

Weekly Report

Nutritional Labeling Today: What Consumers Want – And What They Understand

Findings from consumer surveys and studies about nutritional labeling tend to be hard to compare, because the methodologies they use and questions they address are quite varied. Nevertheless, by evaluating these studies, we can obtain a good overview of existing nutritional labeling systems and consumer preferences. The present background article offers an overview of the studies frequently cited in current debates.

Kornelia Hagen
khagen@diw.de

EU and multinational studies: Many products display nutrient tables on the reverse side of the package

European-wide research on nutritional labeling systems is being conducted under an EU research project known as FLABEL (Food Labeling to Advance Better Education for Life). At present, only interim results are available from this project. Of the products that have been examined, 85 percent display nutritional information. When nutritional information is made available, in the vast majority of cases (94 percent) it is located on the reverse side of the package. Seventy percent of the examined foodstuffs display a nutritional information on the package front. The most common form of labeling is a nutritional information table on the reverse side of the package. Findings on consumer behavior and how it is impacted by nutritional information are not expected until the project is completed in 2011.

A multi-national study was also conducted in 2008 by the European Food Information Council (EUFIC), an institution co-financed by the European Commission and the European food and beverage industry. The EUFIC studied consumer use and understanding of nutritional labeling systems and the general level of public knowledge about nutrition. In the study, researchers conducted written surveys and observed retail consumers in six member states and in relation to six product groups.

According to the study, only 18 percent of consumers regularly consult nutritional value information when purchasing foodstuffs. Twenty-six percent of surveyed consumers read the nutritional label at the time of purchase and spent about 30 seconds looking at each product label. Compared to the findings of previous research, this was regarded as a remarkably long time period of time. It can be assumed, how-

JEL Classification:
D03, D11

Keywords:
Labelling systems, Traffic light labelling

Nutritional Labeling Research: Study Designs and Findings (I)

	EUFIC	FLABEL
Title	Use and understanding of nutrition information on food labels in six European countries	Assessment of consumer exposure to nutrition information on food labels. Penetration study across the EU-27 plus Turkey www.flabel.org/en/
Year of the study	2008	2008–2011
Institution performing study	European Food Information Council, (EUFIC) (private association)	Project: Food Labeling to Advance Better Education for Life (FLABEL)
Authors	Klaus G. Grunert; DK et al., MAPP Centre for Research on Customer Relations in the Food Centre, Aarhus University (university research institute)	S. Storcksdieck et al.
Commissioned by	EUFIC European Commission, 7th Framework Program The EUFIC is co-financed by the EU and by corporations; currently the following corporations belong to the EUFIC: Barilla, Coca-Cola, DSM Nutritional Products Europe Ltd., Ferrero, Groupe Danone, Mars, McDonald's, Nestlé, Procter & Gamble, Südzucker, Unilever	EU-supported research project, 7th Framework Program FLABEL is co-supported by the EUFIC and various corporations
Geographic scope	Multinational study: Germany, France, Britain, Poland, Sweden, Hungary	27 EU member states and Turkey
Objectives and questions	Study about health consciousness and the conceptual and content-related understanding of nutritional value information Survey of subjective opinions	<ul style="list-style-type: none"> • What kinds of nutritional information exist? • Research about consumer behavior and the effects of nutritional information labeling on the selection of foodstuffs by consumers • Auditing as the foundation for an evaluation of labeling systems in various product categories and their effects on consumer behavior • What is the role of labels on food packages? • What can be achieved by providing nutritional information on food packaging?
Research method	<ul style="list-style-type: none"> • Written surveys, interviews und observation of purchases in different locations • Large retail business locations: Tesco, Sainsbury's and Asda in Britain; Intermarché and Auchan in France; Lidl and Real in Germany; Tesco and Interspar in Hungary; Tesco and Real in Poland; ICA, Coop, and Axfood in Sweden. • Conducted on different days of the week and at different times of day • Survey of subjective opinions 	<ul style="list-style-type: none"> • Three different market types for each country: • - One of the five most dominant brands as measured by market share • - A national market or a consumer cooperative • - A discounter
Theoretical explanatory model	Effectiveness model following the traditional decision-making and behavioral models in information economics (following Eagly and Chaiken 1993; McGuire 1985; Peter et al. 1999; Solomon et al. 2006)	–
Sample size for surveys	Germany: 1,963; France: 2,337; Britain: 2,019; Poland: 1,800; Sweden: 1,854; Hungary: 1,804 Response rate: 50.3 percent	–
Labeling systems studied	GDA information and labels on the front of the package Private labels	All nutrient value information on the front and reverse side of the packages
Products/Product categories	6 product categories: salted snacks, soft drinks, yogurt, cereals, frozen dinners, sweets	37,000 products in 5 product categories: cookies/pastries, cereals, frozen dinners, carbonated soft drinks, yogurt
Core findings related to the labeling model	<ul style="list-style-type: none"> • 26 percent paid attention to the nutritional label when purchasing • Consumers spend 30 seconds per product looking at the label • If nutrient information is apprehended, then it is primarily information about calories (69 percent), fat (66 percent) und sugar (58 percent) • 45 percent look at nutrient tables, 35 percent at GDA information und 70 percent say they understand the GDA model • Social disadvantaged consumers tended not to look at nutrient information. • Consumers overestimate calorie content, underestimate calorie need, and tend to exaggerate the need to avoid foods that should be consumed sparingly. • Nutritional understanding and interest in healthy eating are closely connected. • In Germany less than a third of consumers pay attention to nutritional labels. 	<ul style="list-style-type: none"> • Interim results: • Classification of current nutritional labels according to main labeling systems • 85 percent of foods in categories that were studied contained nutrient information, most frequently in Ireland, Britain, and the Netherlands • Nutritional information is predominantly found on the reverse side of the packaging (94%), and on the front side, 70% show one element of nutritional information. • The most prevalent model is the nutrient table on the reverse side of the packaging.
Conclusions	No traffic light labeling	<ul style="list-style-type: none"> • Additional reports expected by 2011: • Creation of an EU map: nutritional information on foodstuffs; • Analyses about the effects of food labeling on product selection by consumers; • Obtain additional information about observations at the supermarket and from cash register data; • How do consumers form an opinion about the health value of a foodstuff? • Examination of specific issues about the effects of food labeling on children; • Proposal for an optimal (simple and comprehensive) system of food labeling.

Nutritional Labeling Research: Study Designs and Findings (II)

	BMELV	Foodwatch	Buxel
Title	Nährwertkennzeichnung. Eine Umfrage ("Nutritional Labeling: A Survey")	Survey	Akzeptanz und Nutzung von Nährwertkennzeichnung auf Lebensmitteln durch Konsumenten ("Consumer Acceptance and Use of Nutritional Labeling on Foodstuffs")
Year of the study	2008	2009	2010
Institution performing study / Authors	Infratest dimap (private market research company)	Tns Emnid (Private market research company)	Münster University of Applied Sciences / Holger Buxel, Andreas Grossmann
Commissioned by	BMELV	Foodwatch	University study
Objectives and questions	<ul style="list-style-type: none"> • Understanding of and attention to nutrient values in foodstuffs • To what extent do consumers pay attention to sugar and calories? • Are foodstuffs selected according to nutrient information at the time of purchase or only afterwards, and is this behavior stable/does it change? • Does nutritional information help people eat more health-consciously? • Which form of nutrient information do consumers prefer: nutrient information per portion, per unit, traffic lights, or GDA information? • Where should nutritional information be located? 	A single question: "Should the German government support the introduction of nutritional labeling based on the traffic light system?"	Familiarity, understanding, opinion about and actual behavior with regard to nutrient information at the time of purchasing products
Research method	Survey of subjective opinions Single point survey Face-to-face Interviews (CAPI)	Survey of subjective opinions Survey at two time points	Online survey and face-to-face (26 main questions) Subjective opinions Direct product comparison
Theoretical explanatory model	–	–	<ul style="list-style-type: none"> • Stages of the acceptance process; • Familiarity (Awareness) • Understanding and ability to interpret (Understanding) • Adjustment, intention to use, wishes (Will) • Actual use (Behavior)
Sample size for surveys	Random sample representative of population 1,250 individuals (aged 14 and older)	Random sample representative of population 1,004 individuals	841 respondents from various walks of life
Labeling systems studied	Hybrid model	Nutritional traffic light model	GDA information and nutritional traffic light model
Products/ Product categories	No specific product focus	No specific product focus	In part, specific products: cereals and peanut snack products
Core findings related to the labeling model	<ul style="list-style-type: none"> • 80 percent find the hybrid model informative, understandable and clear • 71 percent would use this labeling system at the time of purchase • 58 percent indicated that the color-coding would influence their purchasing behavior • 47 percent would prefer that the nutritional information were on the front of the package, and 28 percent would prefer having it on the reverse side 	Over two-thirds of respondents want the government to mandate nutritional labeling with traffic light colors	<ul style="list-style-type: none"> • Higher level of familiarity with GDA system (78 percent) • Knowledge about the standard nutrients only exists to a limited degree, complex nutrition-related information can barely be understood, and consumers are likeliest to be well versed with calories, fat, and sugar. • Just about half of those polled find the GDA figures helpful. • For direct product comparisons, the GDA figures led to problems of understanding and interpretation for many consumers, whereas the traffic light labeling performed better. • Over 75 percent of those surveyed consider the traffic light to be more helpful and easier to understand than the GDA model, and prefer the traffic lights. • A majority of consumers are in favor of mandatory nutritional labeling. • Knowledge is lacking that would allow people to interpret health effects. • Health consciousness drives the use of nutritional information. • The influence of either traffic lights or GDA information upon health-conscious purchasing behavior is questionable, and many persons are likely to use individual nutrient levels as the heuristic basis for making decisions.
Conclusions	"1 plus 4" model (GDA information without traffic light colors)	Nutritional traffic lights (GDA information with traffic light colors)	• It is not possible to conclude from the findings that either of the systems is more advantageous. A smaller amount of information about nutrients is better than an excess of information.

Study Design and Findings from Research about Nutritional Labeling (III)

	FSA
Title	Comprehension and use of UK nutrition signpost labelling schemes www.food.gov.uk/multimedia/pdfs/pmpreport.pdf und www.nzfsa.govt.nz/science/research-projects/signs-literature-review-report_final-2.pdf
Year of the study	2009
Institution performing study	BMRB, Food, Consumer Behaviour and Health Research Centre at the University of Surrey (FCBH) (university research institute)
Authors	Sally Malam, Sue Clegg, Sarah Kirwan, Stephen McGinival (UK)
Advisory Board	Independent Scientific Board
Commissioned by	Food Standards Agency UK (government)
Geographic scope	Great Britain
Objectives and Questions	<ul style="list-style-type: none"> • Evaluation of different nutritional labeling systems used in Great Britain: • How are nutritional labels on the front of packages apprehended by consumers? • How are labels interpreted? • What is the impact of different labeling systems on the consumer's understanding? • Do consumers make decisions based upon labels when there are purchasing foodstuffs and when they are back at home, and which labeling system affects their purchasing in what way?
Methodology	Mixed methods: Qualitative: observations, accompanied purchases, and shopping bag examination at the time of purchase and at home. Omnibus survey In-depth interviews
Theoretical Explanatory Model	Elements from information and behavioral economics
Sample size for surveys	2,932 consumers chosen randomly at the time of purchase.
Labeling systems studied	Nutritional traffic lights Single-color model with percentage figures (GDA) GDA plus nutritional traffic lights (Hybrid model)
Products/Product categories	–
Core findings related to the labeling model	<ul style="list-style-type: none"> • The nutritional traffic light is a very good communication tool, and its understandability is highest if traffic light colors are combined with text. • Consumers least understand GDA information that uses percentage figures. • Older persons, individuals with little education and those from lower social classes are less able to interpret the nutritional labels than other groups of consumers. • The actual use of nutritional information is less common than what consumers indicate in surveys. • Consumers who use labels also inform themselves using other forms of information about foodstuffs. • The labeling is most likely to be used if the product is being purchased for the first time or when consumers are attempting to reduce their consumption of specific nutrients. • Nutritional information is likelier to be used while shopping than at home. • Some labeling systems confuse the consumer.
Conclusions	Nutritional traffic lights/Hybrid model

Source: Compilation by the DIW Berlin.

DIW Berlin 2010

ever, that 30 seconds is generally not a sufficient timeframe to fully comprehend percentage figures for Guideline Daily Amounts (GDAs).

Among those surveyed, 45 percent paid attention to nutrient tables, and a little more than one-third to GDA figures. Lower-income consumers tended not to pay attention to nutrient information. More than two-thirds of respondents (70 percent) reported that they have a “good understanding” of the GDA model.

The study also found that among the nutritional data presented, consumers primarily noticed calories (69 percent), fat (66 percent), and sugar (58 percent). However, consumers tended to underestimate the number of calories in a food in comparison to their overall calorie needs. The study also demonstrated

a close relationship between knowledge about nutrition and an interest in healthy eating.

According to the study, traffic light labeling leads to misinterpretations on the part of consumers, as too much importance tends to be attached to each respective color—among those familiar with the system, for example, 73 percent believed that red meant that the product should not be eaten at all. While information about salt content was widely ignored, figures for calories and fat content did lead to a selection of healthier products.¹

¹ Grunert, K. G., L. F. Celemin, J. M. Wills, S. Storcksdieck genannt Bonsmann, L. Nureeva: Use and Understanding of Nutrition Information on Food Labels in Six European Countries. *Journal of Public Health*, 2010.

The Situation in Germany

According to the food industry, nutritional information is displayed voluntarily by producers on more than 80 percent of foods in Germany.² Although there is no comprehensive inventory of the labeling models that have been used thus far, experts estimate that the predominant model in Germany is to provide GDA information; this conforms with the recommendation made by the Confederation of the Food and Drink Industries of the EU (CIAA) to its members.

Many companies do not express an explicit opinion about which labeling system they prefer.³ An exception is the company FRoSTA, which began to voluntarily label its products using the traffic light system several months ago.⁴ According to the company, this is part of an initial pilot study.

A study by the consumer association Verbraucherzentrale Hamburg regarding nutritional value information on foodstuffs confirms the results of the studies mentioned above.⁵ The association tested more than 3,500 packages in the food groups of jams, sausage, sweets, pizza, frozen dinners, milk products, ice cream, granola bars, cookies, chocolate, and chips/snack foods. Only about 15 percent of the examined foods they studied had no nutrient tables. Brand-name products (like Haribo, Storck, and Ferrero) provide nutrient figures less often than “no-name” products. For example, only 36 percent of Ferrero products provide information on sugar content. According to Verbraucherzentrale Hamburg, discounters offer more foods with dietary information on eight major nutrients than full-service retailers. The association also criticized the fact that calorie-rich products provide nutrient information less often than foods with fewer calories and that for sugar-rich products like jam, sugar content is often omitted.

In 2008 a survey of German consumers was conducted by the market-research company Infratest dimap on behalf of the Federal Ministry for Nutrition, Agriculture, and Consumer Protection (BMELV). The survey measured subjective opinion about vari-

ous aspects of nutritional labeling in a representative random sample of the population. With respect to nutrient value systems, questions were only asked about the hybrid model (i.e. GDA percentage figures with a traffic light system). More than 80 percent of respondents found the color-coded highlighting of nutritional information informative, understandable, and clear, and 70 percent indicated they would make use of such labeling when shopping. Nearly sixty percent of those surveyed indicated that color-coding would have an impact on their behavior, but based on the wording of the question, it is not possible to decide if this means a positive or a negative impact.

The German consumer organization Foodwatch also commissioned a recent survey about nutritional labeling. Carried out in 2009 on a representative random sample of the population, it only inquired as to the subjective opinions of consumers. According to the survey’s results, two-thirds of consumers would like the BMELV to advocate a traffic light labeling system. Respondents in the lowest net household income bracket showed somewhat less support for traffic light labeling than consumers belonging to other income groups.

A third study conducted by Holger Buxel of the Münster University of Applied Sciences shows that a combination of GDA figures and traffic light colors leads to a better and more accurate estimation of sugar and calorie contents as well as more accurate results in direct product comparisons than GDA figures without color-coding. In a test involving two products, about 60 respondents (34 percent) were unable to tell which product had more sugar and more calories when the GDA labeling system was used, but with the traffic light system, only 5 percent of those surveyed failed to come up with the right answer. Overall, 75 percent of respondents rated the traffic lights as being more helpful. By contrast, the GDA labeling led “to problems of understanding and irritation for many respondents when they tried to compare products.” The researchers who conducted the study conclude that there are no unequivocal findings to indicate that either traffic light labeling or GDA figures represent the better system, especially when one recalls that the issue of nutrient values and the configuration of the label is only one factor among many in the actual selection of foodstuffs.

² Bund für Lebensmittelrecht und Lebensmittelkunde e. V., press conference of September 15, 2009: Irreführende Aussagen der Verbraucherzentralen zu Nährwertangaben auf Lebensmitteln, www.bll.de/presse/pressemitteilungen/pm-20090915-vz-nwi.

³ Die Initiative für bewusste Ernährung: Ausgezeichnet informiert. Der GDA-Kompass. 2008. The Initiative consists of Coca Cola Germany, Kraft Foods, Mars, the Metro Group, Pepsico International, Nestle, Kellogg’s, Unilever.

⁴ FRoSTA website concerning its traffic light label, www.frosta.de/aktuelles.

⁵ Verbraucherzentrale Hamburg: Das große Schweigen. 2009, www.vzh.de.

Nutritional traffic lights are already used widely in Britain—and the results have been positive

Unlike the situation in Germany, in Britain many products and suppliers already use a multiple traffic light system (a simplified version of the German hybrid model). The supermarket Sainsbury's, for example, participates in the system. Some retailers, however, such as the supermarket chain Tesco, oppose the traffic light system and instead use GDA figures.⁶

The British government supports the traffic light model. This position is based upon the findings of a comprehensive assessment conducted by the UK Food Standard Agency (FSA).⁷ The study—which, in terms of methods, was extremely broad in scope—explored how easy it is for consumers to understand different nutritional labeling systems that are widely used in Britain, including the traffic-light model, single-color models with GDA percentage figures, and traffic lights combined with GDA percentage figures.

According to the study, traffic light labeling is a very good communication tool. It was found that a traffic lights system in combination with textual information was the most easily understandable form of presentation for consumers. Ultimately, two kinds of labels were significantly more understandable than others: (1) a combination of text (high/medium/low) and traffic light colors (red/yellow/green), and (2) a combination of text, traffic light colors, and GDA percentage values. The GDA model based on percentage values clearly performed worst in comparison to the other labeling systems.

Consumer surveys and studies show conflicting results

In all three of the aforementioned German surveys about nutritional labeling, the traffic light system was the central focus of inquiry. The studies all revealed high approval ratings for traffic light labeling, with implementation being favored by 50 to over 80 percent of respondents. An even higher proportion of respondents found the nutritional traffic lights informative. Based upon these findings,

it seems clear that the traffic light system would find broad acceptance and be well understood by the population.

Yet surprisingly, the food industry interprets the findings of these studies as evidence that consumers do not want a traffic light system. Equally perplexing is why the German Federal Ministry for Nutrition, Agriculture, and Consumer Protection has failed to heed the findings of these studies, expressing support instead for a model without traffic light colors. In any event, based upon the aforementioned studies it is not possible to clearly justify the adoption or rejection of any single labeling system. While the well-designed and comprehensive FSA study does provide evidence in favor of the traffic light system, it has had virtually no impact on discussions at the EU level.

The Foodwatch survey has been a particular target of criticism from the food industry based upon its supposed lack of scientific rigor. We cannot share this criticism. The study has been maligned for its focus on a single question. From a methodological point of view, however, the number of questions asked is not an essential criterion for scientific validity. More crucial is whether survey and evaluation standards have been maintained and whether the question is clearly formulated. The Foodwatch survey meets both of these criteria.

⁶ Sainsbury's: www2.sainsburys.co.uk/food/healthylifestyle/help_and_advice/understanding_labelling/default.htm?WBCMODE=292; Tesco: www.tesco.com/health/food/food_labelling/labels.page?

⁷ Malam, S., Clegg, S., Kirwan, S., McGinigal, S.: Comprehension and Use of UK Nutrition Signpost Labelling Schemes, Report and Technical Annex. 2009, www.food.gov.uk/multimedia/pdfs/pmpreport.pdf and www.nzfsa.govt.nz/science/research-projects/signs-literature-review-report_final-2.pdf.

(First published as "Nährwertkennzeichnung heute: Was Verbraucher wollen – und was sie verstehen", in: *Wochenbericht des DIW Berlin Nr. 22/2010.*)

DIW Berlin
Mohrenstraße 58
10117 Berlin

Tel. +49-30-897 89-0
Fax +49-30-897 89-200

ISSN 1860-3343
Translated from the German.
All articles are protected
by copyright.