effectiveness of the French front-of-pack nutrition label*. *Ernaehrungs Umschau* 2017; 64(12): 181-187.
- ⁴ Julia C, Fialon M, Galan P, Deschasaux-Tanguy M, Andreeva VA, Kesse-Guyot E, et al. *Are foods 'healthy' or 'healthier'? Front-of-pack labelling and the concept of healthiness applied to foods*. *Br J Nutr* 2022; 127(6): 948-952.
- ⁵ Scientific Committee of the Nutri-Score. *Update of the Nutri-Score algorithm - Update report from the Scientific Committee of the Nutri-Score 2022*. 29 Juni 2022.
- ⁶ *Update of the Nutri-Score algorithm - Yearly report from the Scientific Committee of the Nutri-Score 2021*. December 2021.
- ⁷ Westenbrink S, van der Vossen-Wijmenga W, Toxopeus I, Milder I, Ocké M. *LEDA, the branded food database in the Netherlands: Data challenges and opportunities*. *Journal of Food Composition and Analysis* 2021; 102: 104044.
- ⁸ EFSA Panel on Nutrition, Novel Foods and Food Allergens. *Scientific advice related to nutrient profiling for the development of harmonised mandatory front-of-pack nutrition labelling and the setting of nutrient profiles for restricting nutrition and health claims on foods*. *EFSA Journal* 2022; 20(4): e07259.
- ⁹ Rayner M, Scarborough P, Stockley L, Boxer A. *Nutrient profiles: Further refinement and testing of Model SSCg3d - Final report*. British Heart Foundation Health Promotion Research Group, Department of Public Health, University of Oxford, september 2005.
- ¹⁰ *Nutri-Score Frequently asked questions - scientific and technical*. 21 juli 2021. <https://www.santepubliquefrance.fr/en/nutri-score>.
- ¹¹ Health Council of the Netherlands. *Dutch dietary guidelines 2015*. The Hague, 2015; publicatienr. 2015/26E.
- ¹² Gezondheidsraad. *Voedingsnormen - energie, eiwitten, vetten en verteerbare koolhydraten*. Den Haag, 2001; publicatienr. 2001/19.
- ¹³ Health Council of the Netherlands. *Dietary reference values for energy*. The Hague, 2022; publication no. 2022/19e.
- ¹⁴ Health Council of the Netherlands. *Dietary reference values for protein*. The Hague, 2021; publication no. 2021/10e.
- ¹⁵ Health Council of the Netherlands. *Dietary reference values for vitamins and minerals for adults*. The Hague, 2018; Publication no. 2018/19e.



- ¹⁶ Voedingscentrum. *Richtlijnen Schijf van Vijf 2016*. Den Haag: Voedingscentrum, Februari 2020; 6e druk.
- ¹⁷ Rijksinstituut voor Volksgezondheid en Milieu. *Voedselkeuzelogo's onder de loep*. November 2019.
- ¹⁸ EFSA Panel on Nutrition, Novel Foods and Food Allergens. *Tolerable upper intake level for dietary sugars*. EFSA Journal 2022; 20(2): e07074.
- ¹⁹ World Health Organization. *Guideline: Sugars intake for adults and children*. Geneva: World Health Organization (WHO), 2015.
- ²⁰ van Duist L. *Kennis en houding ten aanzien van het Nutri-Score logo onder consumenten*. Motivaction, 18 oktober 2022.
- ²¹ Gezondheidsraad. *Gezonde voeding: logo's onder de loep*. Den Haag, 2008; publicatienr. 2008/22.
- ²² Steenbergen E, Wilson-van den Hooven EC, Ter Borg S, Brants HAM, Niekerk EM, Lindeboom A, et al. *Zout-, verzadigd vet- en suikergehalten in bewerkte voedingsmiddelen*. RIVM *Herformuleringsmonitor 2020*. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu, 2021; 2021-0138.
- ²³ Ter Borg S, Steenbergen E, Brants HAM, Lindeboom A, Beukers MH, Martens EAP, et al. *Nieuwe criteria voor productverbetering*. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu, 2021; 2021-0203.
- ²⁴ Rios-Leyvraz M, Montez J. *Health effects of the use of non-sugar sweeteners: a systematic review and meta-analysis*. Geneve: World Health Organization, 12 April 2022.
- ²⁵ World Health Organisation. *Guiding Principles and framework manual for front-of-pack labelling for promoting healthy diet*. Geneva, 2019.
- ²⁶ Song J, Brown MK, Tan M, MacGregor GA, Webster J, Campbell NRC, et al. *Impact of color-coded and warning nutrition labelling schemes: A systematic review and network meta-analysis*. PLoS Med 2021; 18(10): e1003765.
- ²⁷ Nohlen HU, Bakogianni I, Grammatikaki E, Ciriolo E, Pantazi M, Dias J, et al. *Front-of-pack nutrition labelling schemes: an update of the evidence*. Luxembourg: Joint Research Council, 2022. Publications Office of the European Union.
- ²⁸ Talati Z, Egnell M, Hercberg S, Julia C, Pettigrew S. *Consumers' Perceptions of Five Front-of-Package Nutrition Labels: An Experimental Study Across 12 Countries*. Nutrients 2019; 11(8): 1934.
- ²⁹ Hagmann D, Siegrist M. *Nutri-Score, multiple traffic light and incomplete nutrition labelling on food packages: Effects on consumers' accuracy in identifying healthier snack options*. Food Quality and Preference 2020; 83: 103894.
- ³⁰ Storcksdieck genannt Bonsmann S, Marandola G, Ciriolo E, van Bavel R, Wollgast J. *Front-of-pack nutrition labelling schemes: a comprehensive review*. Luxembourg: Joint Research Council, 2020; EUR29811EN. Publications Office of the European Union.



Committee and consulted experts

Members of the Evaluation of the Nutri-Score algorithm Committee

- Prof. M. Visser, Professor of Healthy Aging, Vrije Universiteit Amsterdam, *chairperson*
- Dr. L. Afman, associate professor molecular nutrition, Wageningen UR
- Dr. K.A.C. Berk, Registered Dietitian and Assistant Professor Department of Internal Medicine at Erasmus MC, Rotterdam
- Prof. E. Blaak, Professor of Humane Biology with special emphasis on Nutrition and Obesity, Maastricht University
- Prof. H. Boersma, Professor of clinical epidemiology of cardiovascular diseases, Erasmus MC, Rotterdam
- Prof. J.B. van Goudoever, Professor of Paediatrics, Amsterdam UMC
- Prof. M.T.E. Hopman, Professor of Integrative Physiology, Radboud UMC, Nijmegen
- Prof. R.P. Mensink, Professor of Molecular Nutrition, Maastricht University
- Dr. N. de Roos, assistant professor nutrition and health, Wageningen UR
- Prof. C.D.A. Stehouwer, Professor of Internal Medicine, Maastricht UMC+
- Prof. E. de Vet, Professor of Consumption and Healthy Lifestyles, Wageningen UR

Composition of the Nutri-Score workgroup, which has prepared the assessment of the

Nutri-Score algorithm:

- Prof. M. Visser, Professor of Healthy Aging, Vrije Universiteit Amsterdam, *chairperson*
- Dr. L. Afman, associate professor molecular nutrition, Wageningen UR
- Prof. H. Boersma, Professor of clinical epidemiology of cardiovascular diseases, Erasmus MC, Rotterdam

- Dr. N. de Roos, assistant professor nutrition and health, Wageningen UR
- Prof. E. de Vet, Professor of Consumption and Healthy Lifestyles, Wageningen UR

Incidentally consulted experts in Committee and working group of the Evaluation of the Nutri-Score algorithm advice^a

- Prof. J.W.J. Beulens, Professor of lifestyle and cardiometabolic disease epidemiology, Amsterdam UMC
- Dr. E.H.M. Temme, scientific employee, National Institute for Public Health and the Environment, Bilthoven
- Dr. J. Verkaik-Kloosterman, nutritionist, National Institute of Public Health and the Environment, Bilthoven

Observers^a

- Dr. E.J. Brink, The Netherlands Nutrition Centre, The Hague (Committee on Nutrition)
- J.M. van Delft MSc, Ministry of Health, Welfare and Sport, The Hague (Committee on Nutrition)
- J.L.M. Hoogeveen LL.M., Ministry of Health, Welfare and Sport, The Hague (advice on Nutri-Score)
- Dr. D. Wolvers, The Netherlands Nutrition Centre, The Hague (advice on Nutri-Score)

Scientific Secretaries

- Dr. J. de Goede, Health Council, The Hague
- Dr. L.M. Hengeveld, Health Council, The Hague
- Dr. C.J.K. Spaaij, Health Council, The Hague

^a Consulted experts are consulted by the committee because of their expertise. Consulted experts and observers are entitled to speak during the meeting. They do not have any voting rights and do not bear any responsibility for the content of the committee's advisory report.



The Health Council of the Netherlands, established in 1902, is an independent scientific advisory body. Its remit is “to advise the government and Parliament on the current level of knowledge with respect to public health issues and health (services) research...” (Section 22, Health Act).

The Health Council receives most requests for advice from the Ministers of Health, Welfare and Sport, Infrastructure and Water Management, Social Affairs and Employment, and Agriculture, Nature and Food Quality. The Council can publish advisory reports on its own initiative. It usually does this in order to ask attention for developments or trends that are thought to be relevant to government policy.

Most Health Council reports are prepared by multidisciplinary committees of Dutch or, sometimes, foreign experts, appointed in a personal capacity. The reports are available to the public.

This publication can be downloaded from www.healthcouncil.nl.

Preferred citation:

Health Council of the Netherlands. Evaluation of the Nutri-Score algorithm.

The Hague: Health Council of the Netherlands, 2022; publication no. 2022/29e.

All rights reserved

