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**Warning labels on food from
the point of view of the
consumers**

2010

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Summary This report is an exploration of food warning labels from the point of view of consumers, considering that a wider use of warning labels is discussed in plans for new EU policies on food safety. By warning labels is in this report meant mandatory messages on food products that have to be included on the package/label to inform the users of health hazards from intake of foods. The aim was to explore the expectations, understanding, and use of food warning labels in the Norwegian population based on both quantitative (web survey) and qualitative (focus groups and stakeholder meeting) data.		
Keywords Food labelling, warning labels, consumers		

Warning labels on food from the point of view of consumers

by

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Foreword

This report presents a study of warning labels on food from the point of view of consumers. The aim was to explore the expectations, understanding, and use of food warning labels in the Norwegian population, considering that a wider use of warning labels may be part of future policies on food safety.

The work has been carried out through collaboration between SIFO researchers and the Norwegian Food Safety Authority. The study has been co-ordinated by Senior Researcher Gun Roos at SIFO. Head of research Unni Kjærnes at SIFO has participated in the planning, analysing and reporting of the study. Research assistant Tommy Ose at SIFO has especially contributed with work related to the focus groups. In addition, Director Arne Dulsrud was actively involved in planning the study.

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Summary

This report is an exploration of the expectations, understanding, and use of food warning labels in the Norwegian population, considering that a wider use of warning labels is discussed in plans for new EU policies on food safety. However, we know little about if, when and how warning labels on food may be appropriate measures.

Warning labels on food products represent an increasingly important measure to protect the population against health hazards from intake of foods. **By warning labels is in this report meant mandatory messages on food products that have to be included on the package/label to inform the users of health hazards from intake of foods.** The use of warning labels can be an alternative to legislation restricting the contents of hazardous substances in food.

In this study we have selected to include the following six examples of mandatory warning labels among those that are currently used on food in Norway (in Norwegian):

- “Do not refreeze after defrosting”
(Bør ikke fryses på nytt etter oppthining)
- “Not recommended for children under 3 years of age”
(Anbefales ikke for barn under 3 år)
- “Should not be given to infants under 12 months of age”
(Må ikke gis til spedbarn under 12 mnd)
- “Excessive consumption may induce laxative effects” (Kan virke avførende ved stort inntak)
- “Contains liquorice – people suffering from hypertension should avoid excessive consumption” (Inneholder lakris – personer som lider av høyt blodtrykk bør unngå for stort inntak)
- “Consumption of more than 3 g/day of added plant sterols should be avoided”
(Inntak av plantesteroler over 3 g per dag bør unngås)

In addition, we have included the following two examples of warnings that may come in the future:

- “Name or E number of the colour(s): may have an adverse effect on activity and attention in children” (Fargestoffet (E xxx) kan ha en negativ innvirking på barns aktivitet og konsentrasjonsevne)
- Food supplements containing beta carotene are not recommended for heavy smokers (more than 20 cigarettes a day)
(Kosttilskudd med betakaroten anbefales ikke brukt av storryktere (mer enn 20 sig. pr dag))

To assess if the use of warning labels is an effective measure we need to know more about how consumers view and use warning labels on food. The **objective of this study** was to explore the following questions related to warning labels on food:

1. What are consumers' views, understandings and use of warning labels on food?
2. How should warning labels on food be designed to be effective?
3. Are warning labels on food an appropriate measure for food safety?

Earlier literature on consumers and food labelling is largely based on applied research and focusing on the understanding and use of food labelling information by consumers. Consumers have positive views of labelling and users of food labelling are described. The literature on warning labels on food is very limited and mainly limited to allergens and focusing on consumer preferences. Literature on trust and information on food risks is presented to show why labels must be based on increased transparency, accountability and consumer control.

Methods

Web survey: To investigate consumers' views, understanding and use of warning labels of food and their perceptions of food safety, trust and responsibility. N=1001; 15-87 years.

Focus groups: To get information on consumers' understanding of information and warning labels on food in everyday practice, dilemmas and views on responsibility. Two focus groups (N= 6 and N=7), 13 people (7 women and 6 men), 23-67 years.

Stakeholder meeting: Arranged after the web survey and focus groups to get feedback on the results and to get wider input on consumer views on warning labelling from Non-Governmental Organisations (NGOs) representing relevant groups of consumers and the Consumer Council. Two representatives for NGOs working with health-related issues participated.

Main findings

Web survey

Food labelling: Almost all consumers reported that they always check price and date on food products they buy. Health-related information (nutrient content, contents of sugar, fat and salt, calories, additives) were checked always by approximately 20-40 percent of the respondents, but, in addition, 30-45 percent reported that they check this information sometimes. Women, older age groups, those with higher education and dietary restrictions check information more. Results show that consumers more often check information on processed food products compared to everyday staple foods. Consumers read mainly labels in the store or both in the store and at home.

Warning labels: There were clear differences in familiarity of the different warning labels on food. Almost two thirds of the respondents reported that they had seen the warning "Do not refreeze after defrosting", whereas only 2 percent reported that they had seen the warning "Consumption of more than 3 g/day of added plant sterols should be avoided". For some warnings no variation based on background variables gender, age, education and dietary restrictions in household). The warning on laxative effects, which had been seen by approximately half of the respondents, showed larger variation especially based on age but also based on gender and dietary restrictions (not education). Warning labels were viewed as useful information – the highly educated were most sceptical. Consumers did not see a contradiction between protective legislation and the use of warning labels.

Responsibility and trust: Consumers agreed that food industry, authorities and consumers themselves share responsibility for food safety. Consumers trusted that in case of a scandal

with animal welfare consumer organisations, food experts, mass media and food authorities are the ones who will tell the whole or parts of the truth.

Focus groups

Food labelling: Consumers said that they look for a whole range of different information, such as country of origin, health, ingredients, novelty and price when they encounter a new food product in the grocery store. On products that they buy routinely they rarely check the labelling. Information and labelling was viewed as something positive and seen as a shortcut that is useful in the grocery store. The use of labels varied based on type of food. Consumers do not read the labels on food products that by definition belong to the group “unhealthy foods”. On products that are supposed to be healthy (dinner components, bread) it becomes more relevant to read the food labels and check ingredients and nutrients.

Warning labels: Not all of the participants had noticed warning labels on food but the participants were in general positive towards getting more information including warning labels on food products. The suggested warning related to the effect of colours on children got some special attention. It was pointed out that it is not easy to understand what are the effects and if it would be aimed at all children or only hyperactive children. A warning like this made them worried; are they toxic? and how do they affect children? It was suggested that it would be a better option to instead ban these colours or at least to give more information about the effects. The participants supported banning dangerous and harmful ingredients or foods, especially if there are no other alternatives available. But they recognized that this may not be in the interest of the producers who wish to make money. They felt that although the authorities do make sure that dangerous products are not for sale in stores, there may still be some products that can be harmful – there are always some risks. Warning labels on food may be useful for smaller groups with specific health problems. The general view was that if banning ingredients that were harmful for some groups was not a possible alternative, warning labels were a good solution. However, the participants also brought up dilemmas, for example, social inequalities and the variation in knowledge.

Responsibility and trust: The participants agreed that authorities and producers are both responsible for food safety. The food authorities make sure and control that there are no dangerous foods in Norwegian grocery stores. Both producers and retailers are seen as responsible for selling safe foods. Consumers have some responsibility; they were seen as responsible for reading labelling. Thus, it appears that consumers need good information to be able to accept responsibility.

Stakeholder meeting

The interest and participation in the stakeholder meeting turned out to be low. Possible explanations for low participation may be the following: warning labelling on food is not considered a topic of high priority and it is not a topic that is currently debated; many organisations have not yet made up a clear standpoint on the issue; we may have contacted organisations that do not see warning labels on food as relevant for their organisation; or invitations did not reach the persons who would have been interested to participate.

Food labelling: The participants viewed food labelling as important information to consumers so that they can make informed choices. The language or logos have to be understandable to all consumers, including those who do not have very good knowledge of Norwegian. People are interested in labelling, but they do not read the labelling every time. They usually buy food based on habits and reading of labels varies between food products. For example, when they buy potato chips people do not check calories or type of fat because they have already made a choice to buy an unhealthy product.

Warning labels: Warning labels were not very familiar to the participants. They represented NGOs that mainly have worked with allergies and nutrient content. It was emphasised that

warning labels may be more acceptable on products that are consumed rarely (sweets, food supplements) or if the target/risk group is limited. It was assumed that the reaction would be different if warning labels would be used on everyday food products such as milk, bread and meat.

Design of warning labels: The Keyhole signposting was brought up as a successful type of labelling on food. However, differences between warning labels and the Keyhole logo were pointed out: a warning is negative whereas the Keyhole is a positive label and a warning label is presented as text and the Keyhole as a logo. The recommendation from the stakeholders was that a logo would reach more consumers, and in addition it would be necessary to inform all Norwegian citizens about warning labels using different languages.

Conclusions

Norwegian consumers and food labelling in general

- Consumers generally positive to more labelling (increased transparency, accountability and consumer control).
- Mainly always check price and date on food products that they buy.
- Women, older age groups, those with higher education and those with dietary restrictions check more information.
- Do not read the labelling every time, usually buy food based on habits and reading of labels varies between types of food products. More often check information on processed foods compared to everyday staple foods.
- Read mainly labels in the store or both in the store and at home. Food labels useful shortcut in the grocery store.

Norwegian consumers' views, understandings and use of warning labels on food

- Very little knowledge and awareness about warning labels (except for certain established warnings).
- Ad hoc responses – not very clear opinions, even not among stakeholders.
- Focus on needs of particularly vulnerable groups (allergy, infants, children).
- Scepticism about warning labels on food products consumed by larger groups on an everyday basis.
- Little differentiation between mandatory and voluntary warnings (allergy warnings vs. the mandatory warnings studied in this project).

Design of warning labels on food from the point of view of consumers

- Limited comments and suggestions.
- Recommended to use common and informative words – expert expressions (for example, plant sterols and beta carotene) are not understood.
- Using text is demanding – best suited for active consumers with good understanding of Norwegian. Stakeholders recommend a logo. Using logos, color coding and diagrams makes comparison of products easier than having only text and numbers.
- Important to also consider the place on packaging and to provide additional information on Internet.

Warning labels on food – an appropriate measure for food safety?

- Caution is needed in interpreting the results of this study – no in-depth analyses.
- Consumers seem to have a positive general view of getting more information including warning labels on food, but awareness and knowledge of many of the current warning labels was very limited.
- Consumers do not view warning labels on food as a new type of regulation, which entails more responsibility to consumers, but an extension of what authorities already do.

- Consumer trust is based on authorities involved. Warning labels represent better transparency and accountability.
- Limited mobilisation among stakeholders around warning label on food – not seen as a politicized topic.
- In the future perhaps changes in the consumer role, with wishes to take a more active role.
- Motivation is needed. May work for special groups, like people with dietary restrictions or small children, general population more problematic
- Requires considerable additional information and education

Based on the current study it is not possible to conclude what views consumers have on the use of warning labels on food as a new type of regulation as an alternative measure to banning hazardous substances to food. Further in-depth studies among both consumers and stakeholders are necessary for being able to assess if warning labels may be appropriate measures for food safety from the point of view of consumers.

1 Introduction

Labelling and standards are policy options used for food safety. Today the majority of food is packaged and labelled and food labelling legislation (in Europe directive 2000/13/EC) mandates what has to be included on the label. Mandatory labelling covers, apart from food safety related issues, ingredients, identification (name, place), etc. The aim of food labelling is to protect consumers against misleading information and health hazards, and to help people make informed choices about the quality of their food. Product labelling includes also a range of voluntary labels and other types of information, some generic, others commercial and branded, designed for the whole food marketing system and used for marketing messages and product differentiation. When judging consumer responses and expectations, this variability of backgrounds and purposes must be taken into consideration.

Currently there is an increased focus on providing consumers with better food labelling. For example, a proposal on the provision of food information to consumers has been proposed and is undergoing political hearing in the European Union (http://ec.europa.eu/food/food/labellingnutrition/foodlabelling/proposed_legislation_en.htm). In order for information to be useful to consumers, the information needs to take into consideration what type of information consumers wish and the design has to be understandable, relevant and useful for consumers.

Warning labels on food products represent an increasingly important measure to protect the population against health hazards from intake of foods. **By warning labels is in this report meant mandatory messages on food products that have to be included on the package/label to inform the users of health hazards from intake of foods.** The use of warning labels can be an alternative to legislation restricting the inclusion of hazardous substances in food. For warning labels it is not sufficient that consumers are given the opportunity to check them, they must reach and be understood by those to whom they are directed. Conditions for efficient functioning of warning labels are that buyers and eaters of food recognise and understand the labels and see them as relevant for their own practices. Some warning labels are directed towards population groups at risk, such as people with diet related diseases, infants, small children, pregnant women, etc. In these cases, we may expect high attention and responsiveness in the target groups. Responses to warning labels addressing the population in general or larger population groups may be different, first of all reflecting general perceptions of food risks and how that applies to various categories of food (meat more risky than vegetables, processed food more than unprocessed). General reactions are likely also to be influenced by the levels of trust and who people trust (authorities, industry, alternative providers, NGOs, etc.).

The use of warning labels on different consumer products is well-known, including both private and public, mandatory and voluntary information. Mandatory warning labels have been used since the 1930s for keeping consumers aware and safe (http://www.ehow.com/about_4685455_warning-labels.html). For example, alcohol and tobacco have warning labels, warning labels on prescription and non-prescription drugs provide detailed information that helps consumers decide if they should or shouldn't take a medica-

tion, and chemical and electrical products have safety labels. Instructions for the use of household appliances include warnings on how to use the product safely. Such labels are widely applied and probably familiar to most people.

The regulation of food safety has traditionally relied less on warning labels. Food warning labels are not a widely used food safety measure in Norway, but we have seen some examples of that such labels may play a larger role in informing consumers in the future. Warning labels on food products may be used more extensively as an alternative to banning food products or ingredients and may give food authorities the possibility to communicate about risk when it is not seen as appropriate to ban sales. In addition, there are private and voluntary warning labels on food. So-called “may contain” labels aimed at those with allergies (for example, “this product may contain traces of nuts”) are used by manufacturers to protect themselves against product liability.

In this study we have selected to include the following six examples of mandatory warning labels among those that are currently used on food in Norway (in Norwegian):

- “Do not refreeze after defrosting”
(Bør ikke fryses på nytt etter opptining)
- “Not recommended for children under 3 years of age”
(Anbefales ikke for barn under 3 år)
- “Should not be given to infants under 12 months of age”
(Må ikke gis til spedbarn under 12 mnd)
- “Excessive consumption may induce laxative effects”
(Kan virke avførende ved stort inntak)
- “Contains liquorice – people suffering from hypertension should avoid excessive consumption”
(Inneholder lakris – personer som lider av høyt blodtrykk bør unngå for stort inntak)
- “Consumption of more than 3 g/day of added plant sterols should be avoided”
(Inntak av plantesteroler over 3 g per dag bør unngås)

In addition, we have included the following two examples of warnings that may come in the future:

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- Food supplements containing beta carotene are not recommended for heavy smokers (more than 20 cigarettes a day)
(Kosttilskudd med betakaroten anbefales ikke brukt av storrøykere (mer enn 20 sig. pr dag))

This report is an exploration of the expectations, understanding, and use of food warning labels in the Norwegian population, considering that wider use of warning labels is discussed in plans for new EU policies on food safety. We know little about if, when and how warning labels on food may be appropriate measures. To assess if it is an effective measure we need to also know more about how consumers view and use warning labels on food.

The objective of this study was to explore the following questions related to warning labels on food:

1. What are consumers' views, understandings and use of warning labels on food?
2. How should warning labels on food be designed to be effective?
3. Are warning labels on food an appropriate measure for food safety?

The report is structured as follows. To begin with, in chapter 2, findings from existing literature on food labelling, warning labels and trust and information on food risks are summarised as a background to the study. The next chapter, chapter 3, describes the methods and data collection processes. In chapter 4, the main findings from the web survey, focus groups and stakeholder meeting are presented. Chapter 5 addresses a discussion on warning labels on food related to the research questions. Concluding remarks are presented in chapter 6.

2 Background: Literature review

This review aims to explore existing literature surrounding warning labels on food and has three parts. First, we give a general overview of literature surrounding the understanding and use of food labelling among consumers. Second, we summarize the very limited literature on warning labels on food. Finally, we sum up some of the literature that focuses on trust and risk communication because successful information, including warning labels, is dependent on trust.

2.1 Consumers and food labelling

Revision of food labelling and focus on providing information for consumers to make healthy and informed dietary choices are current concerns. This is also reflected in an increasing literature on food labelling in recent years. Food labelling serves the aims to ensure fair competition among producers by standardisation of labelling to increase consumers' access to information, and reduce risks to individual consumer's safety and health. The literature on consumers and food labelling is largely based on applied research and focusing on the understanding and use of food labelling information by consumers (BEUC, 2005; Garrett, 2007; Grunert, 2002; Malam et al., 2009; O'Neill, 2004; Rowe, 2002; TemaNord 2001:501; Teisl et al., 1997; Wandel and Bugge, 1995; Wandel, 1997; Wang et al., 1995).

Earlier studies have documented that consumers are generally very positive to labelling and to getting more information (Grunert and Wills, 2007; Wandel and Bugge, 1995). Surveys both in Europe and other parts of the world have shown that consumers report that they in the grocery store mainly check price, date, brand name, quantity and ingredients (ANFZA, 2001; BEUC, 2005; Food Safety Authority of Ireland, 2009; Roos, 2007). Some studies have shown that consumers do not always read labels on products that they usually buy (Guthrie et al., 1995), and that it makes a difference if the food product is considered to be a staple or a treat (Malam et al., 2009). A recent Irish study (Food Safety Authority of Ireland, 2009) also showed that consumers are least likely to use food labels on everyday products and when buying food they consider "junk food". For the first category, these are familiar items bought repeatedly, probably making careful checking of contents and provenance unnecessary unless something changes. For the latter category, these maybe seem "unproper" anyway, i.e. people are aware that they are not very healthy but they buy them anyway. Moreover, treats are often seen as "exceptions" and therefore not very significant when it comes to health (Kjærnes and Døving, 2009). Consumers' frequency of checking expiration dates varies with the product category (Tsiros and Heilman, 2005). It has been concluded that many factors, including time and motivation, may influence reading of labels (Paterson et al., 2001; Klopp and MacDonald, 1981). A content analysis of mandatory and other information on food labels indicated that space allocated to commercial information is favoured (Stuart, 2010). This may be due to the variability of such labels, while generic labels are more stable and expected in an everyday context.

Many studies have also dealt with identifying the consumers who use food labels (Cowburn and Stockley, 2005; Garrett, 2007; Grunert and Wills, 2007; Roos, 2007; Wandel 1997). Norwegian surveys from 1994 (Wandel, 1997) and 2007 (Roos, 2007) show that women and those with higher levels of education tend to read food labels more often than others. Garrett (2007) summarises, based on earlier studies, that the use of nutrition labelling is more likely among female consumers, those who have a higher socio-economic status, higher educational level, greater interest in nutrition, more positive attitude to diet, and knowledge of the link between diet and disease.

Authors have pointed out that many consumers do not use or do not understand food labels and that there are few studies of actual use of labelling (Grunert and Wills, 2007; Rayner et al., 2001; Variyam and Cowley, 2005). Results from interviews with Norwegian consumers (Wandel, 1997) suggested that many consumers have difficulties when trying to understand the information on food labels. The terminology on the food labels appeared technical and very advanced to them. Some did not read labels and others focused on a relatively small part of the information or read when encountering new products. Nayga (1999) proposed that those individuals that place more importance on nutrition are more confident about the information contained in labels. A recent review of determinants of nutritional label use develops a framework for including several factors (Andreas, 2006). Andreas (2006) grouped factors affecting the use of on-pack nutrition labelling: individual characteristics (age, education, gender); situational, attitudinal and behavioural (time, working status, diet status, type of household); product class involvement (price); nutrition knowledge; motivation factors; and other factors.

Literature on consumer understanding and use of nutrition labelling suggests that although reported use of nutrition labels is high, actual use during food purchase may be much lower (Cowburn and Stockley, 2005; Malam et al., 2009). Most consumers seem to use nutrition labelling to avoid some nutrients (fat, sugar) and calories, and Cowburn and Stockley (2005) conclude that labelling may have a limited but relevant role in promoting healthy diets. Trijp et al. (1997) stress that labelling in itself is not sufficient and needs to be supported by promotional strategies aimed at establishing label awareness.

Voluntary simplified labelling, signposting, symbols and logos started appearing on food packages in the 1980s. In 1989, Sweden introduced a keyhole symbol for foods with low content of fat, sugar and salt and high content of dietary fibres. Surveys have conveyed that many consumers recognize and have knowledge about what the keyhole stands for (Larson and Lissner, 1996; Larson et al. 1999).

A similar keyhole symbol was implemented by the Norwegian authorities in 2009 (http://www.mattilsynet.no/mattilsynet/multimedia/archive/00053/Veileder_til_n_kkelh_534_42a.pdf). A survey among Norwegian consumers conducted before the implementation showed that consumers were in favour of simplified nutritional labelling and thought that making healthy choices would be easier if it was introduced. However, it was concluded that although consumers were mostly positive, they have not been very active requesting simplified nutrition labelling and it was still unclear whether they would really use the symbol or whether it would make it easier to make choices (Roos, 2007; Roos, 2009). A smaller qualitative study among immigrants in Norway showed that the idea of keyhole labelling was liked and that health was relevant for food choice but based on observations in a grocery store few used food labelling (Roos and Rysst, 2009). A qualitative study in the UK and Australia also showed that consumers rarely used logos when shopping, and that shopping seemed to be based on routines (Rayner et al., 2001). Routines mean repeated purchase of the same items. That means that not only is the taste and use familiar, we must also assume that so is the packaging and the information it contains. Labelling will have a value and a purpose even in these cases, because at some point in the far or near past the item was introduced and the information was new. In particular, labels demonstrate predictability, accountability and

transparency. In many cases, the functioning of labelling is satisfactory if only some consumers use them or sometimes it is even enough just to provide the possibility to do so.

Studies of consumer preferences of formats of labels have shown that consumers prefer labels to be graphic and coloured (symbols) rather than numbers and tables (Andreas, 2006; Garrett, 2007). Recent research on comprehension and use of nutrition signpost labelling in the UK included internal and external factors (Malam et al., 2009).

In sum, earlier literature on food labelling has mainly approached food labelling as information. Studies report that consumers have positive views of labelling and describe who uses food labelling, but we know less about use in practice. Focus on practices would help make visible the complexity of both individual and socio-cultural factors (for example, norms, routines, household, time, price, knowledge, motivations, preferences, information and trust) involved in consumers' negotiations related to selecting foods in the grocery store. Future research should include more theoretical research on food label use. There is also a recognised need for more research on food labelling not only as consumer information but also on the other roles labelling has for consumers in other areas, such as trust, safety regulation and product development (Caswell and Padberg, 1992).

2.2 Warning labels on food

Food safety messages are communicated to consumers by mass media, web-alerts, certification schemes and warnings on food labels. The literature on warning labels on food is very limited and mainly focusing on voluntary labelling of allergens and consumer preferences. Liability aspects have also been a topic of research (Pape, 2009).

Consumer concerns about allergy have increased and many food labels carry the voluntary warning "may contain" to warn of unintentional presence of allergenic foodstuff. A qualitative study on consumers and nut allergy labelling concluded that nut trace contamination warnings have not worked well (Food Standards Agency, 2002). The problems mentioned were that there were many different phrases in use and the warnings were not easily found on the package. It was believed that the warnings mainly are used by producers to protect themselves against product liability. Participants described different strategies for coping with risk: total avoidance, occasional lapses, or calculated risk taking. The total avoiders would prefer producers to take the responsibility for deciding what products are suitable for somebody with a nut allergy. However, the majority of participants were calculated risk takers and their priority was standardisation of warnings. When shopping food many had a basic repertoire of food products that they didn't have to check, but they expressed confusion when products, which had been safe, carried nut trace contamination warnings. Also a study on Dutch and Greek food-allergic consumers' labelling preferences have concluded that consumers were not satisfied with current labelling and that they reported problems with readability and visibility of the information (Cornelisse-Vermaat et al., 2007).

In the US worries have been voiced that warning labels may lose credibility and people ignore warning labels if they are used too much. However, there is very limited research on other warning labels than the allergy warnings. Research on seafood warning on advertisement for tuna, which was tested because methylmercury may pose a health risk for some consumer groups, showed that attention to the warning was short-lived (Hughner et al., 2009). In a study of responsibility and the food industry in the US, many survey respondents (70%) agreed with the statement "Unhealthy products should have warning labels to indicate that they are unhealthy" (Kwan, 2009).

New technologies present the possibility to add new active substances to food. Some of these may present potential problems for certain population groups. It is first of all within this context that the increased use of warning labels is being discussed. We have not been able to identify studies which have addressed these topics empirically.

2.3 Trust and information on food risks

Numerous studies over the last couple of decades have demonstrated how trust plays a significant role for how consumers interact with various actors in the food system and how they perceive and make use of information from these actors. Several theoretical and disciplinary approaches have been applied to understand popular responses to gradual changes in the food system as well as major events. Trust/distrust has also appeared in debates on the role of consumers in the extensive re-regulation of food that has taken place in recent years. Transparency, independence and accountability have here been identified as key conditions for producing – and re-establishing – trust in food. One important element of this re-regulation has been the increasing emphasis on consumers' own conscious choices, choices that are to become more reflexive and responsible by providing education and information on food and the issues that need consideration (from nutrition, safety and price to provenance, environmental hazards and animal welfare).

This focus on consumer choice is part of a general trend in food policies to rely less on legislation, a typical 'command-and-control' type of policy, and more on voluntary and collaborative – 'at a distance' – measures. Such measures are seen to be more efficient and flexible, considering the complex and highly dynamic character of contemporary food provisioning systems. From a consumer point of view, these new policies are meant to produce more freedom in the forms of a wider and more dynamic selection of food products and qualities to choose from as well as the opportunity to take action regarding a wide range of food issues. More critically, many have argued that these new policies emerge because of pressure from the food industry, demanding less regulation and wider possibilities for product development and marketing. The strongly contested nature of ongoing regulatory processes must be taken into consideration when discussing increasing use of warning labels on food. While food warning labels have so far not aroused much public debate, NGO engagement, etc., there is something to be learnt from the complex responses to debates on genetically modified food, functional foods, health claims, etc. as well as studies of the production of trust and distrust in food.

Public responses in terms of trust/distrust in relation to food warning labels are likely to be influenced by questions raised in the purchasing situation as well as by more general political discourses on the use of warning labels as well as their reliability. We, therefore, have to explore the role of trust from two perspectives; how people trust or distrust various types of information on food and food labels in particular, on the one hand, and food labels used as a measure to enhance trust, on the other.

Media debates being at the focus of attention, it has been assumed that more and better information is a key. Studies have shown that successful information depends on trust in its sources (Breakwell, 2000; Frewer et al., 1999). Numerous academic contributions have attempted to capture current public discomfort and unrest with regard to food. In many cases, the issue of trust in food has been linked to perceptions of risks. This is connected to reactions to media scares and to communication between experts and the public. Food experts and policymakers often judge consumer unease to be excessive, unwarranted and irrational. When people's reactions are not in accordance with experts' evaluations of risks, the main reason is attributed to lay ignorance. What has been called the 'knowledge deficit model' may be characterised as a truly technocratic approach. Consumers' distrust is to be avoided through ad-

ministrative and technological means, with a particular focus on (one-way) information programmes (Scholderer and Frewer, 2003).

Departing from earlier statements that “objective” information about scientifically assessed risks is misinterpreted by ordinary people a large body of literature has emerged on people’s perceptions of risks, looking for general mechanisms underlying consumer attitudes (e.g. Slovic, 1999; Fife-Schaw and Rowe, 1996; Sparks and Shepherd, 1994). The perception of risks is found to be multidimensional (including even several other factors than those related to human health), it varies with the degree of personal control, there is a complex evaluation of risks vs. benefits, and the perception varies according to specific hazards (Hansen et al., 2003).

Most aspects of food risks cannot be identified or controlled by consumers at the product level (“credence characteristics”). In communication about risks, trustworthiness therefore emerges as an important factor (“source credibility”), understood as “*whether an audience perceives a speaker to be making assertions that she or he considers true or valid*” (Hansen et al. 2003). As a common denominator, trust is involved in individual decision-making about risks, where assessments and decisions are seen as cognitive processes.

From this perspective, appropriate information and communication is the key to build and retain trust. But trustworthiness is also a condition for successful communication. In trusting food, people trust or distrust someone, not something (Kjærnes, 1999). This is in line with Tilly’s more general argument that “*Trust consists of placing valued outcomes at risk to others’ malfeasance. Trust relationships include those in which people regularly take such risks.*” (Tilly, 2004) The conditions for trust/distrust in food will then depend on the character and functioning of a complexity of interrelations - in the market, in public regulations and in civil society and public discourse – and on the interdependency between these arenas (Kjærnes et al., 2007). People distinguish clearly between the roles of actors in different arenas. At the same time, food provisioning systems, regulations, knowledge, etc. vary significantly, not only between regions and countries, but also between various food items (in terms of the organisation of production and distribution, distribution of power, technology, performance, etc.). We have expectations of proper conduct, with concerns for fairness, cultural values, animal welfare, environmental sustainability, etc. as well as those referring to quality, taste and health.

Seligman has suggested that a basic form of trust is simple reliance on the ordered workings of existing institutional arrangements (Seligman, 1997). A basic feature of consumer trust will then be that the supplier will live up to shared norms and expectations associated with the various issues linked to food. It is crucial to notice that such norms and expectations cannot be understood as individual preferences and value hierarchies. These are genuinely social constructs, embedded in institutionalised practices. Reputation and experience, based on the iteration of ordinary activities, becomes the basis for new or enforced expectations and hence for confidence in the system of interacting activities. Predictability is therefore important. Distrust may refer directly to experiences or reputation of poor performance, i.e. indications that expectations are not met. The food sector has extensive institutional arrangements aiming to ensure good performance, like quality assurance and traceability schemes. But this can hardly relieve the basic uncertainty linked to a lack of power and control. Any market exchange between suppliers and consumers is characterised by asymmetries of power and information, but also by mutual dependency. There is always the possibility of misuse of power, both in terms of free-riders and a more general disregard of consumer concerns and interests.

The problem of showing “good intentions” and acceptable performance is particularly the point where other institutional actors are being involved, such as audit and inspection bodies, interest organisations, experts, and the media. We see that such actors are generally met with

higher expectations of openness and truth-telling, but also that even such institutions are questioned in these regards (Power, 1997; Shapiro, 1987).

Ongoing changes in the European food sector have features that may both strengthen and challenge the foundations of trust. Integration, management systems, and technological innovations can improve predictability and efficiency, thus supplying foods with a lower price, a predictable quality, a wider selection, and lower risks for unintended safety hazards. But many of the changes imply shifts in power and distribution of responsibilities, such as integration of markets along the food chain, more concentrated ownership structures, global sourcing, etc. The number and types of economic agents involved in interdependent exchanges is large and changing, including different types of retail outlet, food processors (branded and supermarket own-label), distributors, logistics, packaging, marketing, seed manufacture, farmers, agricultural services, technology experts, auditors, marketing consultants, and so on (Harvey, 2002; Lyon, 1998; Busch, 2000). The complexity of technologies and provisioning systems has also increased the asymmetry of information immensely. From a consumer perspective, these changes may cast doubt on whether they will actually benefit from increased economic efficiency, whether the actors take due consideration of consumers' interests with regard to uncertain and controversial safety hazards or quality claims, and how profitability concerns are balanced with concerns for consumers' health and nutritional status. And what types of quality considerations are made in high-tech food processing? Current widespread scepticism towards ongoing changes in the food system is easily understood within such frames. Warning labels as a regulatory device representing an alternative to legislative protection of consumers may be viewed critically as a way to give consumers more responsibility and also the possibility of higher risks, while giving corporate actors the possibility of higher profits and reduced liability.

However, these political opinions that may or may not be reflected in everyday practices. The habitual, tacit character of everyday practices, gives a special role of trust. Referring to Bourdieu, Misztal has characterised one form or aspect of trust as habitus: "*Trust as habitus is a protective mechanism relying on everyday routines, stable reputations and tacit memories, which together push out of modern life fear and uncertainty as well as moral problems.*" (Misztal, 1995:102). It is important to recognise the role of trust in facilitating routinized practices as a way of handling uncertainty, and, at the same time, routinization of daily life as an important characteristic or mechanism for establishing trust. Within this context, trust can be understood as embedded in, and also expressed through, the tacit, taken for granted continuation of our daily routines (Lagerspetz 1998). This is not necessarily "blind trust" – trust that is unfounded, because trust is typically being confirmed by experiences and the normative and institutional framing of the practices. Trust therefore includes both particular and conditional dimensions and unconditional, systemic dimensions (Cvetkovitch and Löfstedt, 1999:175).

Trust is not merely a self-regulatory device of the social system, nor can it be reduced to a "public good" to be consciously engineered. Variations in institutionalisation processes in relation to trust should be related to strong cultural and normative aspects as well as to specific organisational solutions (Mischler and Rose, 2001; Rothstein, 2000). These will develop in complex and path dependent ways, the outcomes not only forming distinct social and relational references for trust in food, but also providing differing abilities to produce consensus and generalised trust and to handle re-emerging problematic events and conflicts. Recognising emerging distrust through particular forms of institutionalisation can form an important basis for generalised, but at the same time dynamic, forms of consumer trust and thus be productive.

These functions or dynamics of trust may be relevant in several ways. Warning labels may provoke reflections on trust in terms of unwanted risk taking, producing political reactions or individual anxiety, depending on whether there is an attentive public discourse and political

mobilisation. In that way, warning labels may increase distrust. But warning labels may also have the opposite effect. Generally, we know that information given on food packaging is much appreciated. In that regard, warning labels may be seen as providing better transparency and also the possibility for buyers of food to control what they are eating. Yet, as a third point, warning labels can only function if people trust them. That means that the labels must be based on sound and transparent knowledge and open quality assurance systems, generally to be accompanied by some kind of 3rd party auditing.

3 Methods

The study on warning labels on food from the point of view of Norwegian consumers is based on both quantitative and qualitative data. This chapter describes the methods and data collection processes used for the quantitative web survey and the qualitative focus groups and stakeholder meeting.

3.1 Web survey

To investigate consumers' views, understanding and use of warning labels on food and their perceptions of food safety, trust and responsibility, a web survey was carried out among Norwegian consumers. Based on a tender Norstat was selected for the job. The nationwide web survey was conducted in December 2009 by recruiting respondents by sending e-mails to members in Norstat's internet panel, which currently has approximately 80 000 members.

A questionnaire with 18 questions was developed. To make sure that the questionnaire would work in practice, it was pilot tested on 8 persons. The final questionnaire included the following main themes: use of food labelling, knowledge of warning labels on food, and statements on food, food production, warning labels on food and trust. One of the warning label questions was if the respondent had seen these six different mandatory food warnings: "Do not refreeze after defrosting"; "Not recommended for children under 3 years of age"; "Should not be given to infants under 12 months of age"; "Excessive consumption may induce laxative effects"; "Contains liquorice – people suffering from hypertension should avoid excessive consumption" and "Consumption of more than 3 g/day of added plant sterols should be avoided". In addition to these, two other warnings that are discussed were also included: "Name or E number of the colour(s): may have an adverse effect on activity and attention in children" and "Food supplements containing beta carotene are not recommended for heavy smokers (more than 20 cigarettes a day)". Related to trust a question about whether different actors would tell the truth or give misleading information, which has been used in a Pan-European survey (Kjærnes et al., 2008), was included. Questions related to background (gender, age, education, health etc.) were also included. Appendix 1 presents the web survey questionnaire in Norwegian.

The total sample consists of 1001 respondents aged 15-87 years (Table 3-1). The response rate was 35%, which can be considered acceptable for this type of survey. Results have been adjusted for age, gender and geographical region to be nationally representative. The proportion of those with higher education (university and university college) is higher (51%) than the national average (27% according to Statistics Norway, <http://www.ssb.no/>). The share of one-person households, singles, in this study corresponds with the national average (18%, <http://www.ssb.no/>).

Table 3-1 Background variables. Adjusted for age, gender and geographical region. Percent (N=1001)

Variable		
Gender	Women	50%
	Men	50%
Age	Under 30 yrs	24%
	30-39 yrs	18%
	40-49 yrs	18%
	50+ yrs	41%
Geographical region	Northern Norway	10%
	Middle Norway	14%
	Western Norway	20%
	Eastern Southern Norway	35%
	Western Southern Norway	9%
	Oslo	12%
Urban/rural	Oslo	12%
	City (more than 50 000 inhabitants)	25%
	Town (5 000 – 50.000 inhabitants)	30%
	Small town, village	17%
	Rural district	15%
Education	University and university college	51%
	High school or less	49%
Household	Single	18%
	Single with children	4%
	Couple	34%
	Couple with children	32%
	Other (with parents, friends)	13%
Income	Under 300 000 NOK	12%
	300 000 – 499 000 NOK	28%
	500 000 – 699 000 NOK	20%
	700 000 + NOK	31%
	Not reported	9%
Health	Excellent	14 %
	Very good	32 %
	Good	36 %
	Medium	14 %
	Bad, varied	5 %
Dietary restrictions (Possible to respond yes on several options)	No	32 %
	Yes, health	33 %
	Yes, dieting	22 %
	Yes, allergy	18 %
	Yes, disease	16 %
	Yes, environment/sustainability	8 %
	Yes, small children	7 %
	Yes, other	4 %
Participation in food shopping	Almost all	42%
	More than half	16%
	About half	20%
	Less than half	13%
	Almost nothing	8%

Earlier surveys have shown that gender, education and interest in nutrition are background variables usually related to use of food labelling (Garrett, 2007; Wandel, 1997; Roos, 1997), and, therefore, we have selected to focus on the following background variables in the statistical analyses: gender, age groups, education and dietary restrictions.

The option “don’t know” was included in most of the questions. The proportion varied in general from 0 to 5%, and in these we have recoded “don’t know” responses as missing values. However, in some questions, including those related to warning labels on food, the proportion was higher and this has been taken into account in the analyses. In most of the basic frequency figures we have included the “don’t know” to show how high the proportion is.

3.2 Focus groups

Focus groups were included in the study to get information on consumers’ understanding of information and warning labels on food especially in everyday practice, dilemmas and views on responsibility. The interview guide was developed on the basis of the observations that we made in the web survey.

In January 2010, two focus group interviews were conducted in Oslo. The focus groups were chosen by a professional recruiter, Norstat, using a recruitment questionnaire. The groups were chosen to represent equally two segments of the population: 1) people who have dietary restrictions; and 2) parents with small children (both mothers and fathers, division: mothers 75% and fathers 25%). Ten participants were recruited to each group.

The focus group discussions took place at SIFO’s meeting room and had two facilitators. A guide with the main themes was used. The discussion started with asking what the participants read when they see a new food product in the shop. The discussion then moved on to discuss views and use of food labelling and information on food. The main theme of the discussion was warning labels on food and responsibility. The focus group sessions both lasted 2 hours and were tape recorded. Participants were provided with an incentive of €60 to participate.

The two focus groups (N= 6 and N=7) included altogether 13 people (7 women and 6 men), aged 23 to 67 years (see Table 3-2). The groups also varied in occupation, education, income and living status. The majority participated in household food shopping and about half reported that they or a member of their household had some kind of dietary restriction (diabetes, allergy, etc.).

Table 3-2 Participants in focus groups

Gender	Age yrs	Occupation	Education	Income NOK	Living status	Food shopping	Dietary restrictions
GROUP 1							
Female	33	Health	Bachelor	250-350	Married	no	yes
Female	43	Public sector	High school	700-850	Single w/ child	yes	no
Female	63	Caretaker	High school	700-850	Single w/ child	yes	yes
Female	67	Retired	Bachelor	250-350	Single	yes	yes
Male	27	Child welfare	Bachelor	250-350	Single	yes	no
Male	62	Retired	High school	500-700	Lives with partner	no	yes
GROUP 2							
Female	31	Exec. officer	Master	700-850	Married	yes	yes
Female	35	IT	Bachelor	850-999	Married	yes	yes
Female	63	Retired IT	Bachelor	350-500	Married	yes	no
Male	23	Accountant	Bachelor	350-500	Single	yes	no
Male	33	IT	Bachelor	500-700	Married w/ child	no	no
Male	38	Industry	Master	1 mill +	Married w/ child	no	no
Male	54	Lawyer	Master	1 mill +	Married w/ child	yes	no

3.3 Stakeholder meeting

The stakeholder meeting was arranged after the web survey and focus groups had been conducted to be able to get feedback on the results from stakeholders. The aim was also to get wider input on consumer views on warning labelling from Non-Governmental Organisations (NGOs) representing relevant groups of consumers and the Consumer Council.

Written invitations to participate in a stakeholder meeting were sent by e-mail to eleven NGOs and the Norwegian Consumer Council. The NGOs were selected because they are interested in issues that are related to family, health and immigration.

Two representatives for NGOs working with health-related issues, one observer from the Norwegian Food Safety Authority and two researchers from SIFO participated in the stakeholder meeting. The representative from the Consumer Council had to cancel participation at the last minute because of illness, and was contacted later on the telephone for comments.

The stakeholder meeting, which took place at SIFO's meeting room, was arranged to facilitate a dialogue with the representatives from the organisations. The program for the meeting started with an introduction of the participants and a presentation of the main results from the web survey and focus groups. This was followed by a discussion about the findings and strengths and weaknesses of current food labelling and warning labels on food, design of warning labels on food and views on responsibility.

4 Main findings

In this chapter, the main findings from the three parts of the study: web survey, focus groups and stakeholder meeting, are presented. The main focus of this report is warning labels on food from the point of view of consumers, and, therefore, we present more detailed results on warning labels.

4.1 Web survey: Consumers view warning labels on food as useful information

The findings, which we present from the web survey, include first as background some results on food labelling in general before we move on to consumers' views, understanding and use of warning labels on food, and their perceptions of food safety, trust and responsibility.

4.1.1 Food labelling

The web survey included a few general questions on food labelling. In this part we present some selected information on what the respondents report that they check on both food products they usually buy and on food products they buy the first time, how often they read information on some selected food products, and where they read information on food products.

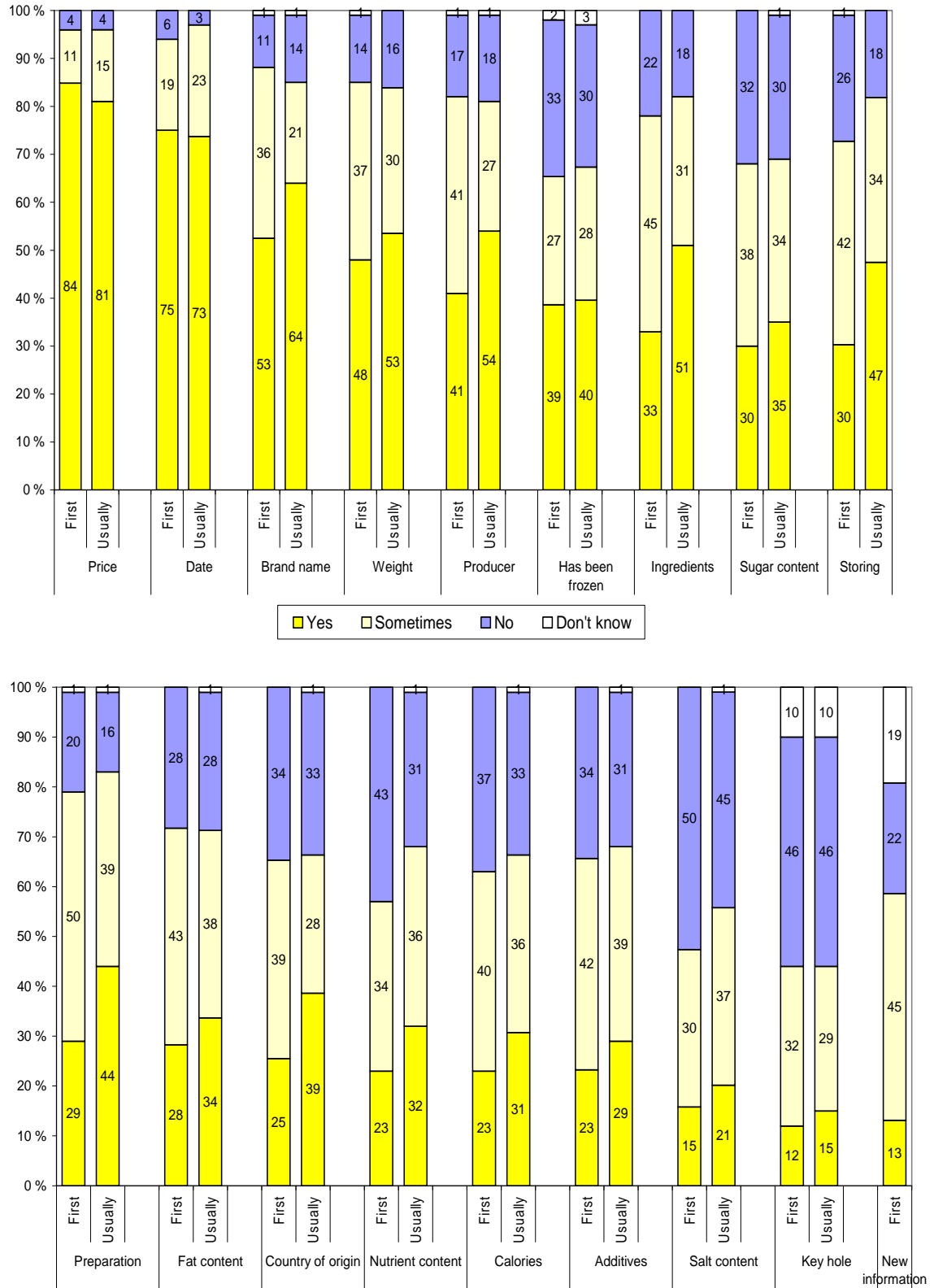


Figure 4-1: The proportion of consumers who report that they check the following information on food products they buy the first time (First) and food products they usually buy (Usually). Percent. Adjusted for age, gender and geographical region. (N=1001)

Figure 4-1 shows that when asked what information they check of the wide range of mandatory information on foods, both on food products they buy the first time and on foods that they usually buy, almost all consumers report “yes” on price and date. The proportions of those who responded “sometimes” were much smaller on price and date compared to the other information. This is maybe because price and date are easy to recognize and the price and date on foods is something consumers regularly check, whereas some of the other information consumers may read only once in a while. Brand name, weight and the name of the producer were also reported by many as information that they tend to always check. Health-related information, such as nutrient content, contents of sugar, fat and salt, calories and additives, are reported to be checked always only by one out of three or four consumers (approximately 20-40% of respondents). However, the proportions of consumers who reported that they check health-related information sometimes were sizeable (30-45% of respondents). The results also suggest that inspecting labels for new information is not a common habit; fewer reported that they always check new information and the recently introduced voluntary Keyhole signposting (simplified nutritional information) compared to other mandatory information on food packages.

Figure 4-1 illustrates that consumers do not seem to differentiate much between what information they check on food products that they usually buy and food products they buy the first time. There seems to be a tendency that more consumers report that they check brand name, producer and ingredients on food products that they usually buy compared to food products that they buy the first time. This finding that there is not much difference may reflect that when you ask consumers what they check in a very general way and not using concrete foods, consumers tend to respond in a general way and do not as readily differentiate between something they buy usually or something they buy the first time.

Earlier studies of food and nutrition labelling have concluded that women, those with higher educational level, those with a special interest in nutrition and health, and those who are on special diets more likely use labels (Garrett, 2007; Wandel, 1997). This study also suggests that women read labels more often than men (see Appendix 2: figures on the proportion of consumers who check various information according to gender, age, education, dietary restrictions and participation in food shopping). Women reported more often that they check the following information on food products they buy the first time: date, how to prepare the product, ingredients, nutrient content, calories, sugar content, and the Keyhole. Older age groups report that they check various information (date, weight, producer, country of origin, if it has been frozen, how to store the product, how to prepare the product, ingredients, sugar content, fat content, salt content, additives, the Keyhole) more often than younger age groups. Higher educational level was clearly related to checking various information. Those with higher educational level reported more often than those with lower educational level that they check the following information on foods that they buy the first time: date, country of origin, producer, weight, how to prepare the product, if it has been frozen, how to store the product, ingredients, nutrient content, calories, sugar content, salt content, fat content, and additives. Dietary restrictions were related to checking especially health-related information. Those who reported that they or someone in their household has a dietary restriction reported more often that they checked the following information on foods that they buy the first time: country of origin, weight, ingredients, nutrient content, calories, sugar content, salt content, fat content, additives and the Keyhole. Also those who reported that they do most of the food shopping reported more often than those that do less of the food shopping that they check various information (date, weight, if it has been frozen, ingredients, sugar content, storing, nutrient content and calories) when they buy a food product the first time.

What type of information they read on food packages and labels varied not only between different groups of respondents, the frequency of reading information also varied depending on what type of food it was.

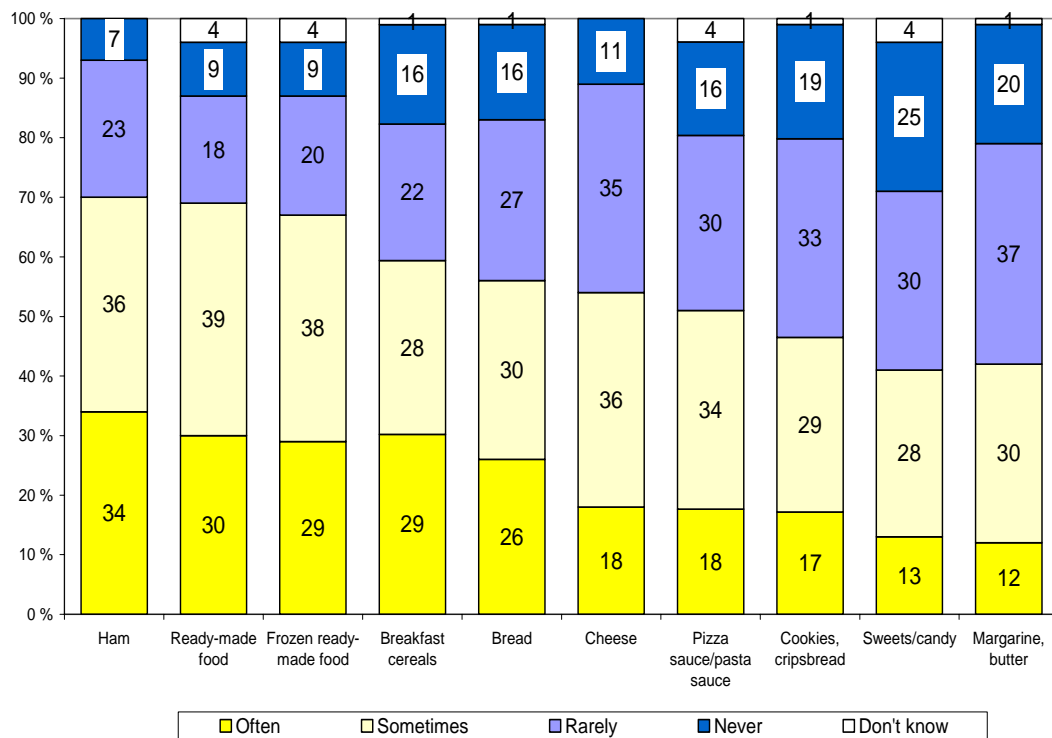


Figure 4-2: The frequency of reading information on selected food products. Percent. Adjusted for age, gender and geographical region. (N=1001)

Figure 4-2 shows that consumers reported to more often read information on processed food products such as ham, ready-made foods and breakfast cereals, whereas they did not report that they as often read information on everyday staples such as bread, cheese and butter. Food products that are commonly viewed as “unhealthy”, such as sweets/candy and cookies, also seemed to belong to foods that consumers do not read the information on as often as on foods that may be components of “healthy” meals.

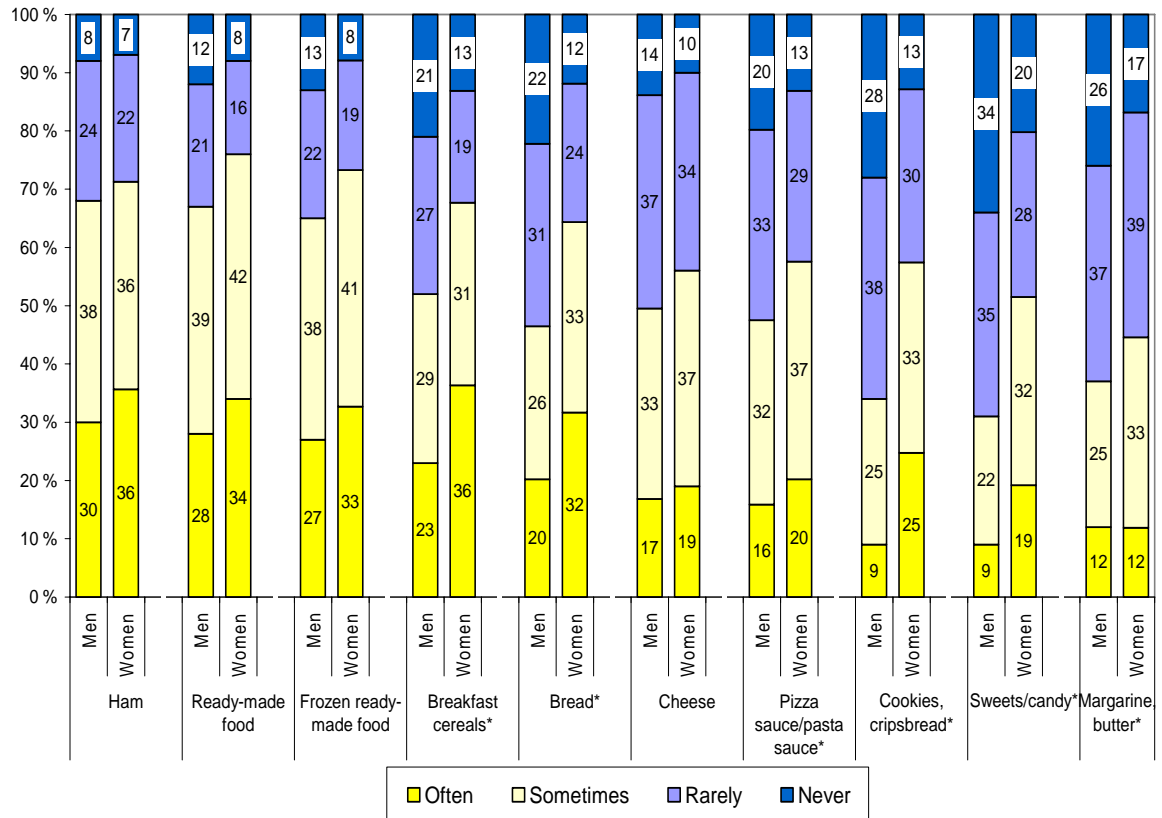


Figure 4-3: The frequency of reading information on selected food products among men and women. Percent. Adjusted for age, gender and geographical region. (N=1001). * Significant differences ($p < 0.001$)

We have selected to present results on the frequency of reading information on various food products based on gender because gender is a main background variable in relation to food and nutrition. Women tend to report that they read information on all the food products more frequently than men (Figure 4-3). Gender differences were significant for breakfast cereals, bread, cookies/crisp bread and sweets/candy for which foods women more often than men reported that they often read information on these products. A third of the men reported that they never read information on sweets/candy. Still, very few in all population groups report that they never consider food labels.

The survey included a question related to where consumers read information and, next, we will present some results showing if consumers read information in the shop or at home.

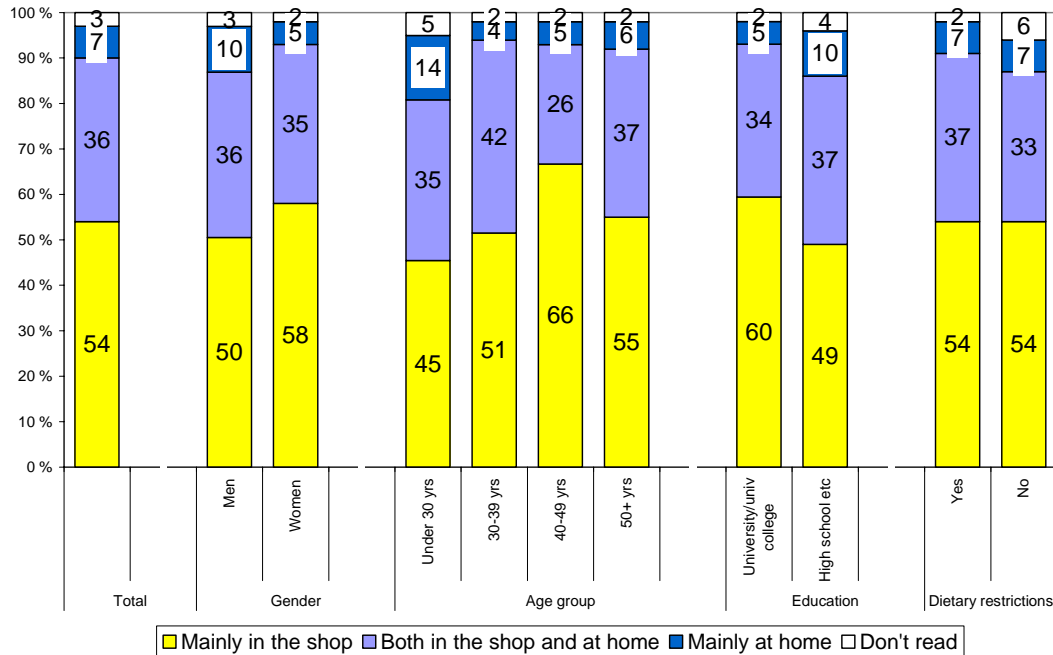


Figure 4-4: The proportions of consumers that read information mainly in the shop and at home. Percent. Adjusted for age, gender and geographical region. (N=1001). Differences between age and educational groups are significant (p<0.001)

Figure 4-4 suggests that consumers read labels mainly in the grocery store or both in the grocery store and at home. Only a few reported that they read information only at home. Among men, those under 30 years of age and those with lower levels of education it was more common to read information mainly at home.

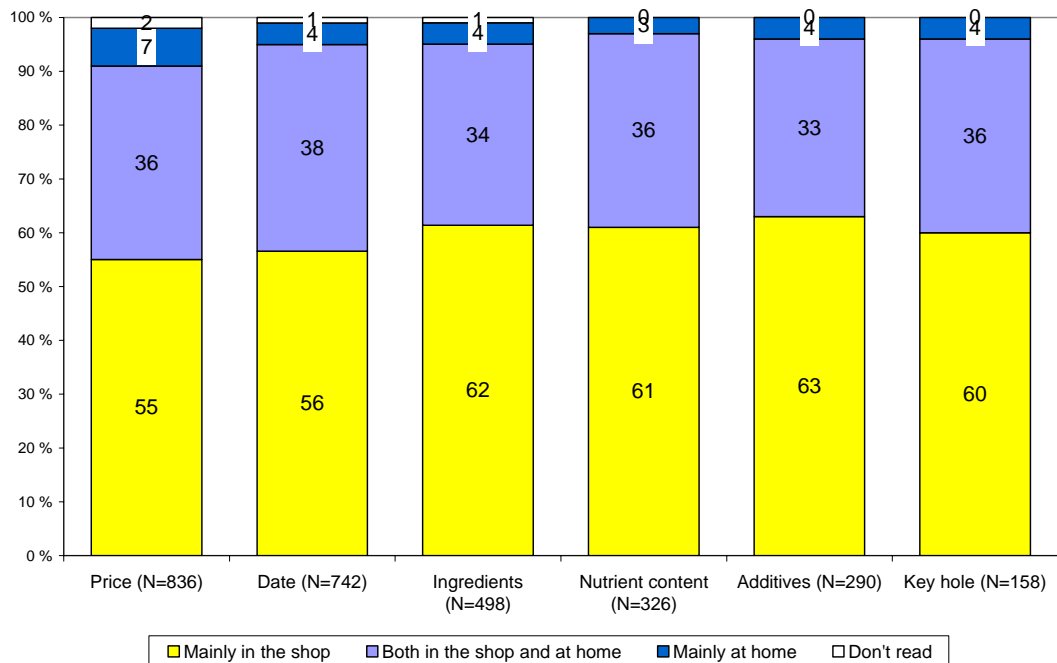


Figure 4-5: The proportions of consumers that read information mainly in the shop and at home among those who report that they check price (N=836), date (N=742), ingredients (N=498), nutrient content (N=326), additives (N=290) and the Keyhole (N=158) on food products they buy the first time. Percent. Adjusted for age, gender and geographical region.

Figure 4-5 shows that the place for reading does not vary much for different types of information, the majority of consumers report that they read information on price, date, ingredients, nutrient content, additives and the Keyhole in the grocery store.

4.1.2 Warning labels on food products

The six examples we have selected of current mandatory warning labels on food include six very different types of warnings, some are aimed at specific groups, such as infants and small children, whereas some have to do with limiting the amount of intake or giving advice on handling of foods. To get an understanding of how familiar Norwegian consumers are with the different types of warnings they were asked to report if they have seen the six mandatory and two suggested warnings on food products.

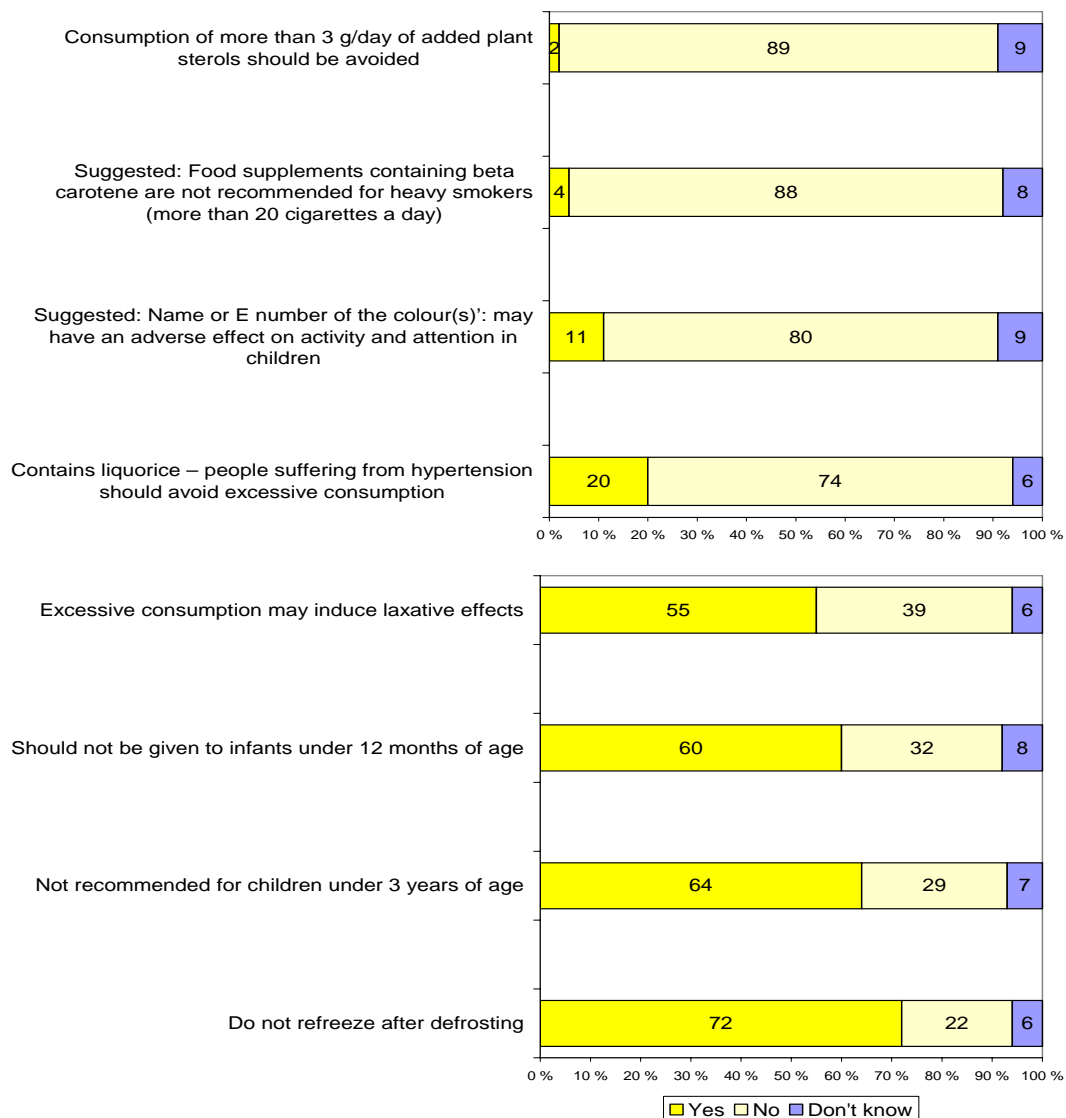


Figure 4-6: Proportion of consumers who report that they have seen the following existing and suggested warnings on food products. Percent. Adjusted for age, gender and geographical region. (N=1001)

There was a clear difference in the familiarity of the different warnings on food to consumers (Figure 4-6). Almost two thirds of the respondents reported that they had seen the warning: “Do not refreeze after defrosting”. Also, the two warnings related to small children and infants were familiar to more than half of the respondents. However, the more specific warnings (the ones associated with liquorice and plant sterols) seem to only have been seen by a limited number of the respondents. Interestingly a few even reported that they had seen the two suggested warnings that are not yet in use (the ones related to colour and dietary supplements). This over-reporting and also the fact that the proportion of those who responded “don’t know” was 6-9% may suggest that warnings on food are not a very well-known type of information, and maybe not always clearly distinguished from other information sources that consumers may have on foods. Yet, the large and consistent differences in familiarity with the different warnings presented indicate that the responses are not given at random, only reflecting the generally positive attitudes towards food labels. Some of these warnings are well-known to a majority of respondents, others are generally hardly known at all.

Next we will take a closer look at the consumers that reported to have seen the six mandatory warnings on food according to gender, age, education and dietary restrictions in household (Figures 4-7 to 4-11).

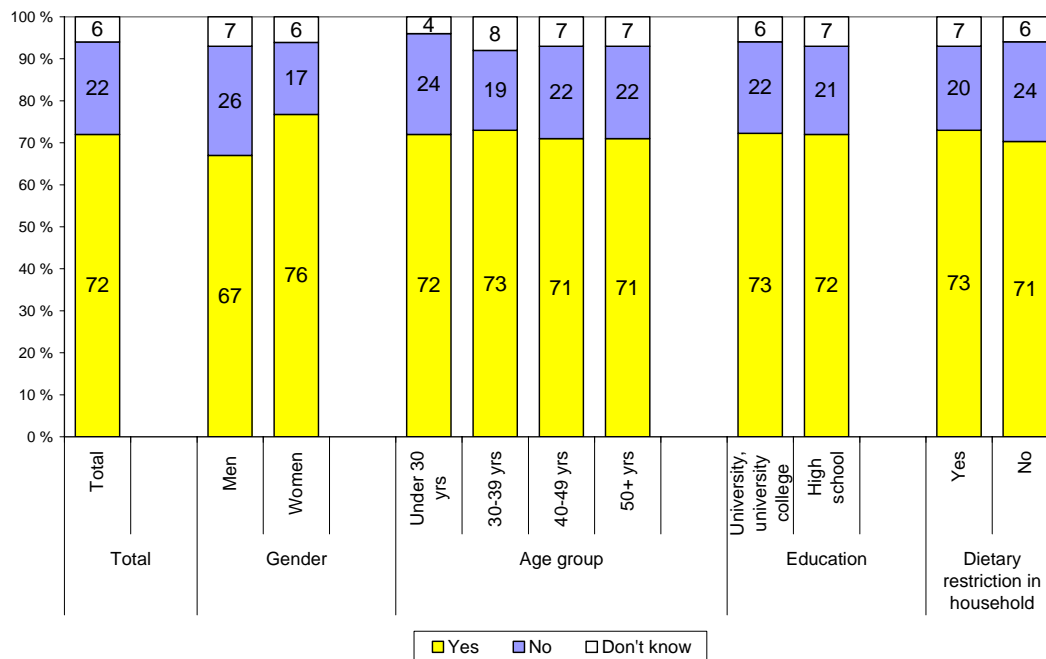


Figure 4-7: Proportion of consumers who report that they have seen the warning “Do not refreeze after defrosting”. Percent. Adjusted for age, gender and geographical region. (N=1001). Difference between gender groups is significant ($p < 0.001$)

Figure 4-7 illustrates that clear majorities among all the studied population groups report that they have seen the warning “Do not refreeze after defrosting”. The variations based on gender, age, education and dietary restriction are not big.

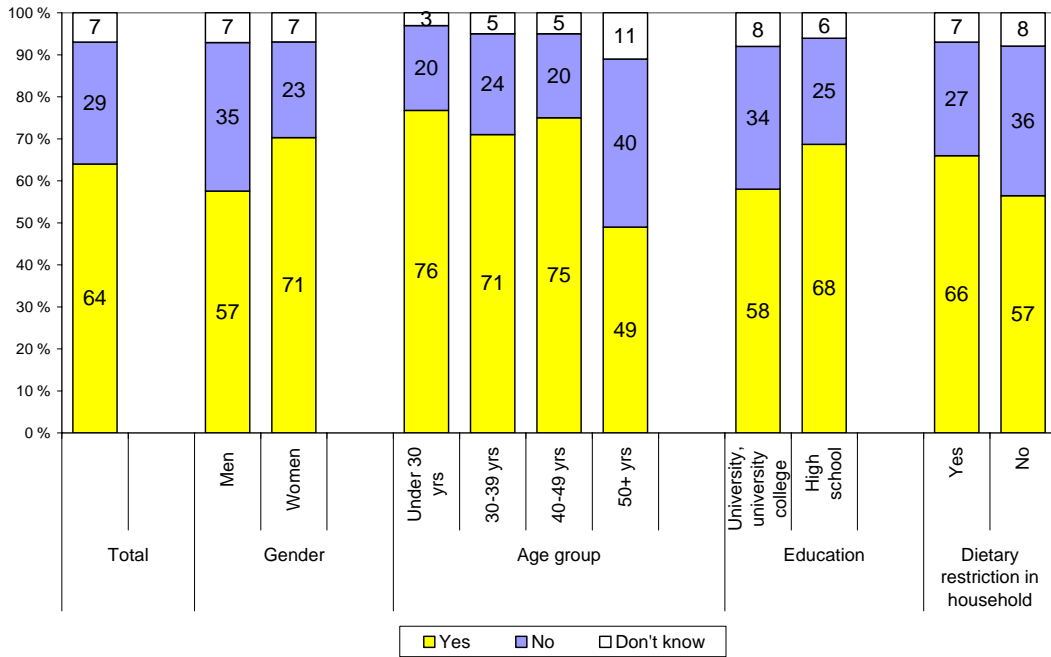


Figure 4-8: Proportion of consumers who report that they have seen the warning “Not recommended for children under 3 years of age”. Percent. Adjusted for age, gender and geographical region. (N=1001). Differences between gender, educational and age groups are significant (p<0.001)

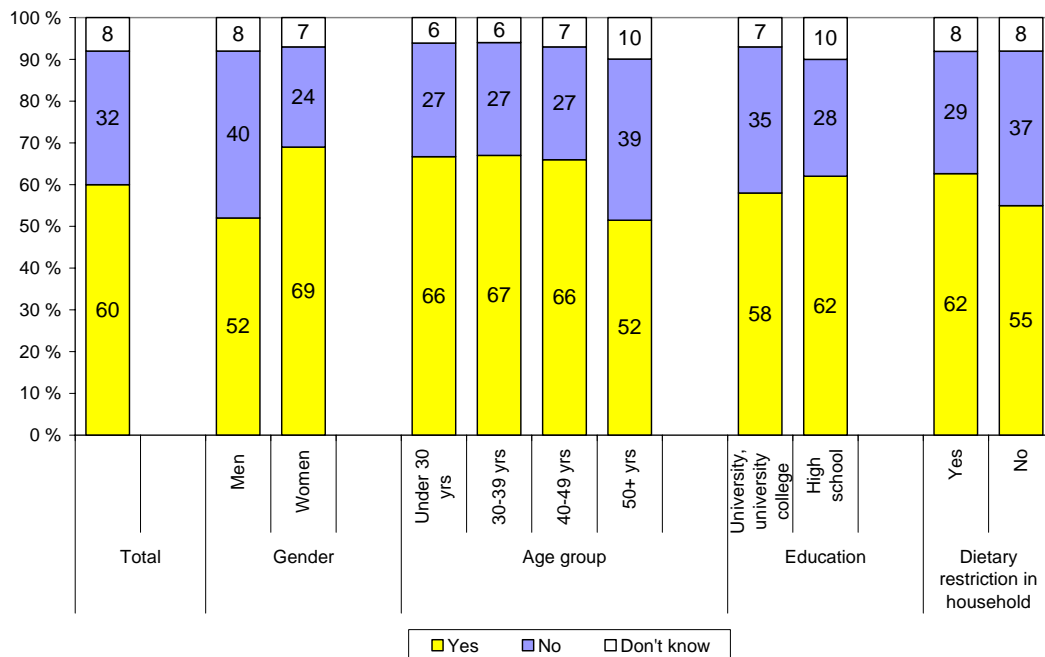


Figure 4-9: Proportion of consumers who report that they have seen the warning “Should not be given to infants under 12 months of age”. Percent. Adjusted for age, gender and geographical region. (N=1001). Difference between gender groups is significant (p<0.001)

Figures 4-8 and 4-9 also indicate widespread familiarity with these warnings related to small children and infants among all groups. But there seems to be considerably more variation in these two warnings. Women reported to have seen the two warnings associated with children more often than men. The oldest age groups, who probably don't have small children in the household, had not seen the warnings linked to children as often as the other age groups. It is

logical that the first warning, relevant to everybody, is more uniformly known than these two warnings addressing particular groups and life phases.

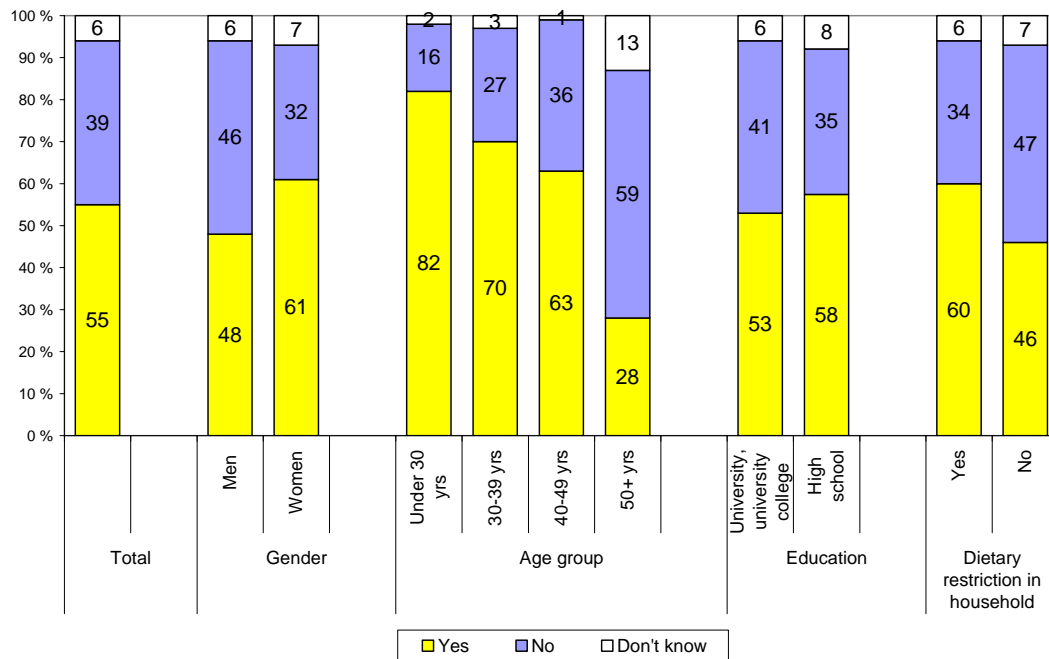


Figure 4-10: Proportion of consumers who report that they have seen the warning “Excessive consumption may induce laxative effects”. Percent. Adjusted for age, gender and geographical region. (N=1001) Differences between gender, age and dietary restriction groups are significant ($p < 0.001$)

For the statement on laxative effects we observe even larger variation, from nearly universal familiarity, especially among the youngest, to wide spread ignorance, especially among the oldest age groups. We don't know whether this reflects different consumption patterns. There seemed to be a tendency on all the warnings that those with dietary restrictions in the household reported more often that they had seen the warnings than those who had no dietary restrictions in the household. However, the difference was statistically significant only for the warning “Excessive consumption may induce laxative effects” (Figure 4-10).

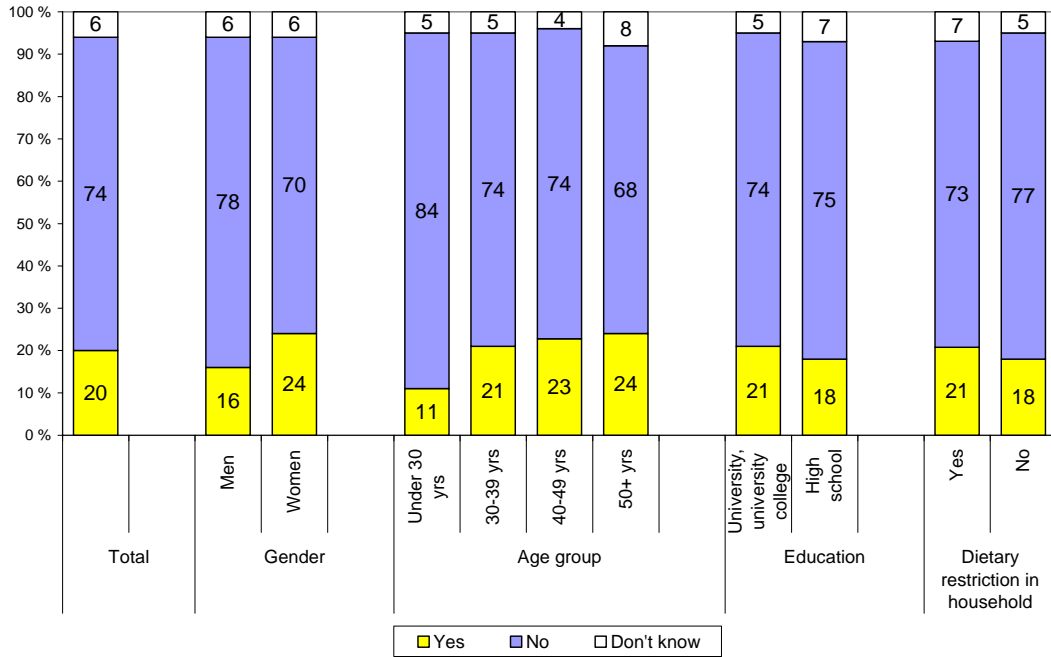


Figure 4-11: Proportion of consumers who report that they have seen the warning “Contains liquorice – people suffering from hypertension should avoid excessive consumption”. Percent. Adjusted for age, gender and geographical region. (N=1001)

The next warnings seem to be largely unfamiliar to Norwegian (Figures 4-11 and 4-12). Not very many consumers had seen the warning related to liquorice and high blood pressure (Figure 4-11). This may be due to the specificity of the warning, relevant only for products containing liquorice and only for people with high blood pressure. The challenge of this highly targeted purpose is to reach those at risk. The survey cannot tell us whether that is the case.

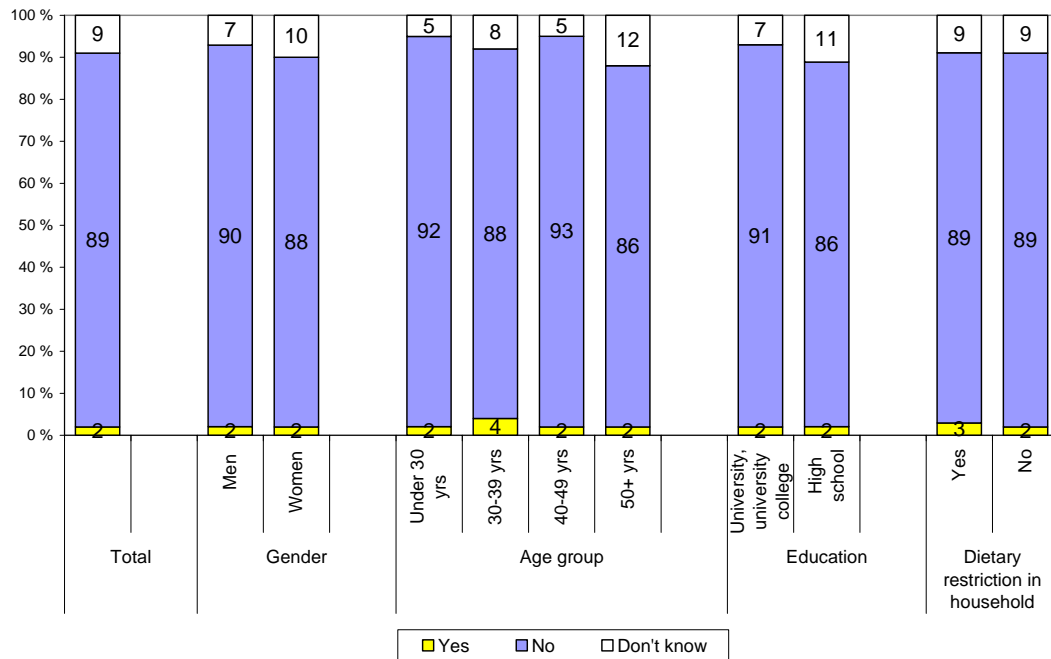


Figure 4-12: Proportion of consumers who report that they have seen the warning “Consumption of more than 3 g/day of added plant sterols should be avoided”. Percent. Adjusted for age, gender and geographical region. (N=1001)

The warning “Consumption of more than 3 g/day of added plant sterols should be avoided”, which is currently found on only one special margarine in Norway that includes plant sterols, was not known and very few reported that they had seen the warning (Figure 4-12). Here, the purpose seems to be to reach everybody and the results indicate that this is largely unsuccessful.

Next, we will introduce what consumers thought about some statements related to warning labels, responsibility and regulation.

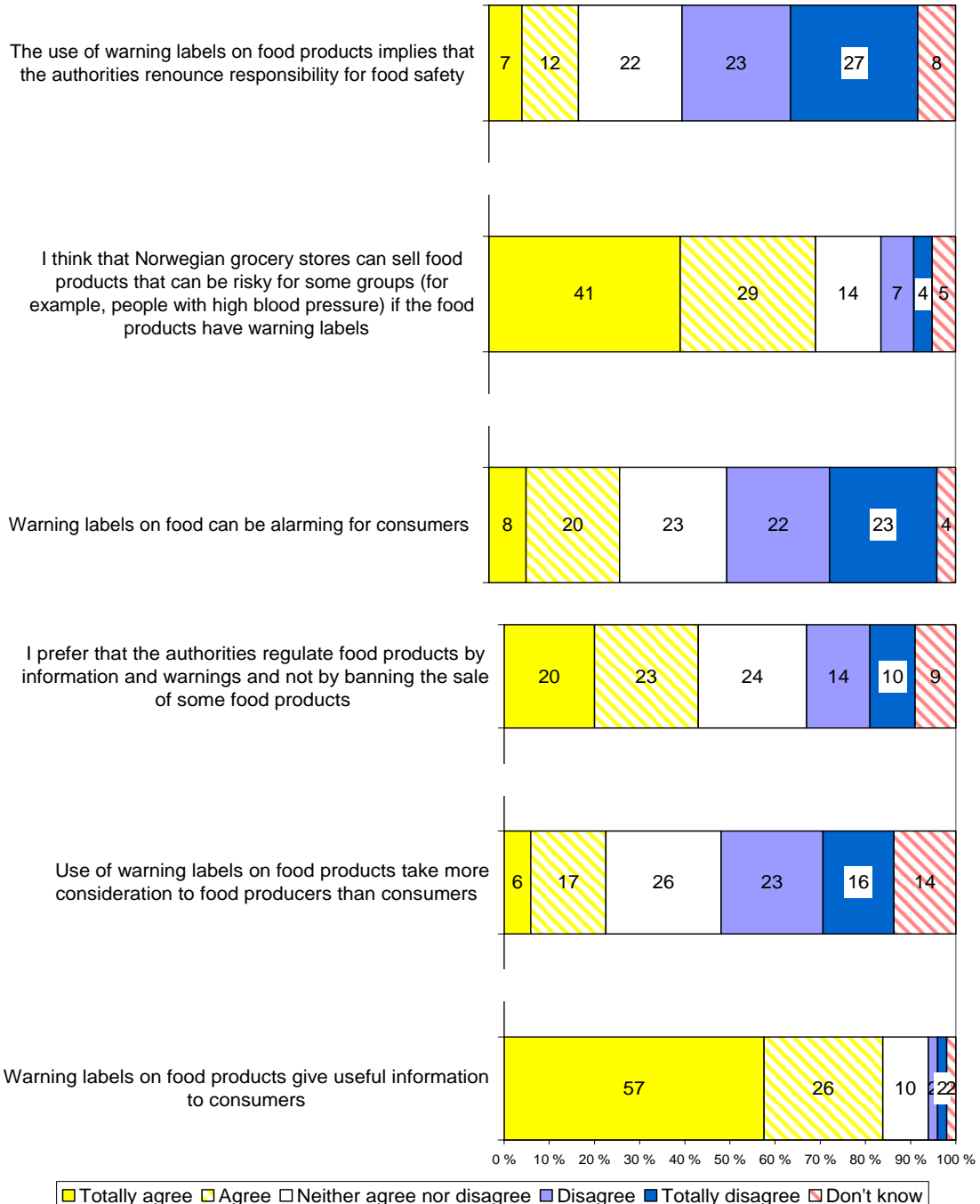


Figure 4-13: The proportion of consumers who reported that they agree or disagree with the following statements on warning labels on food. Percent. Adjusted for age, gender and geographical region. (N=1001)

On most of the statements in Figure 4-13 the responses are distributed fairly evenly on all response options. However, one exception was the statement “warning labels on food products give useful information to consumers” where the majority agreed with the statement and very few disagreed. More than half also agreed with the statement “I think that Norwegian grocery stores can sell products that can be risky for some groups (for example, people with high blood pressure) if the food products have warning labels”. Those with higher educational level disagreed more than those with lower educational level on this statement. The highly educated, reading food labels more, also seem most sceptical.

About half of the consumers did not agree that the use of warning labels on food products could imply that the authorities turn down their responsibility for food safety, nor that warning labels could be alarming to consumers. This may be interpreted as an indication that many respondents being positive to warning labels did not see a contradiction between protective legislation and the use of warning labels.

The high proportion of “don’t know” responses on some of the statements may reflect that some of the statements were difficult to grasp or that these were issues that consumers have not thought about nor have strong opinions about.

4.1.3 Responsibility and trust

Consumers’ views on responsibility and trust were recorded because information on these are relevant when planning information and regulation of food safety, including warning labels.

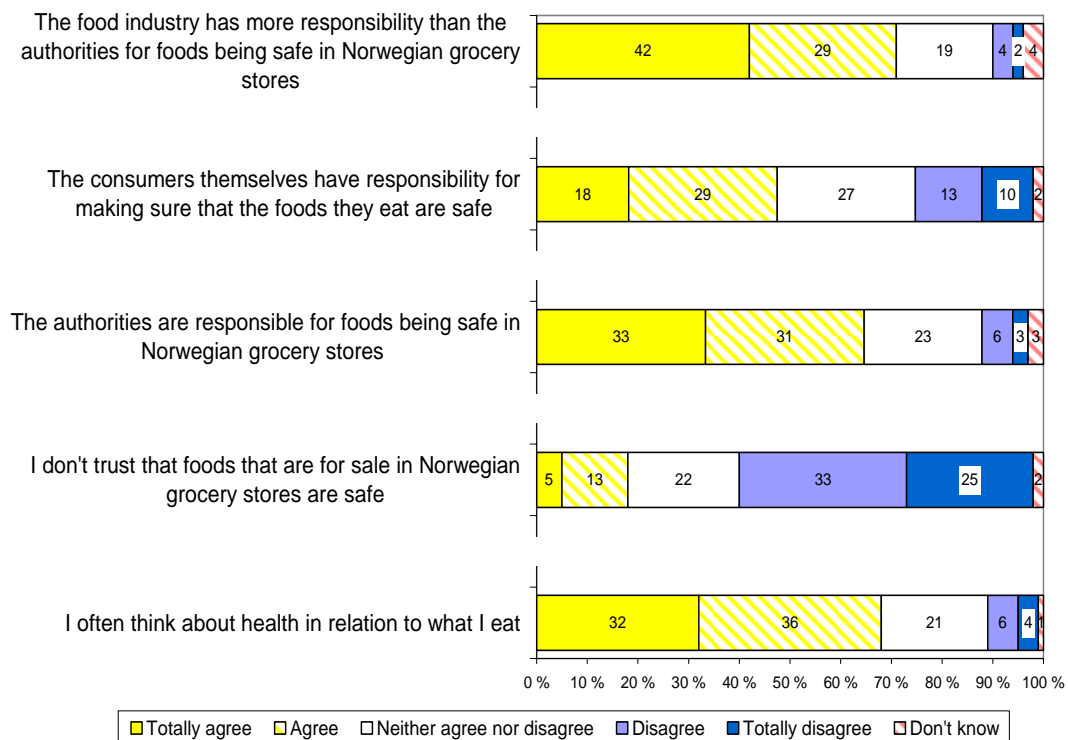


Figure 4-14: The proportion of consumers who reported that they agree or disagree with the following statements related to responsibility, trust and health. Percent. Adjusted for age, gender and geographical region. (N=1001)

Figure 4-14 shows that Norwegian consumers agreed that food industry, authorities and consumers themselves share some of the responsibility for food safety and that consumers seemed to trust that the foods for sale in Norwegian grocery stores are safe. The pattern does not indicate any dominant divisions on people's views on the social distribution of responsibility between food authorities, the food industry, and consumers, except for a small tendency of less responsibility attributed to the consumers. We know from many previous studies that when questions are made more specific, the responsibility of the state is generally emphasised in Norway. But it may also be that shifts are taking place in public opinion, towards more emphasis on the responsibility of market actors and individual consumers.

Further analysis showed that those who have dietary restrictions in the household disagreed more than those who had no dietary restrictions with the statement "I trust that foods that are for sale in Norwegian grocery stores are safe". Those with dietary restrictions may feel more vulnerable to food hazards. They have to be more careful and, based on experiences with wrong or insufficient information, they have become more sceptical.

Trust and distrust in organisation and institutions influencing food safety was assessed with a question about whether different actors would tell the truth or give misleading information in the case of an animal welfare scandal (Figure 4-15). This question was used because it was used in a Pan-European survey in 2005 (Kjærnes et al., 2008) and can thus provide information on change over time as well as comparability across countries.

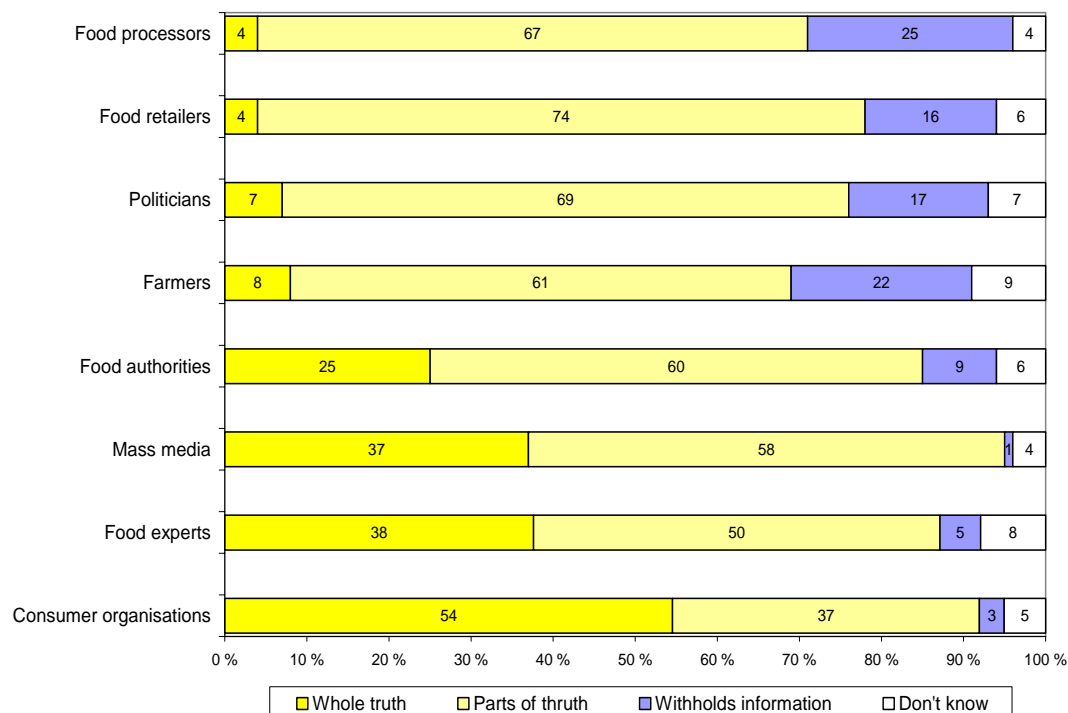


Figure 4-15: Truth-telling in case of a scandal with animal welfare. Percent. Adjusted for age, gender and geographical region. (N=1001)

Consumers seem to in case of a scandal with animal welfare trust that consumer organisations, food experts, mass media (civil society) and food authorities are the ones who will tell the whole or parts of the truth (Figure 4-15). Farmers, politicians, food retailers and processors are believed to maybe withhold some information. This pattern is very similar to what has been observed earlier (Kjærnes et al., 2008). The proportions believing that these actors

tell the whole truth are, however, somewhat lower. It may be that the overwhelming trust in public as well as private sources of information has become a bit more conditional. Trustworthiness may not be taken for granted as much as it used to be among Norwegians.

4.2 Focus groups: Warning labels on food are not always easy to understand

The focus group discussions focused primarily on use of and views on food labelling in general and warning labels on food. The topics responsibility and trust were also covered in the discussions.

4.2.1 Food labelling

The focus group discussions started by discussing what the participants look for when they encounter a new food product in the grocery store. The discussions that followed suggested that consumers may look for a whole range of different information, such as country of origin, health, ingredients, novelty, and price. For example, one of the participants said that she automatically checks where the food is produced, whereas another woman said that she wants to find out from the label if the food product is healthy or unhealthy.

The participants described that they rarely check the labelling on products that they buy routinely. However, information and labelling was still viewed as something positive:

“Labels are good because then you can choose yourself.”

Food labelling was seen as a shortcut that is useful in the grocery store. Some brought up that the use of logos, for example the organic logo, on the front of packages makes it easier for consumers to decide which products to select. Those who were interested in health and exercise tended to check nutrient (protein, fat and carbohydrates) content and came with opinions on current labelling. For example, nutritional labelling on milk and dairy products was seen as useful and clear. Dairy products are in that regard central in people’s everyday diet, they are seen as important for the overall quality of the diet, and there has been considerably product innovation in recent years often with reference to nutrition. It was suggested that this type of information about nutrient content could be useful also on other food products:

“I think that very few Norwegians know what vitamins and minerals there are in foods, so it would be very useful.”

The use of labels varied based on the type of foods. The discussions suggested that consumers do not read the labels on food products that by definition belong to the group “unhealthy foods” (for example, cookies, chocolate):

“If something is supposed to be unhealthy then it is properly unhealthy”.

Whereas on food products that are supposed to be healthy, such as dinner components or bread, it becomes more relevant for consumers to read the food labels and check ingredients and nutrients. The participants were interested in the labelling of bread and discussed the bread logo, which is a voluntary logo used in Norway since 2006 to inform consumers about the content of dietary fibres in bread. Many of the participants said that they use the logo and they were in general positive because it makes selection faster: *“easier to find your way in the bread jungle.”* However, the bread logo was also criticised. Some thought that the logo

was not visible enough on the packages and others brought up that the criteria for dietary fibre content could be stricter or that the logo also could include criteria for other ingredients, for example, sugar. It was also recognised that the logo is managed by the bakers' organisation. These views underline the role of trust, where labels can promote trust, but also that the background for the label must be trusted.

Processed products and ready-made foods were product categories for which the participants expressed a wish for more information:

“I think that ready-made food, frozen food and semi-prepared products should have very good labels because they are not pure basic products. And then it is really great to know what's in them if you are going to buy. If you wish to buy products like meat, egg and milk you know what it is.”

In other words, the more complex and processed food products become, the bigger the need for product information becomes.

It was discussed that perishable products should be clearly labelled because it is difficult to tell if they are spoiled. Here the challenge is not unbalances of information and control per se, but the level of danger involved.

The participants gave many examples of information that they have wished for on labels:

“A good example is this bottle of mineral water. It says natural mineral water, carbon dioxide and aroma. What is aroma? Is it natural? Is it natural lemon? Is it artificial? Does it contain sugar? I've heard that it maybe does...”

“Sugar content is useful to know. But on some products it just says sugar” (implied no information on how much)

“The length of best before date – a product that has long best before date has a lot added to make it last”

Similar to these statements, some brought up the issue about how much of an ingredient a product has to include to be called, for example, “spelt/dinkel bread” or “baconcrisp” (the participant pointed out that the ingredient list does not include animal products):

“Type of grain is important to me because I'm allergic to some types. Spelt bread, for example, if you look at the ingredients it may only be 30% spelt flour...”

Absence of perceived standards on labels or inadequate labelling may add to suspicion and distrust:

“No, it is for sure added some kind of rubbish, but this is for sure not on the label!”

The participants wished more standardised information on labels to make comparison of products easier. Consumers do not seem to make a distinction between mandatory and voluntary food labelling. When some producers include voluntary information on labels consumers may expect or wish to get this information on other food products. The participants wished similar quantum and measures on product labels to ensure that comparing nutrient contents would be easier. It was not only comparison between products that was seen as problematic, participants did also bring up that portion sizes on some labels seemed not to correspond with the portions they really usually consume. For example, the participants described that producers use small portion sizes on chocolate bars and that this may give a misleading impression of the nutrient content. Many of the participants seem to support the idea of some kind of

standardised nutrient information on the labels of all types of food to make it easier to recognize and trust.

The participants acknowledged that different population groups have different needs and thus accept that there are different types of labels and logos. They discussed the difficulties of distinguishing the logos and that they sometimes overlap. One strategy described by one of the participants was to concentrate on one logo, organic. This logo thus seems to be expected to cover a range of issues, like environmental impacts, “naturalness”, healthiness, freshness etc. (Torjusen et al., 2001). Knowledge about the different logos, for example, the recently introduced keyhole, seemed superficial. Some of the participants knew that the keyhole means that the products are healthy. Participants said that they notice the logos but do not always know exactly what they stand for. However, they indicated that they don’t object making decisions without having detailed knowledge about the meaning of the logos as long as the logo is fairly self-evident. A logo, colour coding or diagram instead of tables with numbers or text helps them to compare and make decisions easier.

New and more detailed information can also be surprising suggesting very low understanding of food safety. For example, one of the older women has stopped buying Camembert cheese that she liked when she read that it was mould cheese:

“I wonder about one thing. Lately I have seen that it says on Camembert that it is white mould cheese. And I love Camembert and have bought it for years. And now I have seen that it says that it is white mould cheese, and I have stopped buying it. Did it used to say that before? Is it some new information?”

4.2.2 Warning labels on food products

Not all of the participants in the focus groups had noticed warning labels on food. Some mentioned that they had seen the warning about the laxative effect and one father said that he had seen the warning on honey. As one participant pointed out, warnings are not usually on the front of a package, but can be found when you read carefully.

The participants were in general positive towards warning labels on food products:

“Yes, it’s informative and, yes, it’s good...”

More information was seen as something positive. It is better to get the information and then people can always choose to ignore it. There were hardly any negative views on warning labels. However, their views have to be related to the warnings that were presented to the groups. They were shown the same warning texts that had been used in the web survey (the six mandatory warnings and the two that have been suggested):

- “Do not refreeze after defrosting” (Bør ikke fryses på nytt etter optining)
- “Not recommended for children under 3 years of age” (Anbefales ikke for barn under 3 år)
- “Should not be given to infants under 12 months of age” (Må ikke gis til spedbarn under 12 mnd)
- “Excessive consumption may induce laxative effects”(Kan virke avførende ved stort inntak)
- “Contains liquorice – people suffering from hypertension should avoid excessive consumption” (Inneholder lakris – personer som lider av høyt blodtrykk bør unngå for stort inntak)
- “Consumption of more than 3 g/day of added plant sterols should be avoided” (Inntak av plantesteroler over 3 g per dag bør unngås)

Suggested:

- “Name or E number of the colour(s)’: may have an adverse effect on activity and attention in children” (Fargestoffet (E xxx) kan ha en negativ innvirkning på barns aktivitet og konsentrasjonsevne)
- Food supplements containing beta carotene are not recommended for heavy smokers (more than 20 cigarettes a day) (Kosttilskudd med betakaroten anbefales ikke brukt av storryktere (mer enn 20 sig. pr dag))

The immediate response to these warnings was positive and it was brought up that this is necessary information that should be included on food products. There were some comments on the wording and questions on the content and meaning of the specific warnings. For example: What is excessive/large intake? What are plant sterols? Why is not beta carotene recommended for heavy smokers? It was pointed out that the words used in warnings should be common and informative, and not just understood by experts. Plant sterols and beta carotene were clearly included in that category.

The suggested warning related to the effect of colours on children got some special attention. It was pointed out that it is not easy to understand what are the effects, and if it does include all children or only hyperactive children. A warning like this made them worried; are they toxic? and how do they affect children?: *“Who would want to give children something that has an adverse effect? I would not buy those sweets.”* It was suggested that it would be a better option to instead ban these colours or at least give more information about the effects.

The participants in general supported banning dangerous and harmful ingredients or foods especially if there are other alternatives available. But they recognized that this may not be in the interest of the producers who wish to make money. They also felt that although the authorities make sure that dangerous products are not for sale in stores, there may still be some products that can be harmful - there are always some risks. There was a discussion about the use of warnings on cigarettes when everybody already knows that cigarettes are harmful. This brought up the view that producers may use warnings to protect themselves against product liability.

Warning labels on food may be useful for smaller groups with specific health problems. The general position was that if banning ingredients harmful for some groups was not a possible alternative, warning labels were a good solution. However, the participants also brought up dilemmas, for example, social inequalities and the variation in knowledge:

“Yes, I am both for and against (warning labels) in one way. I think the best thing would be to ban a product from the market because there are always groups in society that maybe cannot afford, doesn’t have enough knowledge about things and they have no money, then their health is poorer.”

Another central dilemma was how far authorities should go with the use of warnings. Issues related to food and health were seen as consumers’ responsibility, but authorities should label harmful things and provide information related to allergies, diabetes and other diseases. The following citation sums up this dilemma:

Like “not recommended for children under the age of 3 years” and “those who have high blood pressure” etc, that is important because they are risk groups. But warnings like “if you eat too much fat you may become this and that” you do not need because it is very general, because then you have to have a whole appendix (with the product). But when it is for special groups who can’t eat everything. They are the ones that need information, and they are the ones who read carefully and who have to get this information.”

The place for warnings on the package was discussed in one of the groups. Because space is limited on the package they suggested that there could be an Internet address (for example, the Norwegian Food Safety Authority) so that those who are interested can find more information. The other option would be to have information available in the shop by scanning the bar code and getting information on a screen. This would be available for everybody and also make it possible to get larger text, thus making reading easier.

4.2.3 Responsibility and trust

Participants in the focus groups agreed that the authorities and producers are both responsible for food safety. The food authorities are making sure and control that there are no mortally dangerous foods in Norwegian grocery stores. Both producers and retailers were also seen as responsible for selling safe foods. However, some scepticism about retailers was voiced. Occasions of repacking and changing sold-by dates on meat were given as an example of breeding distrust. The role of the authorities as a watchdog was seen as positive. But this also brought up the role of consumers. It was suggested that consumers could show their opinion by boycotting the stores that have done this systematically.

Although authorities and producers were seen as responsible for the labelling of food, consumers were also seen to have some responsibility. Consumers were seen as responsible for reading labelling. Thus, it appears that consumers need good information to be able to take on this responsibility. As one participant said about consumers' need to take responsibility:

“Can't take away responsibility for ourselves, we should have that, if we expect to never (take responsibility for ourselves), we become indifferent.”

When talking about labelling in the focus groups some doubts and scepticism was voiced about the information. Through mass media consumers have learnt, for example, that food that has been sold as organic has turned out not to be organic and farmers haven't got the extra money paid for fair trade coffee. Media coverage may undermine the legitimacy, but many still use the labelling when they make choices in the grocery store:

“I try to eat organic because I think it tastes better.”

- *“I agree, but IS it that (organic)?”*

“Some products you do not taste the difference, but carrots and apples, for example. I think it's a big difference in taste.”

The unclear differences between marketing and mandatory labelling may affect consumer trust. Producers use their own logos certifying different attributes to a product on its packaging and consumers may not distinguish these from other certified logos. Expectations among the focus group participants were unclear in that regard.

Some of the participants think that food authorities should be responsible for food warnings because they are neutral and have power to say how it should be and to set the standards of what is acceptable.

4.3 Stakeholder meeting: Warning labels on food may be useful for some groups of consumers

The stakeholder meeting was arranged because it was assumed when planning the project that individual consumers may not have reflected that much on the use and meaning of warning labels on food, whereas organisations that represent groups of consumers may have made up an opinion. However, the interest and participation in the stakeholder meeting turned out to be low. It was only representatives from two health-related NGOs that participated in the meeting. Several factors may explain why so few accepted the invitation. The low participation rate may reflect that warning labelling on food is not considered a topic of high priority and it is not a topic that is currently debated. It may suggest that many organisations have not yet made up a clear standpoint on the issue. However, it may also be due to methodological issues. We may have contacted organisations that do not currently see warning labels on food as relevant for their organisation and thus not responding to the invitation. Another more practical factor may have been that the invitations when they arrived at the organisations did not maybe reach the persons who might have been interested in participating.

Results from the web survey and focus groups were presented at the stakeholder meeting. The participants were encouraged to comment and after the presentation it was opened up for discussion about strengths and weaknesses of current food labelling and warning labels on food and on the design of warning labels on food.

4.3.1 Strength and weaknesses of current food labelling

The stakeholders viewed food labelling as important information to consumers so that they can make informed choices. One of the participants started by underlining that a precondition for food labelling is that consumers understand the information without having a lot of previous knowledge. The language and logos used have to be understandable to all consumers, including those who do not have very good knowledge of Norwegian. However, she also recognised that some groups of consumers, such as those with food allergies, need some initial knowledge.

The participants thought that there is a lot of focus on a healthy diet today and that people thus also read more information. Consumers are interested in labelling, but they do not read it every time; they usually buy foods based on habits and reading of food labels varies between food products. They gave the following examples. When people buy potato chips they do not check the calories or type of fat used because they have already made a choice to buy an unhealthy product. On other products such as pizza, consumers may choose the one with a Key-hole if they have to choose between products.

4.3.2 Warning labels on food

Warning labels were not very familiar to the stakeholder participants, who in their NGO work both nationally and internationally had dealt more with allergies and nutrient content than warning labels. Especially the warning about plant sterols was discussed. It was pointed out that this warning is used on only one product in Norway, and thus it was not considered that surprising that so few in the web survey had seen the warning. Also, it was noted that there had been little mass media attention to plant sterols. Another comment was related to the size of the target group for warning labels on food. It was suggested that pregnant women would be a much larger and maybe important group than heavy smokers. In relation to additives, it was emphasized that well educated mothers pay more attention to health and child feeding than those with less education or limited knowledge of Norwegian.

It was emphasised that warning labels may be more acceptable on food products that are consumed rarely (for example, candy and dietary supplements) or if the target/risk group is limited. It was assumed that the reaction among consumers would be different if warning labels would be used on everyday food products such as milk, bread, meat and instant soup. Norwegian consumers are used to trust food: “*we are trusting people and expect honesty and best intentions also in relation to food*”, and they are likely to also trust the food authorities to deal with issues like this.

The positive views on warning labels reported in the web survey were explained by the importance of individual freedom and choice (“*we don’t want the authorities to choose for us. Of course we want safety, but we don’t want too much regulation*”) and that consumers may think that the warnings don’t concern them. It was also pointed out that people today get so much contradictory information that some give up and say that everything is dangerous. It was suggested that maybe a warning label issued by the authorities is more trusted than if producers would be allowed to choose how they label and market food. It was also brought up that consumers today seem to think that “natural” is always the best. For example, natural colouring is viewed as better than artificial, and that producers, therefore, also prefer to use natural colouring although it may have negative consequences.

The two participants at the stakeholder meeting did not present any established and clear policies on the use of warning labels beyond these general statements. This was also reflected in their views on the design of warning labels.

4.3.3 Design of warning labels

The Keyhole signposting was brought up by the participants as a successful type of labelling on food. However, they also underlined differences between warning labels and the Keyhole. A warning is negative, whereas the Keyhole is a positive label. Also, it was pointed out that the warning label is presented as text and the Keyhole is a logo.

The text in warning labels is more demanding for the reader and thus warning labels mainly reach active consumers that have a good understanding of Norwegian. It was pointed out that social inequalities in health have been much discussed recently related to the keyhole signposting. It was stated that a logo has the potential to reach everyone because it is not dependent on language, whereas a text in small letters may only reach those with more resources.

In conclusion, the recommendation was that a logo (maybe a skull and crossbones!?) would reach more consumers, and that in addition it would be necessary to inform all Norwegian citizens about warning labels using all different languages.

5 Discussion

5.1 Norwegian consumers and food labelling in general

In line with earlier studies on food labelling (Grunert and Wills, 2007; Wandel and Bugge, 1995) findings from this study suggest that consumers are generally positive to labelling and information. Food labelling is mainly viewed as information consumers need to make informed choices.

The survey shows that the majority of Norwegian consumers reported that they always check price and date on food products that they buy, and that women, older age groups, those with higher education and those with dietary restrictions check more information. Similar results have been described in earlier national and international studies (Garrett, 2007; Roos, 2007; Wandel, 1997).

Findings from this study suggest that food labelling is seen as a shortcut that is useful in the grocery store. Consumers reported that they mainly read food labels in the store or both in the store and at home. They described that they do not read the labelling every time, they usually buy food based on habits and reading of labels varies between types of food products. They more often check information on processed foods compared to everyday staple foods, and they do not read labels on food products that by definition belong to the group “unhealthy foods”. Also earlier studies have suggested similar variation in reading of labels based on types of food products (Guthrie et al., 1995; Malam et al., 2009; Food Safety Authority of Ireland, 2009).

5.2 Norwegian consumers' views, understanding and use of warning labels on food

Findings from this study show that except for certain established warnings, there was little knowledge and awareness about warning labels among individual Norwegian consumers as well as among organisations representing consumers or consumer groups. Based on the web survey familiarity of the different warnings varied. Almost two thirds of the respondents reported that they had seen the warning: “Do not refreeze after defrosting”. For this warning the variations based on background variables (gender, age, education and dietary restrictions in household) were not big. Also, the two warnings related to small children and infants were familiar to more than half of the respondents (women more often than men), whereas the more specific warnings (the ones associated with liquorice and plant sterols) seem to only have been seen by a very limited number of the respondents. The warning on laxative effects, which had been seen by approximately half of the respondents, showed larger variation especially based on age but also based on gender and dietary restrictions (not education).

The participants in the focus group and stakeholder discussions gave ad hoc responses to questions related to warning labels and did not express very clear opinions. Not all of the focus group participants had noticed warning labels on food. The discussions also reflected little differentiation between the mandatory warnings studied in this project and voluntary warnings, including allergy warnings, and health related information.

This study establishes that consumers in general have positive attitudes to more information including warning labels, but we can say very little about consumers' use of warning labels on food. It seemed that warning labels were mainly seen to provide increased transparency and possibility for consumers to control what they buy in a dynamic food market where products on offer are increasingly processed, using a growing number of ingredients that are often not very familiar and where advanced technologies make the recognition of safety and quality more and more difficult.

Warning labels were seen as useful for smaller groups with specific needs, for example children and those with dietary restrictions (diabetes, allergy etc.). Findings suggest that although consumers in general seemed to support banning dangerous and harmful ingredients or foods they thought that warning labels could be a solution if banning was not a possible alternative. Consumers tend to trust warning issued by the food authorities.

The difference between if warnings are aimed a limited group or if warning labels are only used on foods that are consumed rarely was compared to using warning labels on everyday staple food products. There seemed to be less interest in the use of warning labels on food products consumed on an everyday basis.

5.3 Design of warning labels on food from the point of view of consumers

The specific purposes and functions of warning labels makes it crucial that they reach the target groups and that people understand them. Thus the design of the warning labels is important. Earlier studies of consumer preferences to allergy labelling have shown that consumers are not satisfied with visibility and readability of voluntary labelling of allergens (Cornelisse-Vermaat et al., 2007). However, because consumer preferences and design were not the main focus of the study comments and suggestions were limited.

Participants in the focus group and stakeholder discussions suggested that logos reach larger groups and are easy to understand. Logos, color coding and diagrams also make comparison of products easier than having only text and numbers. The stakeholders recommended using a logo because text is more demanding and best suited for active consumers with good understanding of Norwegian. The warning texts were discussed and it was stated that common and informative words should be used instead of expert expressions (for example, plant sterols and beta carotene), which are not understood.

In addition to the content of the warning labels, it was also pointed out that it is important to consider the place on packaging and to provide additional information, for example, on Internet.

5.4 Warning labels on food – an appropriate measure for food safety?

Based on the findings of this study it is not possible to conclude if Norwegian consumers think that the use of warning labels on food is an appropriate measure for food safety. We wish to underline that caution is needed in interpreting the results and more in-depth analyses and further studies are needed.

Findings show that consumers seem to have a positive general view of getting more information, including warning labels on food, although awareness and knowledge of many of the current warning labels was very limited. It was a little bit surprising that consumers voiced very little scepticism, but this may reflect that it is not a topic that has received media attention and consumer mobilisation. Limited mobilisation among stakeholders around warning label on food also reflects that it is not seen as a politicized topic.

This study suggests that consumers have limited understanding of contrasts or contradictions between different regulatory policies. Consumers did not seem to view warning labels on food as a new type of regulation, which would entail more responsibility to consumers, but as information and an extension of what authorities already do. Consumer trust is based on authorities involved and warning labels seem to represent better transparency and accountability.

Warning labels on food do not seem to be viewed as a new type of regulation. Consumers seem to view the use of warning labels as an extension of what authorities already do. It signifies more, not less, public intervention in the food market. Neither consumers nor stakeholders seem to view warning labels on food as a shift in existing politics or changing consumer role.

The findings that consumers are positive to getting more information and agree that food industry, authorities and consumers share some of the responsibility for food safety could also be interpreted as a possible change in the consumer role. Consumers may be expressing wishes to take a more active role and that they are willing to take more responsibility than earlier studies have indicated, where Norwegians have appeared to be more passive and relying on state protection compared to citizens of other European countries (Kjærnes et al., 2008). This change may indicate that the role of consumers will be more active in the future.

Motivation is needed for warning labels to function as measures for food safety. Based on this study it seems like it might work for special groups, for example, those who have dietary restrictions or small children, but that it would be more problematic for the general population. In addition to including the warning labels on the food packages, considerable additional information and education would be required if warning labels on food are used as measures for food safety.

6 Concluding remarks

The objective of the study was to explore the following questions related to warning labels on food:

1. What are consumers' views, understandings and use of warning labels on food?
2. How should warning labels on food be designed to be effective?
3. Are warning labels on food an appropriate measure for food safety?

Based on the findings we have drawn some conclusions:

Norwegian consumers and food labelling in general

- Consumers generally positive to more labelling (increased transparency, accountability and consumer control).
- Mainly always check price and date on food products that they buy.
- Women, older age groups, those with higher education and those with dietary restrictions check more information.
- Do not read the labelling every time, usually buy food based on habits and reading of labels varies between types of food products. More often check information on processed foods compared to everyday staple foods.
- Read mainly labels in the store or both in the store and at home. Food labels useful shortcut in the grocery store.

Norwegian consumers' views, understandings and use of warning labels on food

- Very little knowledge and awareness about warning labels (except for certain established warnings).
- Ad hoc responses – not very clear opinions, even not among stakeholders.
- Focus on needs of particularly vulnerable groups (allergy, infants, children).
- Scepticism about warning labels on food products consumed by larger groups on an everyday basis.
- Little differentiation between mandatory and voluntary warnings (allergy warnings vs. the mandatory warnings studied in this project).

Design of warning labels on food from the point of view of consumers

- Limited comments and suggestions.
- Recommended to use common and informative words – expert expressions (for example, plant sterols and beta carotene) are not understood.
- Using text is demanding – best suited for active consumers with good understanding of Norwegian. Stakeholders recommend a logo. Using logos, color coding and diagrams makes comparison of products easier than having tables with numbers.
- Important to also consider the place on packaging and to provide additional information on Internet.

Warning labels on food – an appropriate measure for food safety?

- Caution is needed in interpreting the results of this study – no in-depth analyses.

- Consumers seem to have a positive general view of getting more information including warning labels on food, but awareness and knowledge of many of the current warning labels was very limited.
- Consumers do not view warning labels on food as a new type of regulation, which entails more responsibility to consumers, but an extension of what authorities already do.
- Consumer trust is based on authorities involved. Warning labels represent better transparency and accountability.
- Limited mobilisation among stakeholders around warning label on food – not seen as a politicized topic.
- In the future perhaps changes in the consumer role, with wishes to take a more active role.
- Motivation is needed. May work for special groups, like people with dietary restrictions or small children, general population more problematic.
- Requires considerable additional information and education.

Based on the current study it is not possible to conclude what views consumers have on the use of warning labels on food as a new type of regulation that could be used as an alternative measure to banning hazardous substances to food. Consumers seemed to mainly regard warning labels as useful information especially for special groups of consumers, who need specific information, by providing better transparency and the possibility for buyers to control what they buy. Further in-depth studies among both consumers and stakeholders are necessary for being able to assess if warning labels may be appropriate measures for food safety from the point of view of consumers.

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Appendix 1

WEB SURVEY (in Norwegian)

Hei!

Velkommen til en ny undersøkelse fra panel.no. Håper du synes det kan være interessant å si din mening. Skjemaet tar omkring 7-8 minutter å fylle ut, og faller du innenfor målgruppen vil du automatisk få godskrevet 10 poeng på din konto. Det kan ta noen dager før du får godskrevet dine poeng på din konto.

Vi håper du har anledning til å delta i denne undersøkelsen. Gjennom din besvarelse bidrar du til å gi svært verdifulle tilbakemeldinger til vår oppdragsgiver. Informasjonen fra våre undersøkelser bidrar både til utvikling og tilpassing av produkter, tjenester og kommunikasjonsstrategi.

Om du synes dette høres interessant ut, ville vi satt pris på om du besvarte undersøkelsen så raskt som mulig siden undersøkelsen vil bli lukket så fort vi har fått nok svar. Du aktiverer undersøkelsen ved å åpne linken under. Alternativt kan du kopiere linken inn i adressefeltet øverst i nettleseren din.

{Link til undersøkelse}

Har du spørsmål om undersøkelsen, eller har problemer med å besvare den via Internett, kan du sende en e-post til support@panel.no.

Vi gjør for ordens skyld oppmerksom på at du er anonym og at svarene du avgir aldri vil knyttes til hverken navn eller e-postadresse. Du kan lese mer om personvern og anonymisering på våre nettsider, panel.no. Du vil også kunne motta nyhetsbrev, oppdateringer og henvendelser fra support sent fra Panel.no eller Norstat Norge. Personvernerklæring: <http://www.panel.no/nor/Personvern/>

På forhånd tusen takk for at du besvarer skjemaet!

Med vennlig hilsen
panel.no

B1 Er du mann eller kvinne?

- Mann
 Kvinne

B2 Hva er alderen din? _____**B3 Bor du**

- Alene
 Alene med barn under 3 år
 Alene med barn 3 -18 år
 Alene med hjemmeboende barn over 18 år
 Par uten barn
 Par med barn under 3 år
 Par med barn 3-18 år
 Par med hjemmeboende barn over 18 år
 Sammen med forelder/foreldre
 Annet (Sammen med venn/venner, kollektiv)

M1 Hvor stor del av din husholdnings matinnkjøp gjør du selv?

- Praktisk talt alt
 Mer enn halvparten
 Omtrent halvparten
 Mindre enn halvparten
 Praktisk talt ingenting
 Vet ikke

M2a Sjekker du følgende opplysninger på matvarer som du pleier å kjøpe?

	Ja	Nei	Av og til	Vet ikke
Merkevarenavn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Produsentens navn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvilke land maten kommer fra	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Datomerking (best før, bør brukes innen, siste forbruksdag)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vekt (kvantitet, volum)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvordan varen bør oppbevares	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Om varen har vært fryst	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvordan varen skal tilberedes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Informasjon som du ikke har lagt merke til før	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

M2b Sjekker du følgende opplysninger på matvarer som du pleier å kjøpe?

	Ja	Nei	Av og til	Vet ikke
Ingredienser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Næringsinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kalorier (energi)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sukkerinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saltinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fettinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tilsetningsstoffer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nøkkelhullet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

M3a Første gang du kjøper en matvare, sjekker du følgende opplysninger?

	Ja	Nei	Av og til	Vet ikke
Merkevarenavn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Produsentens navn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvilke land maten kommer fra	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Datomerking (best før, bør brukes innen, siste forbruksdag)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vekt (kvantitet, volum)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvordan varen bør oppbevares	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Om varen har vært fryst	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hvordan varen skal tilberedes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

M3b Første gang du kjøper en matvare, sjekker du følgende opplysninger?

	Ja	Nei	Av og til	Vet ikke
Ingredienser	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Næringsinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kalorier (energi)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sukkerinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Saltinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fettinnhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tilsetningsstoffer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nøkkelhullet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

M4 Omtrent hvor ofte leser du opplysninger på følgende matvarer?

	Ofte	Av og til	Sjelden	Aldri	Vet ikke
Ost					
Kjøttpålegg/skinke					
Margarin/smør					
Brød					
Kjeks/knekkebrød					
Frokostblanding					
Pizza/pastasaus					
Frossen ferdigmat					
Annen ferdigmat					
Godteri, pastiller					

M5 Hvor leser du opplysninger på matvarer?

- Mest i butikken
- Mest hjemme
- Både i butikken og hjemme
- Annet sted
- Leser ikke opplysninger
- Vet ikke

M6 Har du sett følgende advarsler på matvarer?

	Ja	Nei	Vet ikke
Inneholder lakris – personer som lider av høyt blodtrykk bør unngå for stort inntak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Må ikke gis til spedbarn under 12 måneder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inntak av plantesteroler over 3g per dag bør unngås	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fargestoffet (E xxx) kan ha en negativ innvirkning på barns aktivitet og konsentrasjonsevne	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kosttilskudd med betakaroten anbefales ikke brukt av storryktere (mer enn 20 sigaretter pr dag)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anbefales ikke for barn under 3 år	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kan virke avførende ved stort inntak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bør ikke fryses på nytt etter opptining	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

M9 Tenk deg at det er en matvareskandale knyttet til kyllingproduksjon i Norge. Tror du de følgende personer eller instanser vil fortelle hele sannheten, deler av sannheten eller vil de holde (all) informasjon tilbake?

	Hele sannheten	Deler av sannheten	Holde (all) informasjon tilbake	Vet ikke
Aviser, TV og radio				
Matvareindustrien				
Dagligvarekjedene				
Bøndene				
Forbrukerorganisasjonene				
Politikerne				
Matvaremyndighetene				
Matvareekspertene				

Til slutt noe om din bakgrunn

B4 Vil du si at din helse er

- Utmerket
- Veldig god
- God
- Middels
- Dårlig
- Varierende
- Vet ikke

B5 Har du eller noen i din husholdning siste år tatt spesielle hensyn i valg av mat?

- Nei
- Ja, på grunn av sykdom
- Ja, på grunn av allergi
- Ja, på grunn av sunnhet
- Ja, på grunn av slanking
- Ja, på grunn av små barn
- Ja på grunn av miljø/bærekraftighet
- Ja på grunn av annet: _____
- Vet ikke

B6 Hvor bor du?

- Oslo
- Stor by (mer enn 50.000 innbyggere)
- Liten by (5.000 - 50.000 innbyggere)
- Tettsted
- Landsbygd

B7 Hva er din høyeste utdanning du har fullført?

- Grunnskole
- Videregående skole/gymnas/fagutdanning
- Høyskole/universitet
- Annet
- Vet ikke

B8 Hvilken av de følgende beskrivelser passer for din situasjon i dag? Er du

- I arbeid (fulltid eller deltid)
- Student/Skoleelev
- Både arbeid og skole
- Hjemmeværende
- Langtidssykemeldt
- Arbeidsledig/trygd
- Pensjonert
- Annet

B9 Omtrent hvor mye tjente dere til sammen i hele husstanden siste år?

(Samlet brutto årsinntekt, inkludert trygd/pensjon, før skatt og avdrag er trukket)

- Under kr 100.000
- kr 100-199.000
- kr 200-299.000
- kr 300-399.000
- kr 400-499.000
- kr 500-499.000
- kr 600-699.000
- kr 700-799.000
- kr 800-899.000
- kr 900-999.000
- Mer enn kr 1.000.000
- Ønsker ikke å si
- Vet ikke

Takk for at du deltok i undersøkelsen!

Appendix 2

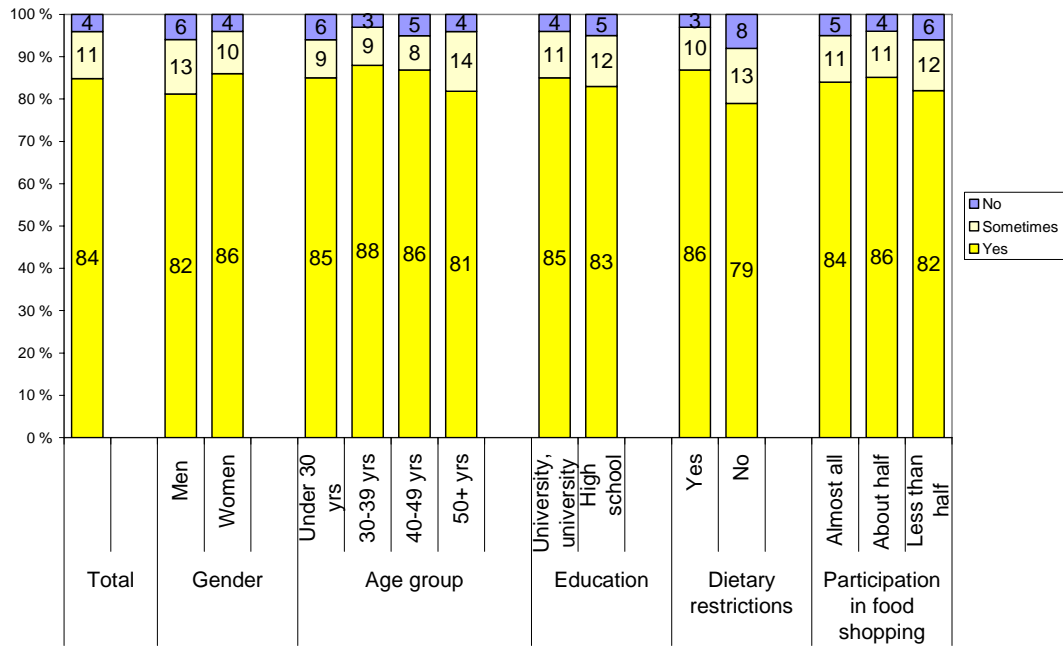


Figure 6-1: The proportion of consumers who report that they check the price on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

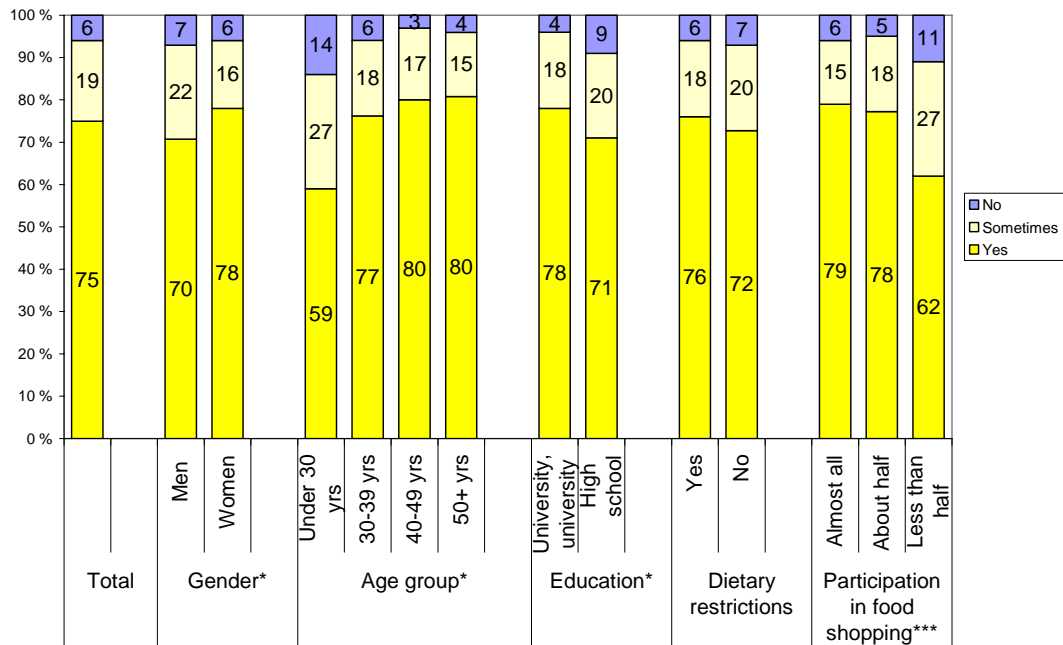


Figure 6-2: The proportion of consumers who report that they check the date on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

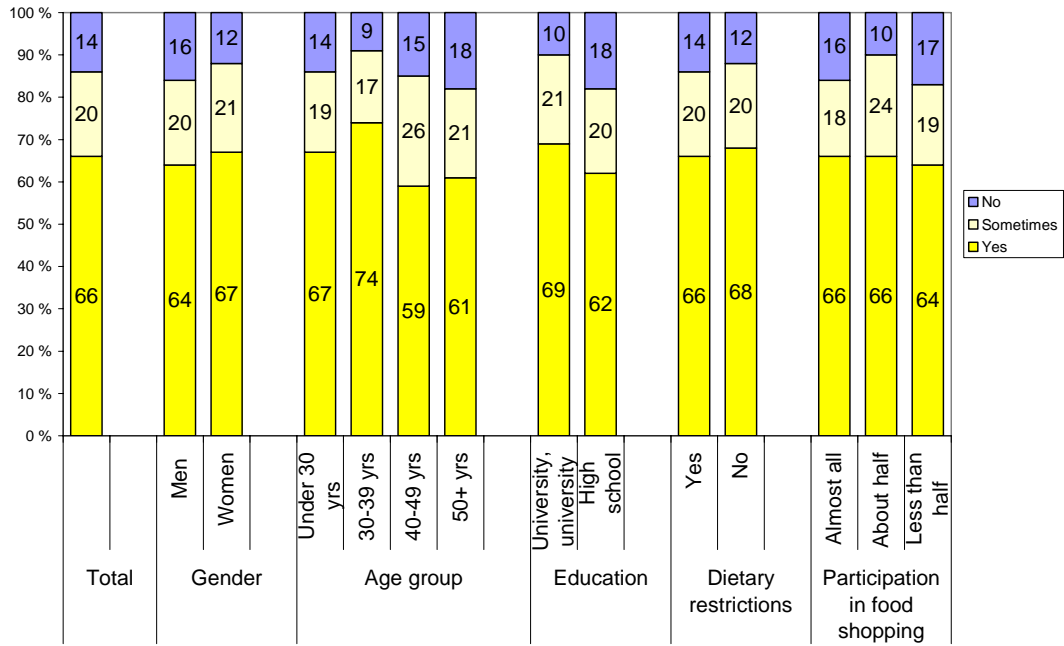


Figure 6-3: The proportion of consumers who report that they check the brand name on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

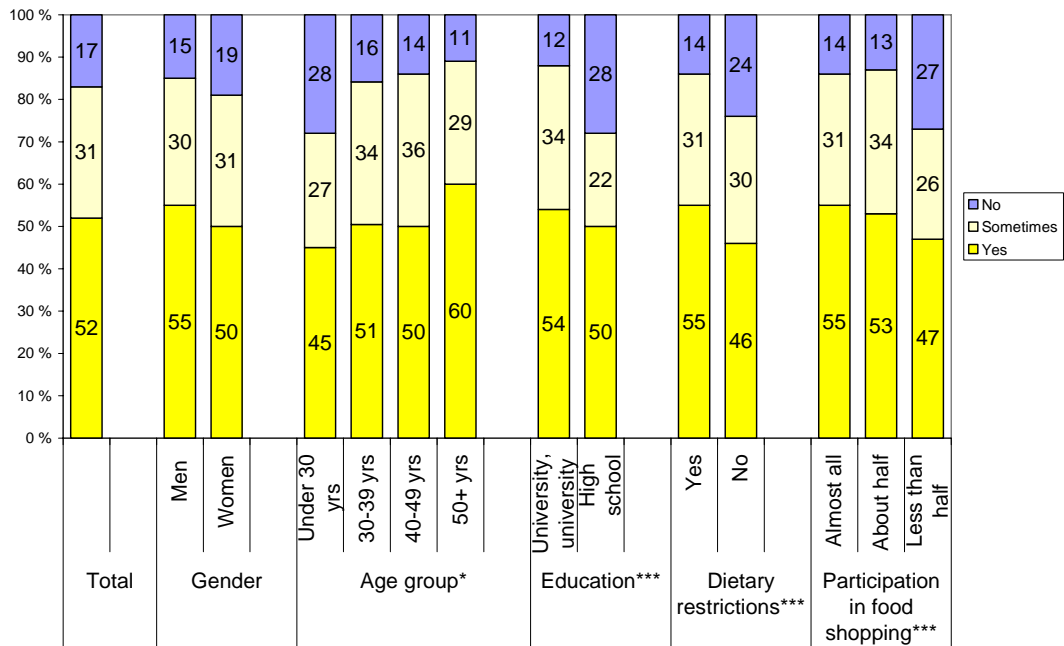


Figure 6-4: The proportion of consumers who report that they check the weight on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

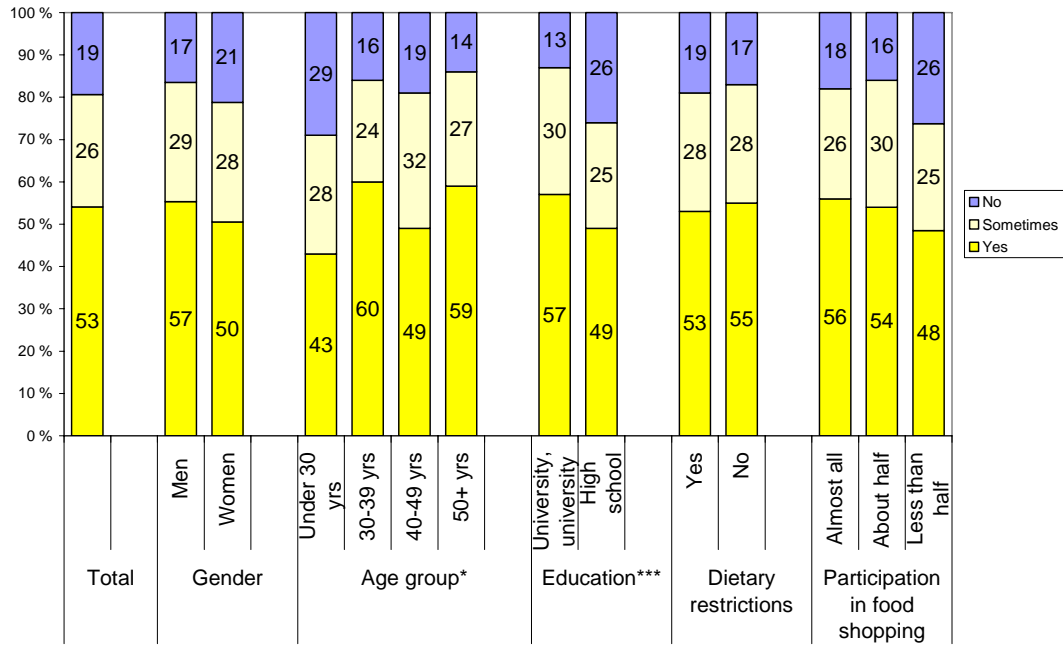


Figure 6-5: Proportion of consumers who report that they check the producer on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

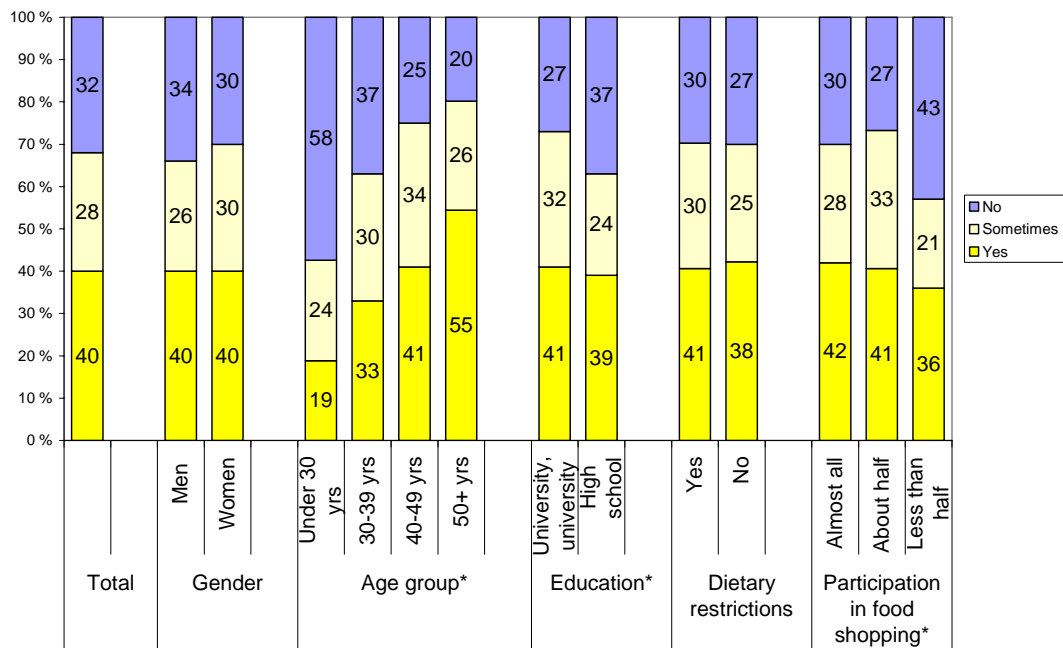


Figure 6-6: Proportion of consumers who report that they check on food products if they have been frozen when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

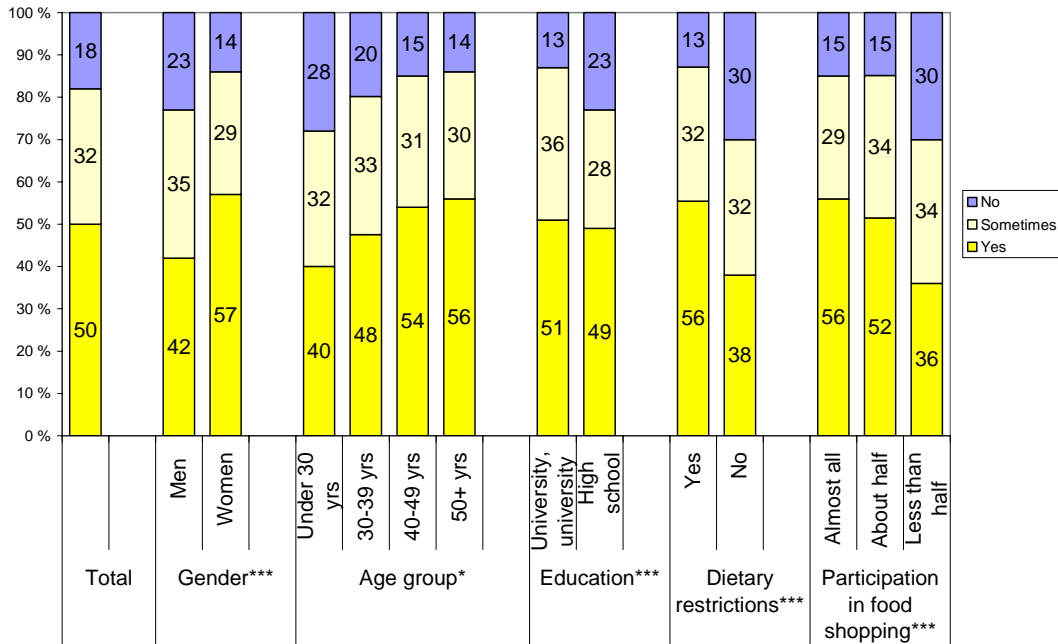


Figure 6-7: Proportion of consumers who report that they check the ingredients on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

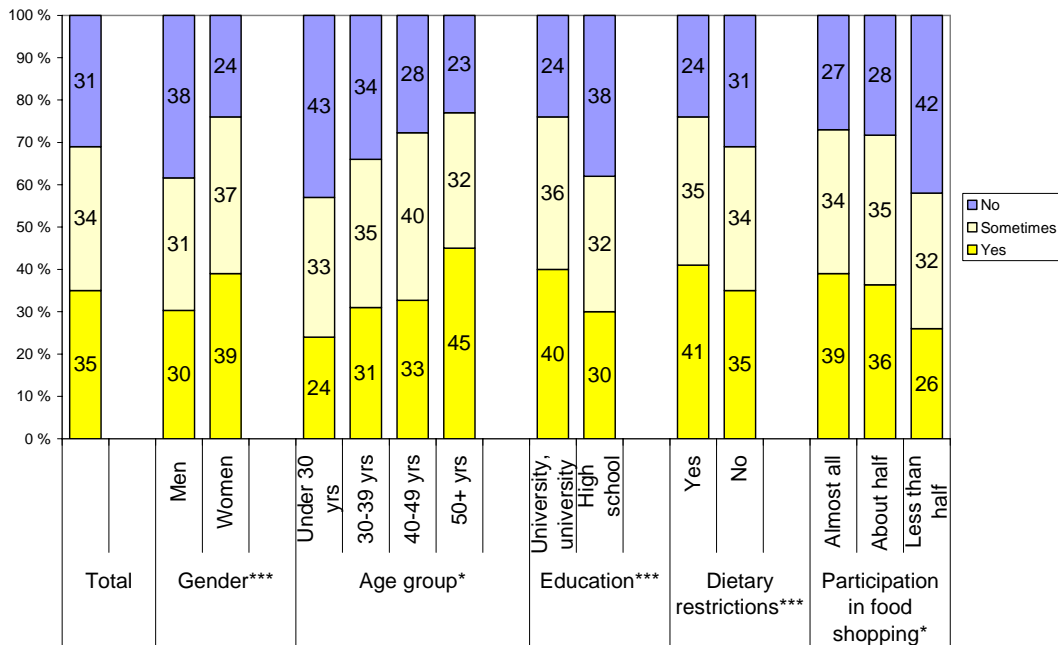


Figure 6-8: Proportion of consumers who report that they check the sugar content on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

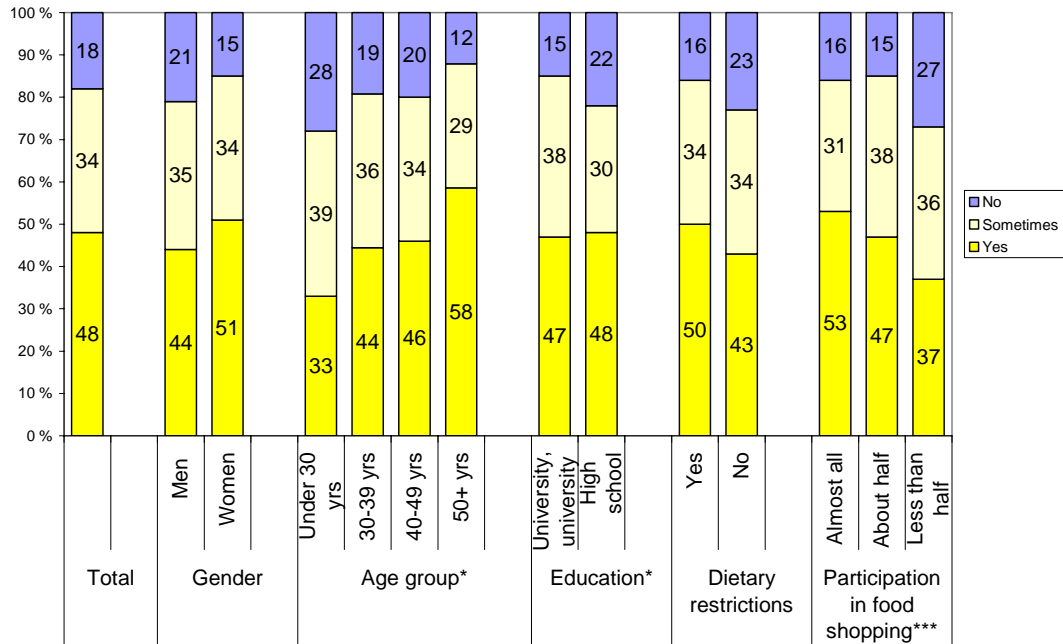


Figure 6-9: Proportion of consumers who report that they check the storing information on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

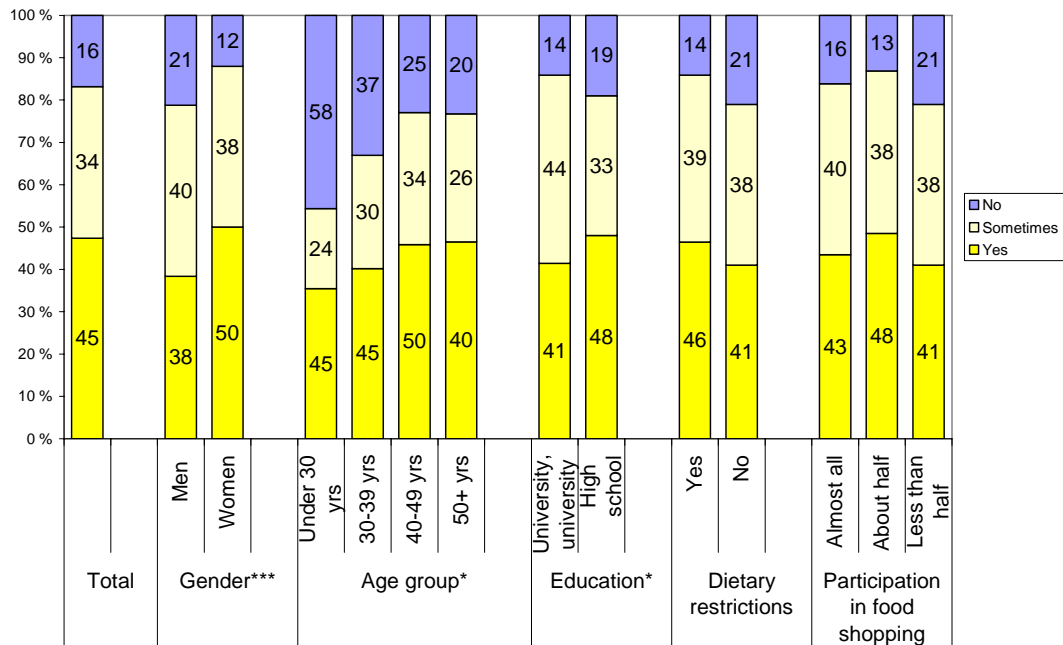


Figure 6-10: Proportion of consumers who report that they check the information on preparation on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. *** p<0.001, * p<0.01. (N=1001)

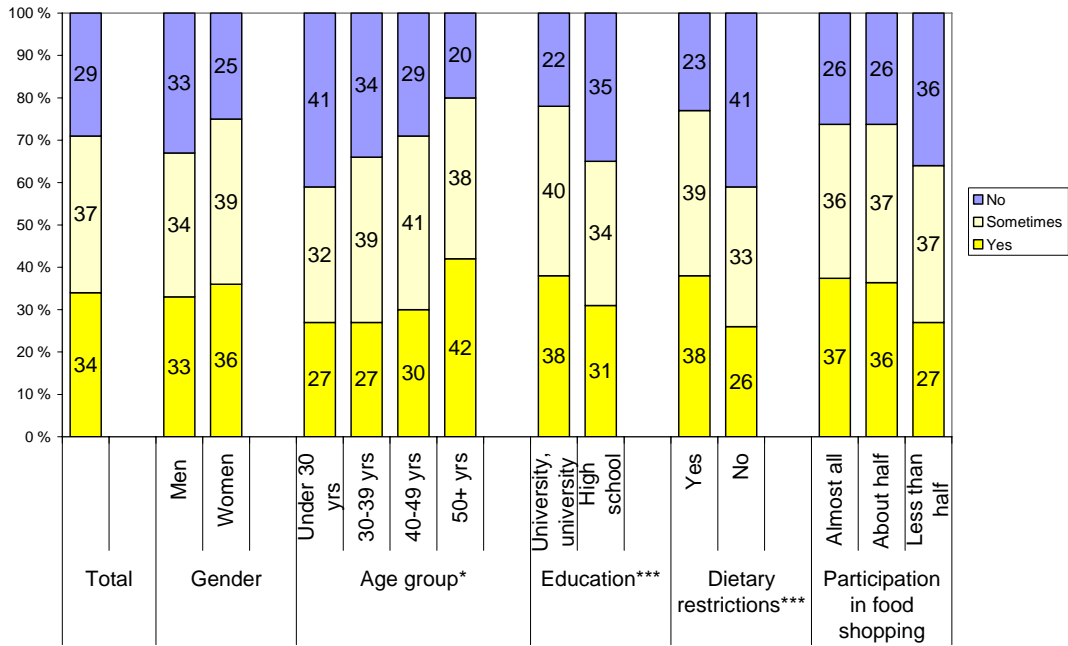


Figure 6-11: Proportion of consumers who report that they check the fat content on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

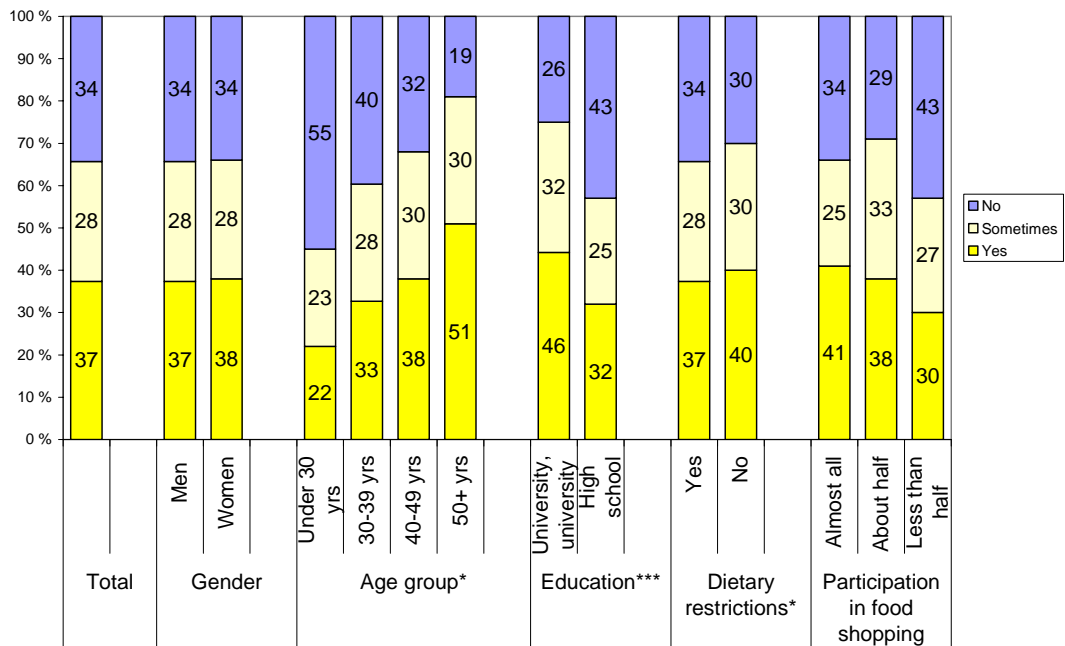


Figure 6-12: Proportion of consumers who report that they check the country of origin on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

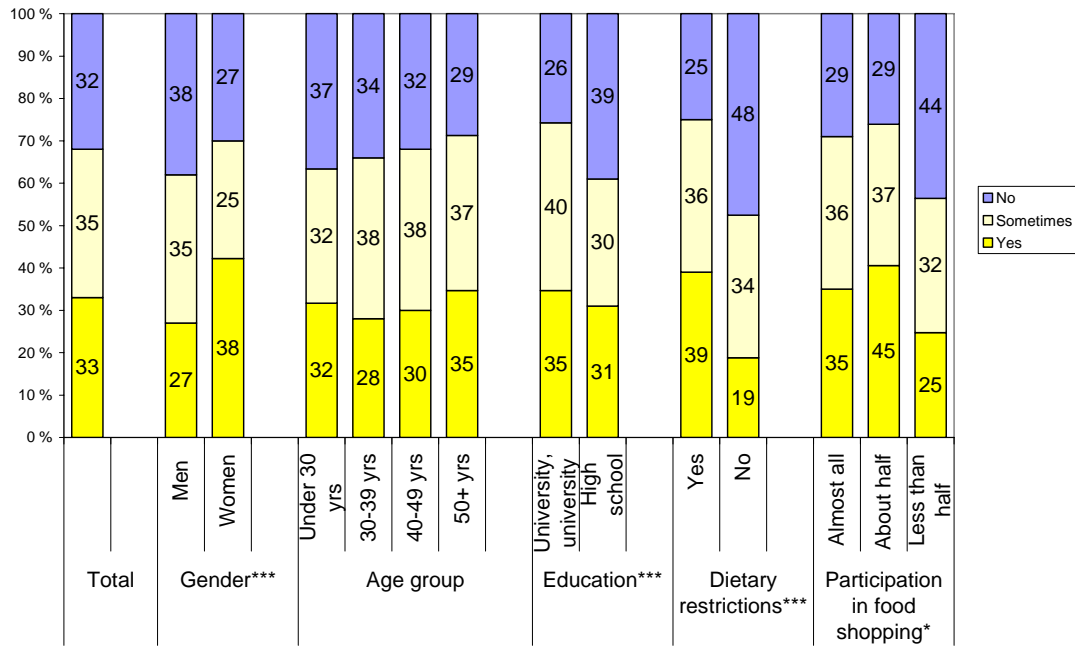


Figure 6-13: Proportion of consumers who report that they check the nutrient content on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

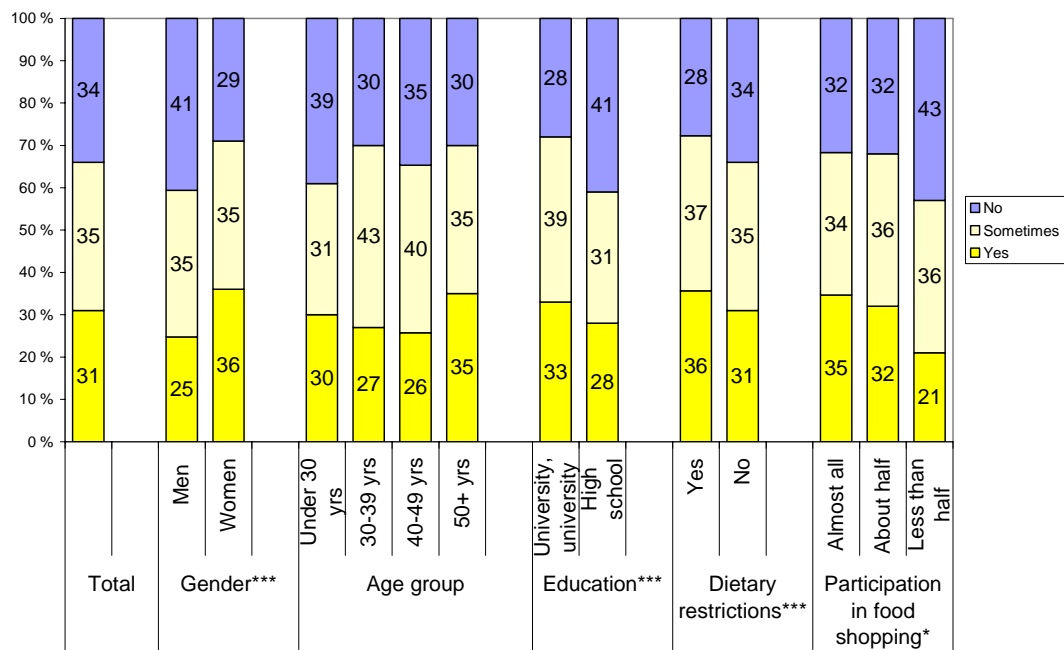


Figure 6-14: Proportion of consumers who report that they check the calories on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

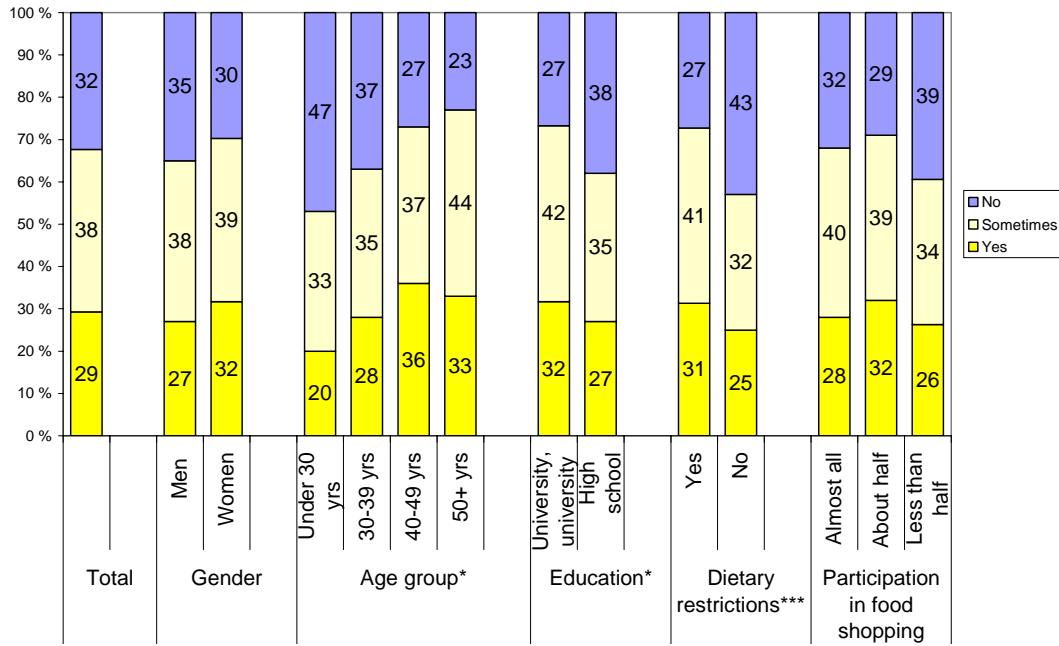


Figure 6-15: Proportion of consumers who report that they check the additives on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

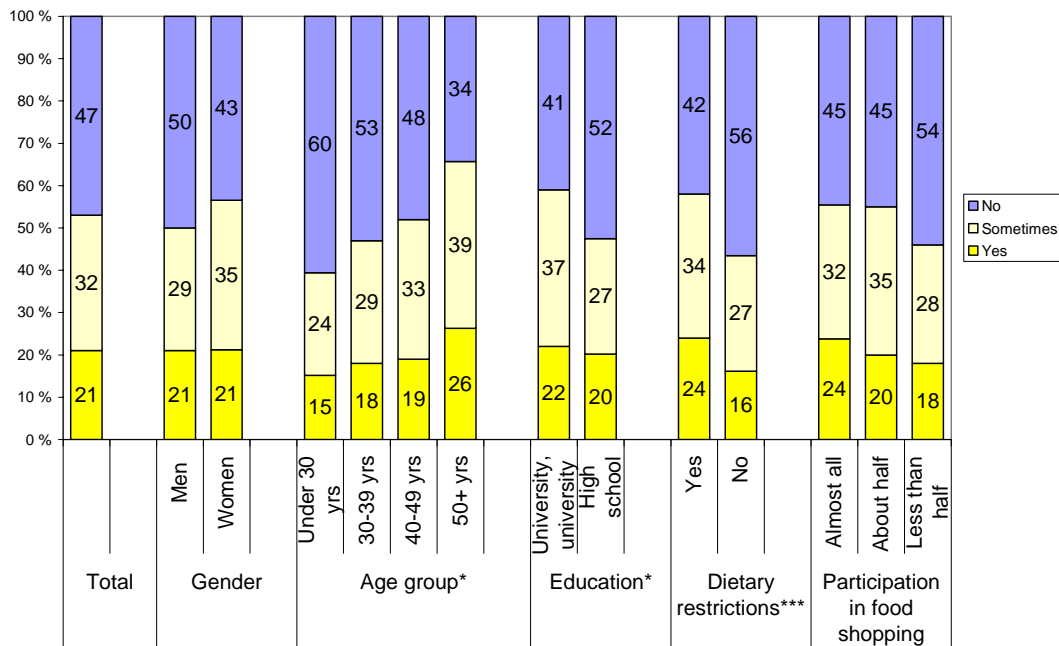


Figure 6-16: Proportion of consumers who report that they check the salt content on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**

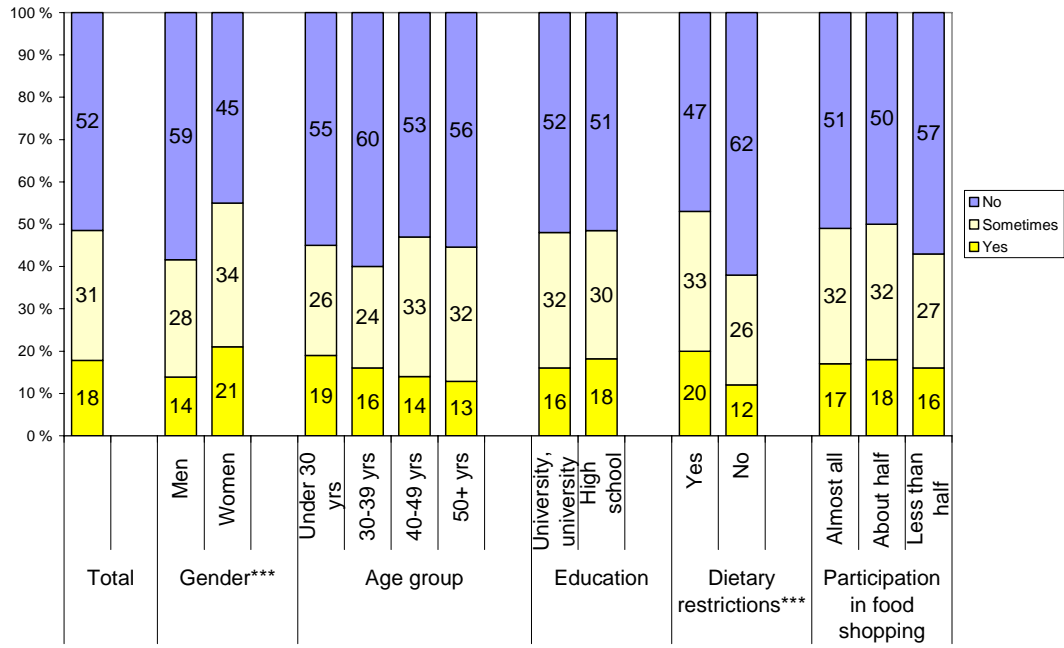


Figure 6-17: Proportion of consumers who report that they check the Keyhole on food products when they buy the first time. Percent. Adjusted for age, gender and geographical region. * p<0.001, * p<0.01. (N=1001)**