European Commission

Study assessing consumer understanding of tyre labels

Final report

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Study assessing consumer understanding of tyre labels

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1. Introduction

The new proposed Regulation updates the tyre label design by aligning it more closely to the EU energy label, as provided for by the energy labelling framework Regulation (EU) 2017/1369 and the product-specific regulations recently made under it. The EU energy label, as provided for by Regulation (EU) 2017/1369, repealing Directive 2010/30/EU, aims at promoting the uptake of more efficient energy-related products. The energy label, as well as the tyre label, aim to help consumers make informed purchasing choices by facilitating product comparisons among products with different characteristics that influence energy efficiency and safety. The tyre label focuses on the fuel efficiency of the product, but also includes other aspects (such as noise level and wet grip) relevant to consumers to make an informed choice.

Regulation (EU) 2017/1369 states that where appropriate, when preparing delegated acts, the Commission shall test the design and content of the (energy) labels for specific product groups with representative groups of Union customers to ensure their clear understanding of the labels. The Commission considers it useful to undertake such testing for tyre labels as well.

The objective of this study was to develop new tyre labels and to test, for the current and new tyre labels, the impact on consumer understanding and purchase decisions. The tyre label, covering tyres for passenger cars (C1 tyres), light commercial vehicles (C2 tyres) and heavy-duty vehicles (C3 tyres), contains features in the following categories:

- the fuel efficiency (based on rolling resistance);
- safety performance (based on the wet grip, snow grip, and ice grip);
- health (based on the rolling noise).

The **fuel efficiency** – defined in terms of the Rolling Resistance Coefficient – and the safety performance of tyres – as indicated by the **wet grip** – are currently displayed on two A-G scales. The **external rolling noise** is displayed in decibels and depicted with one, two or three black sound waves. The **snow grip** and **ice grip** are not displayed on the tyre label as they do not form part of the current Regulation. It has not yet been tested whether consumers understand the symbols that are displayed on the current label. Therefore, one of the aims of the study was to test understanding of the current tyre label. In addition, the tyre label is brought further in line with the new house style[1] of the energy labels and alternative pictograms were developed and tested with consumers. The study provides insight into the extent to which consumers understand the various elements of these newly developed label alternatives.

This study examined consumer understanding and relevance of separate label elements of a draft tyre label. The study provides insight into:

- consumer **understanding** of specific pictograms designed to represent the proposed product features;

[1] Study on the impact of a draft energy label on consumer understanding and purchase decisions for household refrigerating appliances. Specific contract No. ENER/C3/FV2017-438/10/FWC2015-631/02 under Framework contract No. ENER/C3/2015-631.

- the perceived **relevance** of the product features proposed to be represented on the new labels;
- aspects that consumers consider important when **choosing** new tyres.

The pictograms aim to help consumers make informed decisions by facilitating comparisons among tyres with different characteristics. The pictograms that were developed and tested represent: (1) fuel efficiency, (2) wet grip, (3) snow grip, (4) ice grip, and (5) the external rolling noise. For each pictogram, three alternatives were developed and tested (see Table 1.1) and compared with the current label pictograms (alternative 1). One of the three newly developed alternatives is the current label updated to the new (energy label) house style, including ice and snow grip symbols (alternative 2, in Table 1.1).

For the **external rolling noise pictogram**, the alternative that will become part of the new energy labels was included (alternative 3) as well as an alternative that aimed to better communicate that the origin of the sound is the contact of the tyre with the asphalt (alternative 4). The **snow grip pictogram** is based on the 3PMSF symbol (i.e. the “three-peak mountain and snowflake” symbol). It was proposed to use the 3PMSF symbol for the tyre label as it is already used on the tyre sidewall itself. For ice grip, a similar symbol was included (alternative 2 in Table 1.1). Alternatives 2 and 3 provide more context for the understanding of the snow and ice grip pictograms by combining them with a tyre or a car, respectively.

The pictograms were combined into full tyre labels (see Table 1.2 and 1.3). Furthermore, two representations of the **wet grip scale** were tested and two ways to represent **unsuitability for snowy and/or icy roads**. Table 1.2 provides an overview of all labels that were tested in the study. Label alternatives A and B use a similar scale for wet grip as for fuel efficiency, but with different shades of blue instead of a red to green colour scheme. In label alternatives C and D a different representation of the wet grip scale is used. Finally, if a tyre is not suited for snowy or icy roads, the snow and ice grip pictogram were either removed from the label (label alternatives A and C, see Table 1.2 and Table 1.3) or this unsuitability was indicated with a cross (label alternatives B and D, see Table 1.2 and Table 1.3).

Table 1.1. Pictogram alternatives

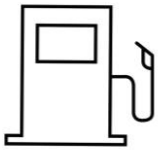
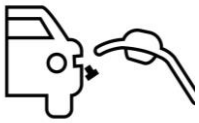
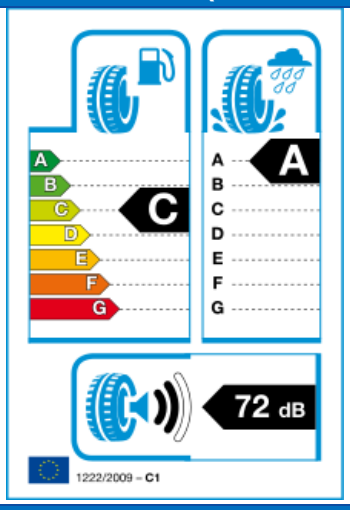
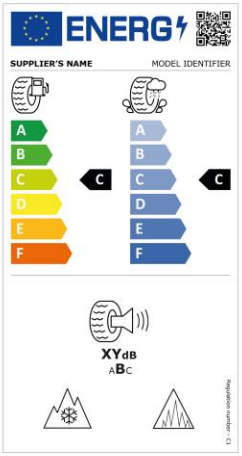
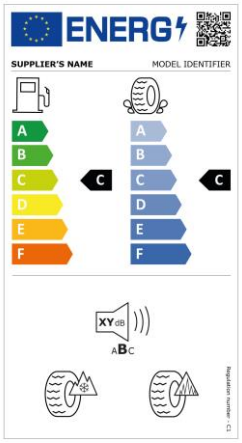
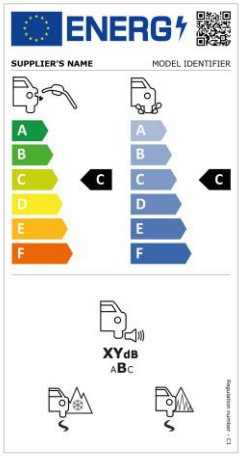
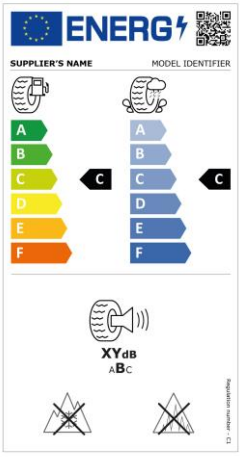
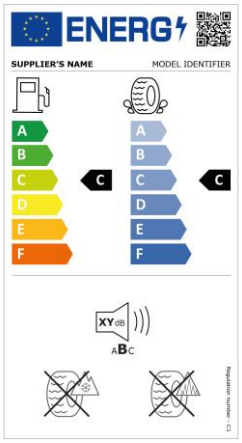
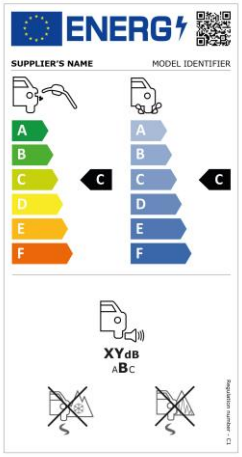
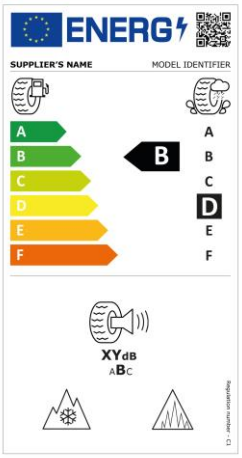
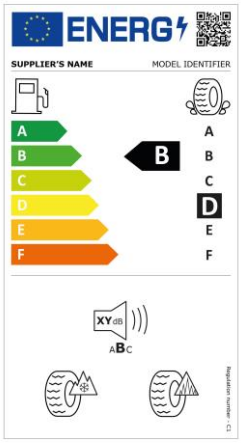
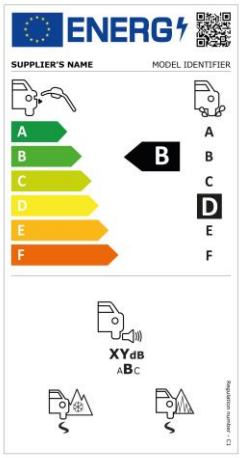
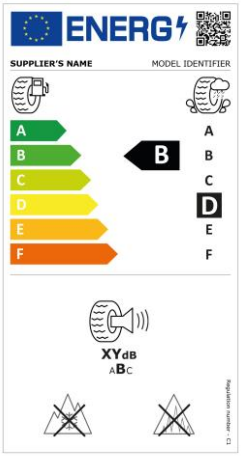
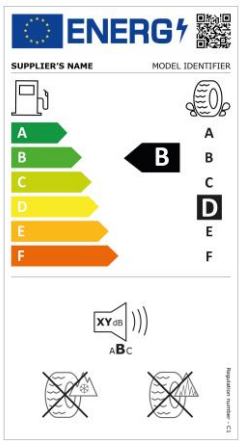
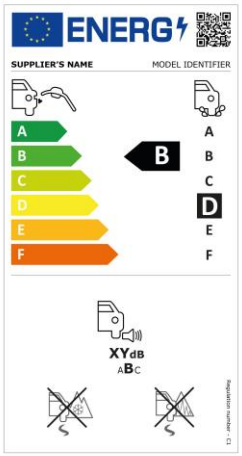
Pictogram	Pictogram alternative 1 (current label)	Pictogram alternative 2	Pictogram alternative 3	Pictogram alternative 4
Fuel efficiency				
Wet grip				
External rolling noise				
Snow grip	NA			
Ice grip	NA			

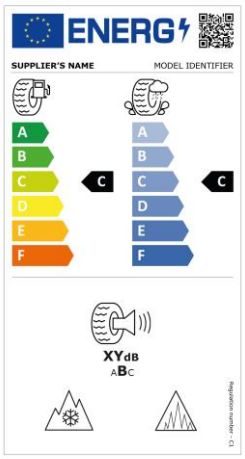
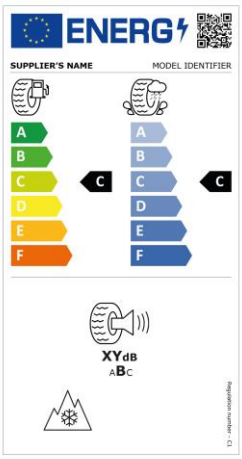
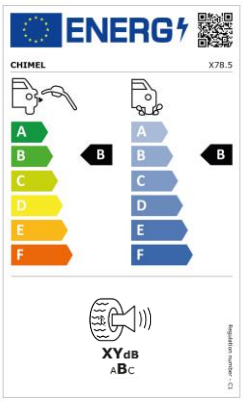
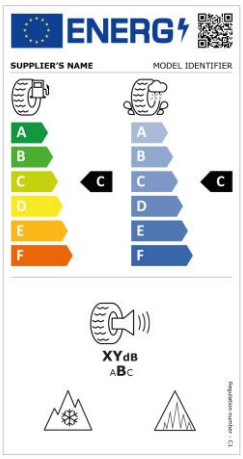
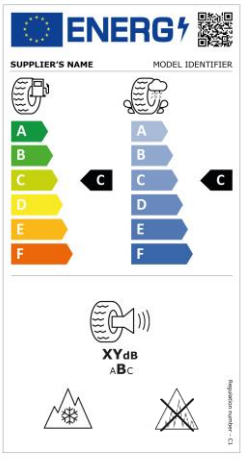
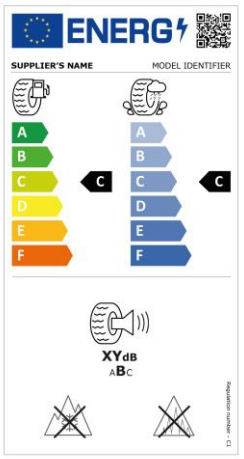
Table 1.2. Label alternatives

<table>
<tr><th colspan="3">Label alternative 1 (current label)</th></tr>
<tr><td colspan="3"> 
</td></tr>
<tr><th>Label alternative 2A</th><th>Label alternative 3A</th><th>Label alternative 4A</th></tr>
<tr><td> 
</td><td> 
</td><td> 
</td></tr>
<tr><th>Label alternative 2B</th><th>Label alternative 3B</th><th>Label alternative 4B</th></tr>
<tr><td> 
</td><td> 
</td><td> 
</td></tr>
</table>

Label alternative 2C	Label alternative 3C	Label alternative 4C
		
Label alternative 2D	**Label alternative 3D**	**Label alternative 4D**
		

Note – Label alternatives 2-4 show the labels with the different pictogram alternatives as in Table 1.1. Labels A and B and labels C and D have the same wet grip scale. Labels A and C indicate unsuitability of snow and/or ice grip by omitting the respective pictogram(s); labels B and D indicate unsuitability by using a cross on the respective pictogram(s), see Table 1.3.

Table 1.3. Unsuitability for snowy/icy roads: Label examples for alternatives 2A (pictogram omission to indicate unsuitability) and 2B (pictogram cross to indicate unsuitability)

Label alternative 2A: Tyre with snow and ice grip	Label alternative 2A: Tyre with snow but not ice grip	Label alternative 2A: Tyre with no snow or ice grip
		
Label alternative 2B: Tyre with snow and ice grip	**Label alternative 2B: Tyre with snow but not ice grip**	**Label alternative 2B: Tyre with no snow or ice grip**
		

2. Methodology

To gain insight into consumer understanding of the draft tyre labels, an online survey was undertaken in Ipsos' online panels in six European countries. The fieldwork was conducted in August 2019. More than 800 respondents per country completed the survey (4976 respondents in total). At the start of the survey it was explained to respondents that they were taking part in an important study for the European Commission. It was explained to them that there are a number of considerations to make when buying tyres and that the tyre labels facilitates a quick and easy comparison in terms of environmental and safety aspects. The survey consisted of three parts:

Part 1: Product identification and choice task

In the first part of the questionnaire, respondents were presented with an assortment of nine tyres and were instructed to find tyre(s) with a specific feature. They were asked to imagine that the tyres of their car needed to be replaced and that they visit a store to buy new tyres. If they usually let their garage or dealer decide on the type of tyres, they were asked to imagine that they were buying tyres themselves this time. To assess whether respondents understand specific label elements, they were asked to identify best or worst performing tyre alternatives. Half of the respondents were asked to identify product(s) with best performance on a certain aspect (e.g. "the lowest fuel consumption") and the other half were asked to identify product(s) with the worst performance on that aspect (e.g. "the highest fuel consumption").[2] The tyres were described in terms of key attributes and carried tyre labels (see Figure 2.1 for an example). Respondents saw only one of the label alternatives for the specific product group (randomly decided, see Table 1.2-1.3). For the features of interest (e.g. fuel efficiency, wet grip, snow grip, ice grip, external noise level), we measured whether respondents could accurately identify products with the highest (or lowest) level of that specific feature (**objective comprehension**). Furthermore, we asked which of the tyres they would choose if they were actually planning to buy tyres (**choice**).

Part 2: Comprehension test (isolated pictograms)

In the second part, for each of the features of interest – fuel efficiency, wet grip, snow grip, ice grip and external noise level – respondents saw either the current alternative or one out of three pictogram alternatives designed for this study (see Table 1.1 for an overview). For the snow and ice grip no current alternatives are available, so only the newly developed alternatives were tested. For each feature, respondents were first asked whether they thought the pictogram was clear or unclear (**subjective comprehension**). Next, they were asked to identify the meaning of the pictogram via a multiple choice question (**objective comprehension**). Subsequently, the meaning of the pictogram was briefly explained to the respondent, after which the perceived clarity of the pictogram was assessed once more ("Now you know its meaning, do you think this symbol is clear or unclear?"). Finally, respondents were asked whether they found the information (e.g. about the fuel efficiency) important and whether they considered it important to include the information on the tyre label (**perceived relevance**). This procedure was repeated for all relevant tyre features. Tyre features were presented in a randomized order to respondents. Finally, the clarity of the different representations for the wet grip scale was assessed.

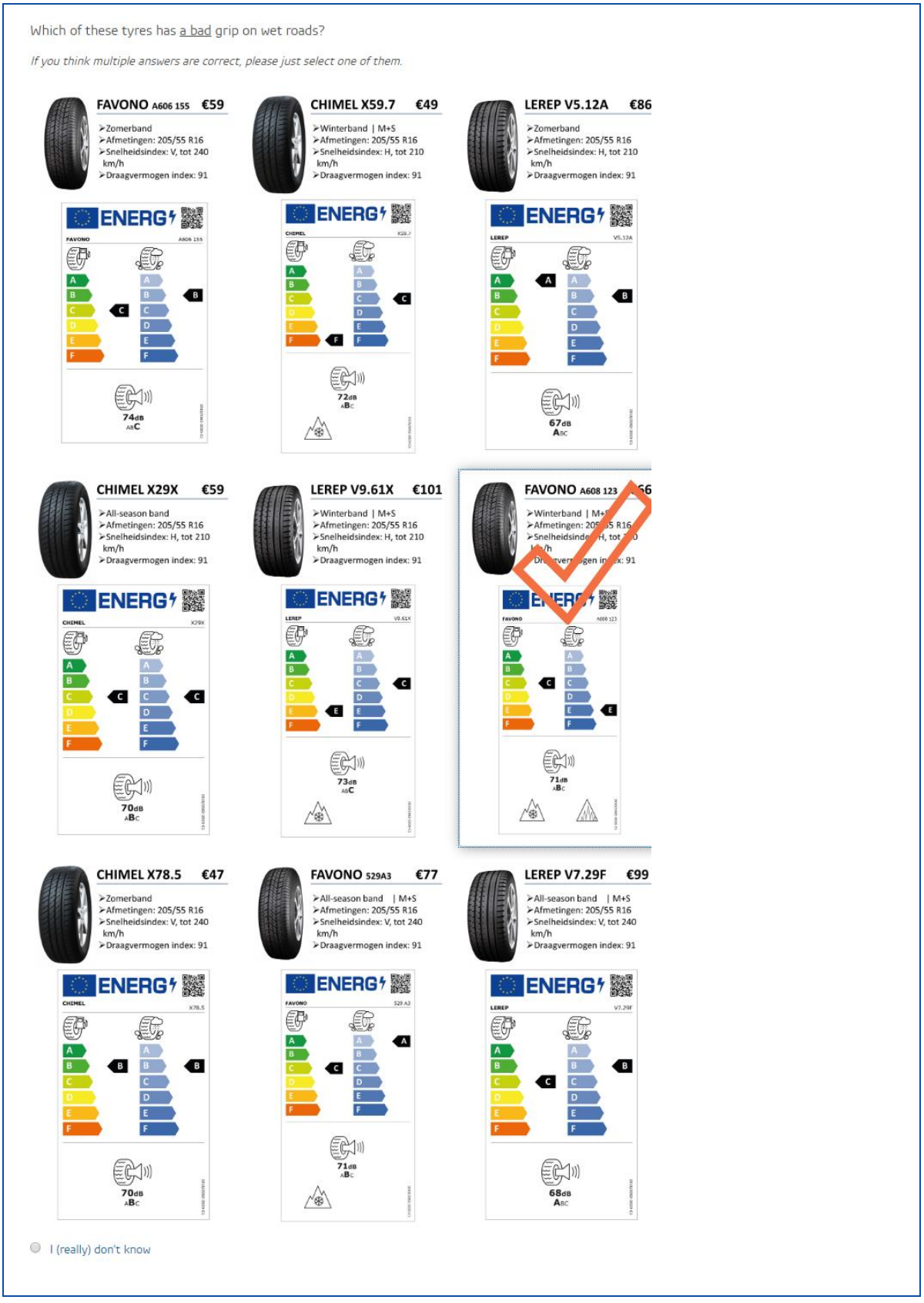
[2] We had respondents identify the best *and* worst performing tyre on a specific aspect as this provides more complete insight in whether they are able to correctly interpret the information on the label.

Part 3: Background information

In the last part, we aimed to gain insight into the tyre-buying process, assessing (1) awareness of the existence of a tyre label and recognition of the current label, (2) whether respondents had recently bought tyres or whether they let their garage buy these, and (3) which specific aspects they consider important when buying tyres (e.g. price, brand, etc.), which specific aspects they consider important to have on the label and which information they currently miss on the label (if any). Finally, we measured relevant person-related characteristics – environmental concern and product category expertise – as well as socio-demographic information (age, gender, educational level, and financial situation).

Parts 1 and 2 provided insight into consumer choices and comprehension of the current and newly developed pictograms for tyres. Next to the current tyre label, three tyre label alternatives were tested. Respondents were randomly assigned to one of three variants of the tyre label, or to the current label. To control for order effects, parts 1 and 2 were counterbalanced between respondents: half of the respondents started with the first part (the choice tasks) and the other half started with the second part (the comprehension test). The complete survey can be found in Appendix A.

Figure 2.1. Product identification task: example[3]



[3] In the actual questionnaire, all information (other than the tyre label) was presented in the language of the respondent.

2.1. Sampling

Country sample

The survey was administered in six countries: Germany, Italy, The Netherlands, Portugal, Romania and Sweden. Together these countries cover 39% of the EU28-pouplation with adequate geographical spread (see Figure 2.2).

Figure 2.2. Country sample

Table 2.1 shows the details per country for relevant country characteristics. The sample included:

- One country where the **environmental impact of a product or service had a low influence on product choice**, three where it had an average level of influence and two with a high level of influence.[4] The selection also included two countries where there has been a big (positive) change in this figure since 2011, two where the change has been around average and two where there has been little or no change since 2011;
- Two countries with a high percentage of households with **broadband internet**[5], two with a low broadband rate and two with an average rate;
- Three countries with low **consumer empowerment**[6] and three countries with a high level of consumer empowerment;
- Two countries with a low **GDP/capita**, one country with an average GDP/capita and three countries with a high GDP/capita.

[4] Flash Eurobarometer 397; http://ec.europa.eu/COMMFrontOffice/PublicOpinion/index.cfm/Survey/getSurveyDetail/instruments/FLASH/surveyKy/2031

[5] Eurostat (2015) Households having access to the internet by type of connection (code tin00073)

[6] Index based on http://europa.eu/rapid/press-release_MEMO-11-229_en.htm

Table 2.1. Country sample

Country code	Popula-tion	Region	Concern for the environ-ment (2014)	Change in concern for the environ-ment (2011-2014)	Broadband internet at home (2015)	Consumer empower-ment	GDP per capita
	%		Percentage	Percentage	Percentage	Level	Level
DE	15,9%	West	54%	25%	88%	17,3	124
IT	11,8%	South	59%	31%	74%	13,5	96
NL	3,3%	West	58%	18%	94%	17,3	131
PT	2,1%	South	42%	0%	69%	13,7	78
RO	4,0%	East	65%	34%	65%	11,1	55
SE	1,9%	North	56%	16%	83%	17,0	123
EU-28	100%		55%	26%	80%	15,0	100

Table 2.2. Sample description: socio-demographics[7]

	Total	DE	IT	NL	PT	RO	SE
Sample size	4976	823	828	825	838	833	829
Gender							
Male	49,8%	50,4%	49,5%	50,2%	48,0%	49,9%	50,8%
Female	50,2%	49,6%	50,5%	49,8%	52,0%	50,1%	49,2%
Age							
Age: 18-24	9,0%	6,8%	5,0%	9,6%	9,5%	9,0%	14,1%
Age: 25-34	20,5%	23,0%	21,4%	21,1%	17,7%	20,5%	19,2%
Age: 35-44	18,4%	16,0%	23,2%	15,0%	23,2%	18,8%	14,1%
Age: 45-54	23,1%	24,7%	21,0%	24,6%	20,2%	23,0%	25,0%
Age: 55-70	29,1%	29,5%	29,5%	29,7%	29,5%	28,6%	27,6%
Education							
Elementary school or less	1,4%	0,2%	0,8%	0,7%	0,6%	0,6%	5,5%
Some high school	4,3%	4,5%	6,3%	3,6%	4,7%	2,8%	4,1%
Graduated from high school	43,4%	58,3%	48,9%	45,9%	38,7%	28,0%	40,7%
Graduated from college/university	33,5%	24,9%	23,7%	31,3%	39,4%	50,1%	31,4%
Post-graduate degree	13,0%	8,9%	16,6%	12,0%	13,2%	17,3%	10,0%
Still studying full-time	2,2%	0,9%	2,3%	2,7%	1,7%	1,0%	4,5%
Other	1,5%	1,7%	1,1%	2,7%	1,0%	0,1%	2,8%
Prefer not to say	0,7%	0,6%	0,4%	1,1%	0,8%	0,2%	1,0%
Household financial situation[8]	2,9	2,8	3,1	2,6	3,2	2,9	2,9

[7] Totals may not add up to 100% due to rounding.

[8] Financial situation ("Would you say that making ends meet every month is…") measured on a 5-point scale from 1 = *very difficult* to 5 = *very easy*.

2.2. Respondent sample

In each country, more than 800 respondents completed the survey. Respondent samples consisted of members of the general public, aged 18-70, nationally representative of each country's population with quotas on age and gender. Tables 2.2 and 2.3 provide a description of the sample sizes and sample characteristics for the total sample and per country. About half of the respondents had looked up information about tyres in the past 12 months. Also, about half of the respondents had bought tyres during the past 12 months, of which more than half purchased the tyres themselves (28,6% of the total sample).

Respondents were incentivised as part of their membership of the Ipsos online panel, where they receive 'points', which can then be converted into shopping vouchers, as a reward for taking part in surveys.

Table 2.3. Sample description: other background information[9]

	Total	DE	IT	NL	PT	RO	SE
Other							
Product category expertise[10]	3,1	3,1	3,5	2,8	2,9	3,6	2,6
Purchased tyres in past 12 months							
Yes, and I purchased the tyres myself	28,6%	31,0%	41,3%	18,1%	27,3%	35,9%	17,7%
Yes, but my garage or dealer selected tyres	14,4%	13,4%	18,7%	18,9%	17,2%	7,5%	10,8%
Yes, but a friend or family member selected tyres	7,9%	4,1%	5,7%	4,6%	8,4%	16,3%	8,0%
No	49,2%	51,5%	34,3%	58,4%	47,1%	40,3%	63,5%
Looked up information about tyres in past 12 months							
Yes, extensively	15,6%	15,0%	20,0%	10,2%	8,7%	31,3%	8,2%
Yes, a little	32,4%	31,8%	40,6%	18,7%	37,3%	38,6%	27,6%
No, none	52,0%	53,2%	39,4%	71,2%	54,0%	30,2%	64,2%
Concern for the environment[11]	5,4	5,2	5,8	4,9	5,9	5,8	4,6
Reason for paying attention to fuel efficiency							
Saving costs	58,7%	57,2%	54,3%	58,3%	63,8%	65,5%	52,8%
Protecting the environment	30,8%	30,3%	38,4%	25,0%	29,2%	29,4%	32,7%
Other	2,1%	2,1%	1,6%	3,3%	2,4%	1,1%	2,4%
Don't know	8.3%	10,4%	5,7%	13,5%	4,5%	4,0%	12,1%

[9] Totals may not add up to 100% due to rounding.

[10] Product category expertise ("I know a great deal about tyres", and "I know more about tyres than most other people") measured on 7-point scales from 1 = *strongly disagree* to 7 = *strongly agree*. Cronbach's alpha = 0,92.

[11] Environmental concern ("In my daily activities, I am conscious about saving energy", "I am worried about the environment" and "I am worried about climate change") measured on 7-point scales from 1 = *strongly disagree* to 7 = *strongly agree*. Cronbach's alpha = 0,88.

3. Findings

This chapter presents the results. In section 3.1, we examine differences between pictogram and label variants in terms of subjective (i.e. self-declared) and objective comprehension (i.e. factual understanding). Subsequently, section 3.2 describes the extent to which consumers perceive the information as relevant, as well as the extent to which they miss certain information on this label. Section 3.3 examines aspects that consumers consider important when choosing new tyres. Section 3.4 examines country differences in understanding and environmental concern and product expertise.

3.1. Comprehension

In this section, we present the results of the comprehension test. For fuel efficiency, wet grip, and external noise level, respondents were shown either the current pictogram or one of three pictogram alternatives (see Table 1.1). For snow grip and ice grip, respondents were shown one of three pictogram alternatives (as snow and ice grip are not displayed on the current tyre label). We assessed comprehension in three ways. For each feature, we first present the results of the part in which the pictograms were presented **in isolation**.[12] In this part, we assessed subjective (self-declared) as well as objective (factual) comprehension for each pictogram. **Subjective comprehension** was assessed both before ("Do you think this symbol is clear or unclear?") and after the pictogram's meaning was explained to the respondent ("Now you know its meaning, do you think this symbol is clear or unclear?"). This allows us to examine the extent to which the perceived clarity of an pictogram improves after its meaning is explained. **Objective comprehension** was assessed via a multiple choice quiz question. We then present the results of the product identification task in which **objective comprehension** of the pictograms was measured **in a product context**. In this part, respondents were shown nine tyres with full tyre labels and other tyre information (e.g. price). For each of the features of interest, they were asked to identify tyres with either the highest or the lowest level on that feature (e.g. "Which of these tyres has the highest/ lowest fuel consumption?").

3.1.1. Fuel efficiency

Subjective comprehension: isolated pictogram

Overall, 56,9% of the respondents perceived the fuel efficiency pictogram as (very) clear. The relative performance of the various fuel efficiency alternatives depended on whether the pictogram's meaning was explained to respondents.[13] Before the meaning of the pictogram was explained to the respondent, self-reported understanding was **highest for pictogram alternative 1 (60,8%),** followed by alternative 3 (58,0%) and alternative 2 (55,8%), and lowest for alternative 4 (47,1%, see Table 3.1). After explaining the meaning of the pictogram, understanding was **highest for alternative 1 (66,7%)**, followed by alternative 2 (62,5%) and alternative 3 (56,0%). Self-reported understanding remained lowest for alternative 4 (48,3%).[14]

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[12] Note that consumers were aware that the survey concerned tyre labels.

[13] There is a significant pictogram alternative x explanation interaction: $p < 0{,}001$.

[14] For pictogram alternatives 1 and 2, perceived clarity significantly increased after the explanation was provided: *ps* < 0,001. For pictogram alternative 3, perceived clarity did not change after the explanation: $p = 0{,}543$. For pictogram alternative 2, perceived clarity significantly decreased after the explanation: $p < 0{,}001$.

Table 3.1. Subjective pictogram comprehension: fuel efficiency[15]

		Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)	Total (*N* = 4976)
						
Total	% (very) clear	63,8%	59,2%	57,0%	47,7%	56,9%
	% (very) unclear	16,5%	18,2%	21,4%	30,7%	21,7%
	Average (5-point)	3,8[a]	3,6[b]	3,6[b]	3,3[c]	3,5
Before explanation	% (very) clear	60,8%	55,8%	58,0%	47,1%	55,4%
	% (very) unclear	16,9%	19,0%	20,0%	29,6%	21,4%
	Average (5-point)	3,7[a]	3,6[b]	3,7[ab]	3,2[c]	3,5
After explanation	% (very) clear	66,7%	62,5%	56,0%	48,3%	58,4%
	% (very) unclear	16,1%	17,5%	22,9%	31,7%	22,1%
	Average (5-point)	3,8[a]	3,7[b]	3,5[c]	3,3[d]	3,6

Note – Averages with different superscripts (in rows) indicate statistically significant differences at p < 0,05. For this and other tables, it indicates that if the superscripts are the same, the means are not significantly different (i.e. the difference is likely due to chance). If the superscripts differ (a vs. b), the difference in means very likely reflects a real difference between the alternatives rather than chance variation.

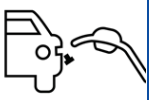
Objective comprehension: isolated pictogram

Next, via a multiple choice question, we examined whether respondents actually understood the meaning of the fuel efficiency pictogram (see Table 3.2). When the fuel efficiency pictogram was presented in isolation, understanding was not so high (ranging from 33,6% to 53,9%) and differed significantly between pictogram alternatives.[16] **Pictogram alternatives 1 and 2 were best understood objectively**: about 5 out of 10 respondents indicated the correct meaning of alternative 1 (53,9%) and 2 (50,6%), about 4 out of 10 respondents of alternative 3 (42,7%), and only about 3 out of 10 respondents of alternative 4 (33,6%). Thus, objective understanding was highest for alternatives 1 and 2, and lowest for alternative 4. Further, a substantial share of respondents inaccurately believed that pictogram alternatives 3 and 4 indicated the fuel efficiency of the car (instead of the tyre; 24,5% and 34,5%, respectively).

15 "Do you think this symbol is clear or unclear?" measured on a 5-point scale from (1) *very unclear* to (5) *very clear*.

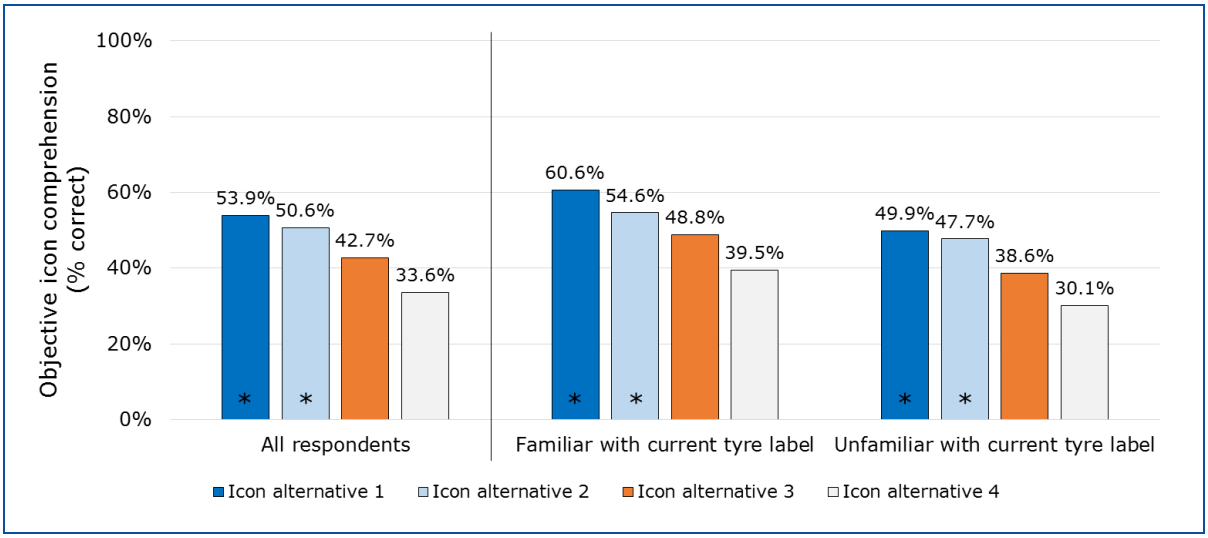
16 Differences between pictogram alternatives: $p < 0,001$.

Table 3.2. Objective pictogram comprehension: fuel efficiency

	Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)	Total (*N* = 4976)
What do you think this symbol indicates?					
The fuel efficiency of the tyre	53,9%[a]	50,6%[a]	42,7%[b]	33,6%[c]	45,1%
The fuel efficiency of the car	16,1%	16,0%	24,5%	34,5%	22,8%
That it should be regularly checked at a gas station if the tyre pressure is still at the recommended level	9,8%	11,2%	8,8%	6,5%	9,1%
Acceleration efficiency of the tyre	1,6%	1,3%	1,5%	1,4%	1,5%
The tyre pressure can easily be topped up at a gas station	9,3%	11,4%	8,5%	4,6%	8,4%
I (really) don't know	9,3%	9,6%	14,0%	19,5%	13,1%

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Figure 3.1. Objective pictogram comprehension: fuel efficiency



Note – The bars with asterisks reflect the best performing pictogram alternatives, that is, the alternative with the highest percentage of correct responses and other pictogram alternative(s) with a performance that does not significantly differ from this best performing alternative (i.e. the observed difference may be due to chance).

Follow-up analyses examined whether consumers who are familiar with the current tyre label responded differently to the new pictogram alternatives than consumers who are not familiar with the current label. Figure 3.1 provides the results. In the figure, bars with an asterisk indicate the best performing pictogram alternative(s). On average, consumers familiar with the current label were better able to identify the correct meaning of the fuel efficiency pictogram as compared to consumers unfamiliar with this label.[17] The relative performance of the different pictogram alternatives did not significantly depend on respondents' familiarity with the current label, however[18]: For both consumer groups, pictogram alternatives 1 and 2 significantly outperformed the other pictogram alternatives.

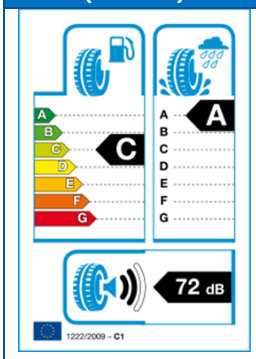
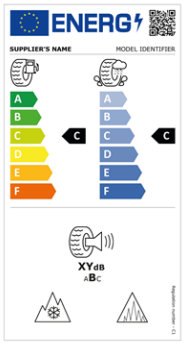
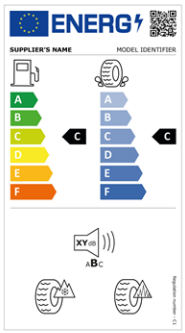
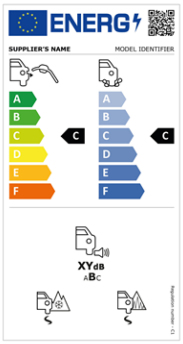
[17] Positive effect of familiarity with the current tyre label: $p < 0{,}001$.

[18] No significant pictogram alternative x familiarity interaction: $p = 0{,}760$.

Objective comprehension: in product context

Finally, we examined objective comprehension in a product context. Respondents were shown nine tyres, for which the tyre label as well as other product information was provided (see Figure 2.1). They were asked to select the tyre with the highest fuel consumption. **Product identification accuracy was significantly higher for alternative 1 (66,5%) and alternative 3 (61,7%)**, followed by alternative 2 (59,5%) and alternative 4 (57,6%, see Table 3.3).[19]

Table 3.3. Accurate product identification: fuel efficiency

Alternative 1 (N = 615)	Alternative 2 (N = 629)	Alternative 3 (N = 618)	Alternative 4 (N = 613)	Total (*N* = 2475)
				
66,5%[a]	59,5%[b]	61,7%[ab]	57,6%[b]	61,3%

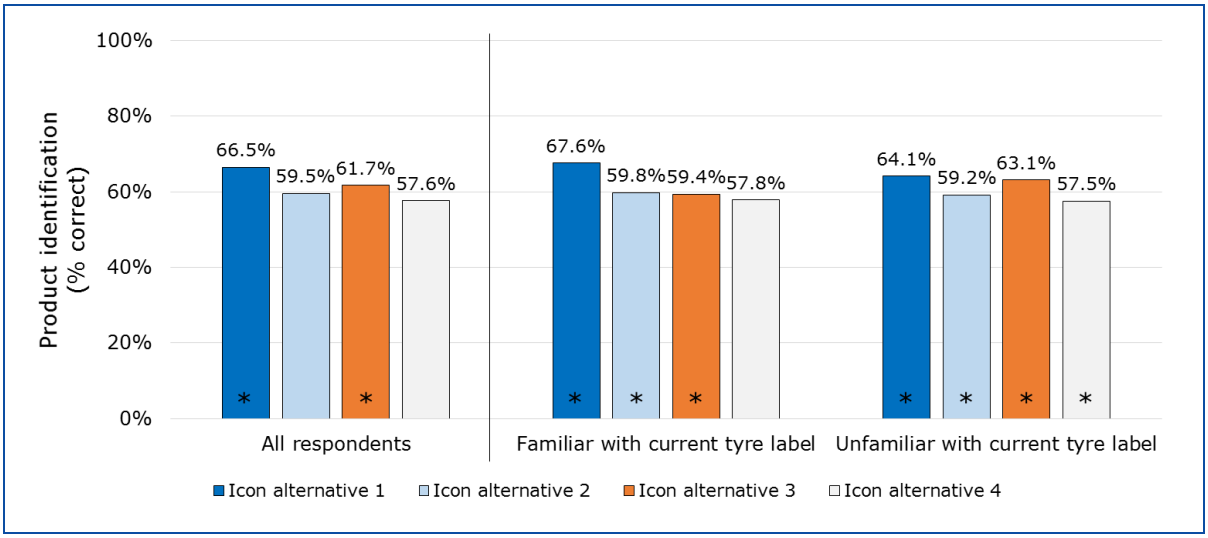
Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Figure 3.2 shows the results for consumers that are familiar versus unfamiliar with the current type label. The analysis revealed that the pattern of results did not significantly differ between the two consumer groups (i.e. observed differences may be due to chance).[20]

19 Differences between pictogram alternatives: $p = 0,042$.

20 The pictogram alternative x familiarity interaction is not significant: $p = 0,564$.

Figure 3.2. Accurate product identification: fuel efficiency



Note – The bars with asterisks reflect the best performing pictogram alternatives, that is, the alternative with the highest percentage of correct responses and other pictogram alternative(s) with a performance that does not significantly differ from this best performing alternative (i.e. the observed difference may be due to chance).

3.1.2. Wet grip

Subjective comprehension: isolated pictogram

Overall, 67,7% of the respondents perceived the wet grip pictogram as (very) clear (see Table 3.4). Before explaining the meaning of the pictogram to respondents, self-reported understanding was **higher for pictogram alternative 1 (74,6%) than for alternative 2 (63,1%) and alternative 3 (63,1%)**, and lowest for alternative 4 (49,0%). After explaining the pictogram, the same pattern emerged: Understanding was still highest for alternative 1 (82,8%), followed by alternative 2 (75,6%) and 3 (73,1%), and lowest for alternative 4 (61,2%). Even though the improvement in comprehension following explaining the pictogram's meaning was greatest for pictogram alternative 4, this did not close the gap with the other alternatives.[21]

Objective comprehension: isolated pictogram

Via a multiple choice question it was examined whether respondents understood that the wet grip pictogram reflects the tyre grip on wet roads (see Table 3.5). About 8 out of 10 respondents selected the correct answer. There were significant differences in pictogram understanding between pictogram alternatives.[22] Consistent with the subjective comprehension results, **objective comprehension was highest for pictogram alternative 1** (84,1%), followed by alternative 2 (78,5%) and 3 (77,3%), and lowest for alternative 4 (70,4%).

[21] There is a significant pictogram alternative x explanation interaction: $p < 0{,}001$. For all pictogram alternatives, perceived clarity significantly increased after the pictogram's meaning was explained to respondents: $ps < 0{,}001$.

[22] Differences between pictogram alternatives: $p < 0{,}001$.

Table 3.4. Subjective pictogram comprehension: wet grip[23]

		Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)	Total (*N* = 4976)
						
Total	% (very) clear	78,6%	69,3%	68,1%	55,1%	67,7%
	% (very) unclear	6,0%	10,4%	10,4%	20,6%	11,9%
	Average (5-point)	4,2[a]	3,9[b]	3,9[b]	3,5[c]	3,9
Before explanation	% (very) clear	74,6%	63,1%	63,1%	49,0%	62,4%
	% (very) unclear	7,1%	11,9%	11,9%	23,4%	13,6%
	Average (5-point)	4,1[a]	3,7[b]	3,8[b]	3,3[c]	3,7
After explanation	% (very) clear	82,8%	75,6%	73,1%	61,2%	73,1%
	% (very) unclear	4,9%	8,8%	9,0%	17,8%	10,2%
	Average (5-point)	4,3[a]	4,0[b]	4,0[b]	3,7[c]	4,0

Note – Averages with different superscripts (in rows) indicate statistically significant differences at p < 0,05.

Table 3.5. Objective pictogram comprehension: wet grip

	Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)	Total (*N* = 4976)
What do you think this symbol indicates?					
Tyre grip on wet road	84,1%[a]	78,5%[b]	77,3%[b]	70,4%[c]	77,5%
Fuel efficiency on wet roads	4,5%	4,1%	4,1%	6,0%	4,7%
Tyre suited for off-road driving	1,4%	2,6%	3,8%	2,1%	2,5%
Protection against wear in wet-weather	5,2%	8,2%	4,6%	5,8%	6,0%
Tyre suited for gravel surfaces	0,6%	1,3%	4,1%	4,3%	2,6%
I (really) don't know	4,3%	5,3%	6,1%	11,4%	6,8%

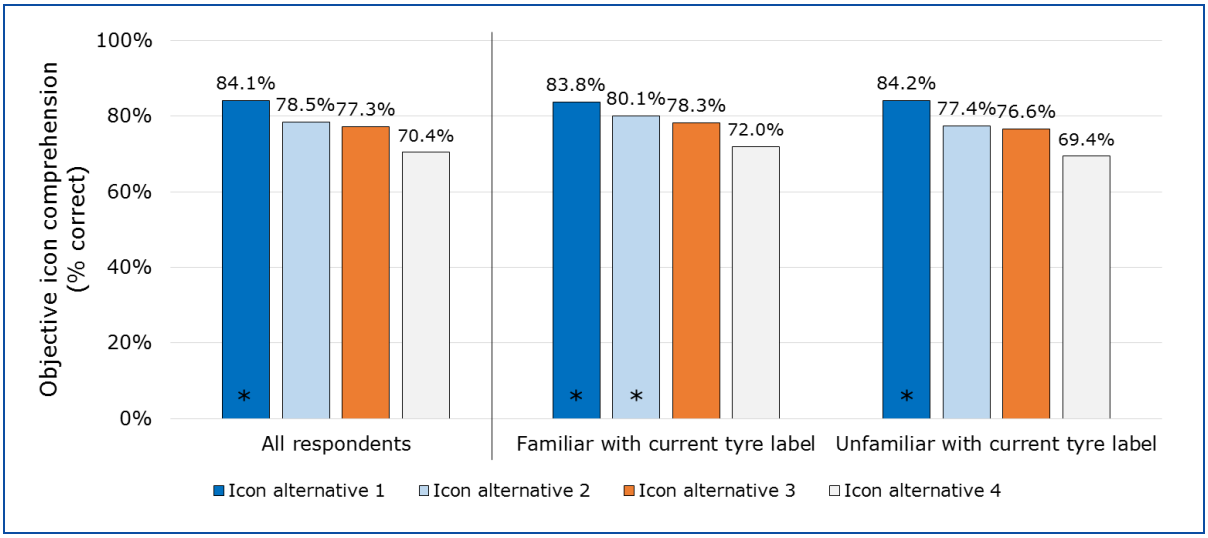
Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Figure 3.3 shows the results for consumers that are familiar versus unfamiliar with the current tyre label. The relative performance of the four different pictogram alternatives did not depend on whether or not the respondent recognised the current tyre label.[24]

[23] "Do you think this symbol is clear or unclear?" measured on a 5-point scale from (1) *very unclear* to (5) *very clear*.

[24] The pictogram alternative x familiarity interaction is not significant: $p = 0,776$.

Figure 3.3. Objective pictogram comprehension: wet grip



Note – The bars with asterisks reflect the best performing pictogram alternatives, that is, the alternative with the highest percentage of correct responses and other pictogram alternative(s) with a performance that does not significantly differ from this best performing alternative (i.e. the observed difference may be due to chance).

Objective comprehension: in product context

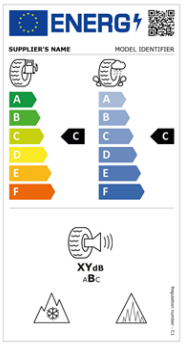
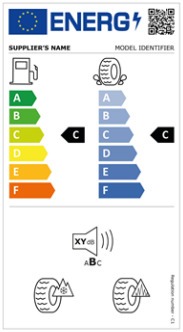
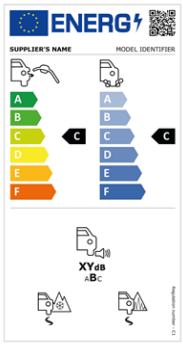
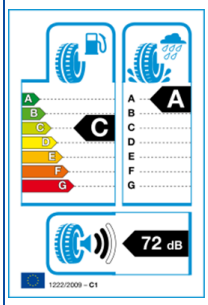
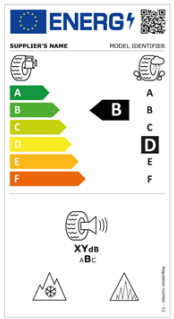
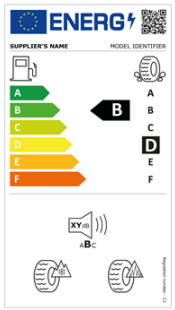
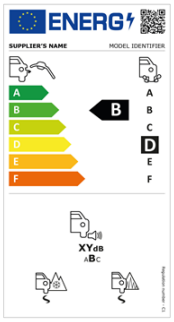
Respondents were asked to identify the tyre with the best grip on wet roads. In addition to the different pictogram alternatives, two new representations of the wet grip scale were tested against the current wet grip scale. The new wet grip scales included in the test were (1) a scale similar to the fuel efficiency scale but with different shades of blue (see label alternative A+B in Table 3.6), and (2) a scale with a very different visual format (see label alternative C+D in Table 3.6).

Table 3.6 shows the percentage of respondents who identified the tyre with the best wet grip. The scale type did not **affect the likelihood of respondents identifying the correct tyre**, nor did the effectiveness of the specific wet grip pictogram alternatives significantly depend on the specific scale representation used.[25] Independent of the type of scale used, pictogram alternative 2 was better understood than alternative 4, with alternative 3 falling in between (see Table 3.6).[26]

[25] There is no significant effect of scale type: p = 0,402, and also no pictogram alternative x scale type interaction: p = 0,788.

[26] Differences between pictogram alternatives: p = 0,001.

Table 3.6. Accurate product identification: wet grip

	Alternative 1 (N = 615)	Alternative 2A+B (N = 323)	Alternative 3A+B (N = 293)	Alternative 4A+B (N = 313)	Total (N (A+B) = 929)
					
		54,2%[a]	48,5%[ab]	41,2%[b]	48,0%
		Alternative 2C+D (N = 306)	**Alternative 3C+D (N =325)**	**Alternative 4C+D (N = 300)**	**Total (N (C+D) = 931)**
					
		50,0%[a]	46,8%[a]	41,3%[a]	46,0%
Total	69,4%[a]	52,2%[b]	47,6%[b]	41,3%[c]	52,0%

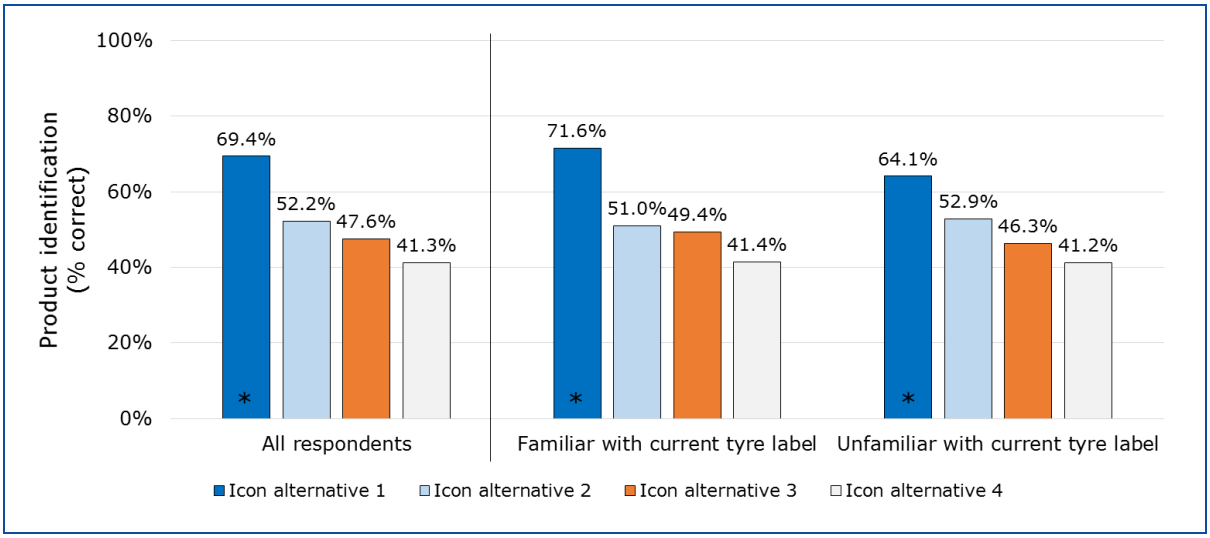
Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

We also compared the performance on the product identification task of respondents who were exposed to labels with new alternatives of the wet grip pictogram with the performance of respondents who saw tyres with the current label (see Table 3.6, last row). The percentage of respondents who identified the tyre with **the best grip on wet roads was significantly higher for pictogram alternative 1 (66,8%)** than for alternative 2 (52,2%) and 3 (47,6%), and lowest for alternative 4 (41,3%).[27] Figure 3.4 shows the results for consumers that are familiar versus unfamiliar with the current tyre label. Again, the relative performance of the four different pictogram alternatives did not significantly depend on whether or not the respondent was familiar with the current tyre label.[28]

[27] Differences between pictogram alternatives: $p < 0,001$.

[28] The pictogram alternative x familiarity interaction is not significant: $p = 0,380$.

Figure 3.4. Accurate product identification: wet grip



Note – The bars with asterisks reflect the best performing pictogram alternatives, that is, the alternative with the highest percentage of correct responses and other pictogram alternative(s) with a performance that does not significantly differ from this best performing alternative (i.e. the observed difference may be due to chance).

Table 3.7. Wet grip and fuel efficiency: pictogram clarity

	Current wet grip scale (N = 1225)	Blue shaded wet grip scale (Alternative A+B) (N = 1881)	Wet grip scale in different visual format (Alternative C+D) (N = 1870)	Total (N = 4976)
The specific design of the wet grip scale helped me to understand it.	78,1%[a]	77,0%[a]	75,3%[a]	76,6%
The different designs of the scales helped me to understand that these are two different types of information.	86,2%[a]	84,6%[a]	81,3%[b]	83,7%

Note – Percentages with different superscripts indicate statistically significant differences at $p < 0,05$.

Respondents were also asked whether the different representations of the wet grip scale and fuel efficiency scale helped them to better understand the meaning of these scales. We compared the current fuel efficiency and wet grip scales with the blue shaded wet grip scale (as in alternative A+B in Table 3.6) and the other wet grip scale (as in alternative C+D in Table 3.6). 83,9% of the respondents indicated that the specific design of the fuel efficiency scale helped them to understand it. For the wet grip scale this was 76,6%. There were no significant differences across label alternatives (the current label, the label with the blue shaded wet grip scale and the label with the wet grip scale in a different visual format) in the extent to which the specific design of the wet grip scale facilitated understanding (see Table 3.7).[29] A large majority of respondents indicated that the distinct designs of the fuel efficiency and wet grip scales in **the current label (86,2%) and the label with the blue shaded wet grip scale (84,6%) helped them to understand that these scales represent different types of information** (Table 3.7). This percentage was slightly lower (81,3%) when the wet grip scale was presented in a different visual format (alternative C+D in Table 3.6).[30]

[29] Differences between scale representations: $p = 0,167$.

[30] Differences between scale representations: $p < 0,001$.

3.1.3. Snow grip

The snow grip is currently not displayed on the tyre label. Therefore, we compare understanding of the three new alternatives in this section.

Subjective comprehension: isolated pictogram

Subjective understanding significantly depended on the specific pictogram alternative presented to the respondent.[31] **Subjective understanding was highest for pictogram alternative 2,** which presented a tyre next to the snow grip symbol. This pictogram was considered (very) clear by 69,6% of the respondents. Understanding was significantly lower for alternative 3, which displayed a car next to the snow grip symbol (63,0%), and alternative 1, which displayed the snow grip symbol on its own (60,0%). Not surprisingly, subjective understanding significantly improved when the meaning of the pictogram was explained to respondents.[32] Before the explanation, 61,2% indicated that the pictogram was (very) clear, on average. This rose to 67,2% after the explanation.

Table 3.8. Subjective pictogram comprehension: snow grip[33]

		Alternative 1 (N = 1236)	Alternative 2 (N = 1258)	Alternative 3 (N = 1252)	Total (*N* = 3746)
					
Total	% (very) clear	60,0%	69,6%	63,0%	64,2%
	% (very) unclear	15,1%	10,5%	14,8%	13,5%
	Average (5-point)	$3,7^{b}$	$3,9^{a}$	$3,8^{b}$	3,8
Before explanation	% (very) clear	56,1%	67,1%	60,4%	61,2%
	% (very) unclear	15,1%	10,7%	15,0%	13,6%
	Average (5-point)	$3,6^{b}$	$3,9^{a}$	$3,7^{b}$	3,7
After explanation	% (very) clear	63,9%	72,1%	65,7%	67,2%
	% (very) unclear	15,1%	10,3%	14,6%	13,3%
	Average (5-point)	$3,8^{b}$	$4,0^{a}$	$3,8^{b}$	3,9

Note – Averages with different superscripts (in rows) indicate statistically significant differences at p < 0,05.

Objective comprehension: isolated pictogram

Objective understanding was assessed via a multiple choice question to which respondents could select multiple answers.[34] The percentage correct in Table 3.8 indicates the percentage of respondents that only ticked the correct answer “tyre grip on snow” and not one of the other answer options. More than half of the respondents correctly understood that the snow grip pictogram displays tyre grip on snow when it is presented in isolation (see Table 3.9). However, objective comprehension significantly differed across pictogram alternatives.[35] **Objective comprehension was higher for**

[31] Differences between pictogram alternatives: $p < 0,001$.

[32] Explanation effect: $p < 0,001$.

[33] “Do you think this symbol is clear or unclear?” measured on a 5-point scale from (1) *very unclear* to (5) *very clear*.

[34] Objective comprehension of the snow grip and ice grip pictograms was tested via two multiple choice questions with the same response options. For the snow grip pictogram, the "tyre grip on snow” was the correct answer. For ice grip pictogram, both the “tyre grip on ice” and the “tyre grip on snow” were correct. For consistency, respondents were able to select multiple answers in both cases.

[35] Differences between pictogram alternatives: $p = 0,021$.

alternative 2 (55,7%) compared to alternatives 1 (51,9%) and 3 (50,4%). In line with the subjective comprehension results, presenting the snow grip symbol together with a tyre (instead of a car, or the symbol alone) increased understanding.

Table 3.9. Objective pictogram comprehension: snow grip

	Alternative 1 (N = 1236)	Alternative 2 (N = 1258)	Alternative 3 (N = 1252)	Total (*N* = 3746)
What do you think this symbol indicates?				
Tyre grip on wet road	1,9%	2,6%	3,4%	2,6%
Tyre grip on ice	28,2%	30,5%	36,9%	31,9%
Tyre grip on snow	63,9%	66,6%	64,1%	64,9%
Tyre suited for driving in the mountains	13,6%	7,5%	6,7%	9,2%
Anti-puncture tyre (run flat)	1,5%	1,9%	2,1%	1,8%
I (really) don't know	6,7%	5,3%	5,2%	5,7%
Tyre grip on snow (unique response)	51,9%[b]	55,7%[a]	50,4%[b]	52,7%

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

A follow-up analysis revealed that the extent to which consumers accurately understood the meaning of the snow grip pictogram significantly differed across countries.[36] Not surprisingly, understanding of the snow grip pictogram was higher, overall, in countries with (regions with) mountains and/or severe winter conditions (with the sole exception of Germany). More specifically, understanding was highest in Romania (50,5%), followed by Sweden (46,2%[37]) and Italy (39,0%[38]), and lowest in the Netherlands (35,2%[39]), Germany (34,4%[40]) and Portugal (32,7%[41]). Also, which pictogram alternative was best understood significantly depended on the specific country.[42] More specifically, the results, summarised in Figure 3.5, revealed that the better performance of pictogram alternative 2 was strongly driven by the results of Romania.[43] Among the Romanian respondents who saw pictogram alternative 2 (the snow grip symbol accompanied by a tyre), almost 8 out of 10 correctly identified the pictogram's meaning. This percentage was lower for pictogram alternative 1 (67,9%) and 3 (55,6%). In the other countries, we did not observe significant differences in objective pictogram understanding across the three pictogram alternatives.

36 Differences between countries: $p < 0,001$.

37 The difference between Romania (50,5%) and Sweden (46,2%) is significant: $p < 0,05$.

38 The difference between Sweden (46,2%) and Italy (39,0%) is significant: $p = 0,001$.

39 The difference between Italy (39,0%) and the Netherlands (35,2%) is significant: $p < 0,05$.

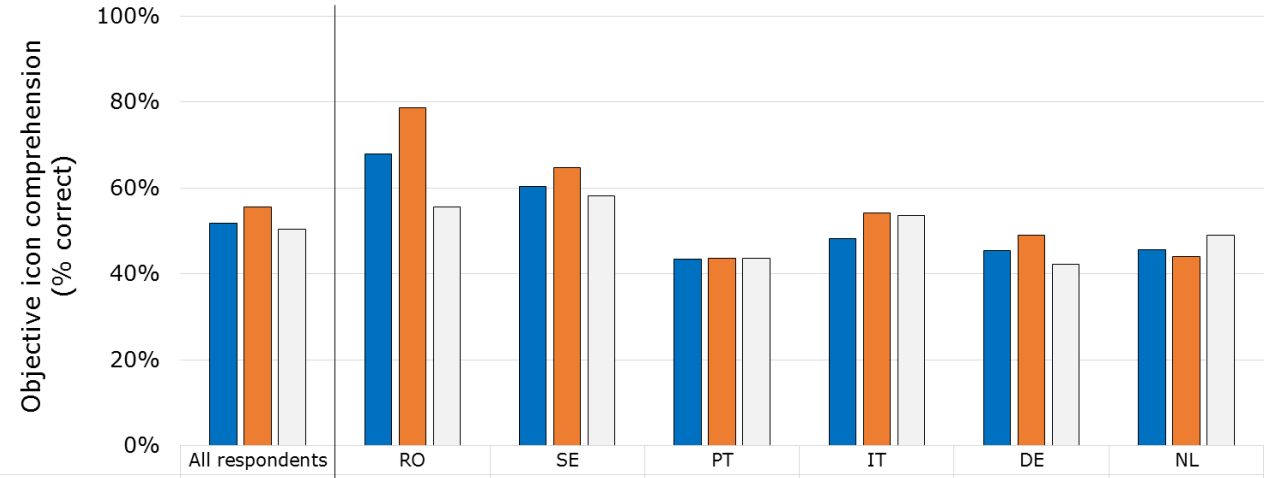
40 The difference between Netherlands (35,2%) and Germany (34,4%) is not significant: $p = 0,803$.

41 The difference between Germany (34,4%) and Portugal (32,7%) is not significant: $p = 0,488$.

42 The pictogram alternative x country interaction is significant: $p = 0,008$.

43 Only in Romania, differences between pictogram alternatives were significant: $p < 0,001$ ($ps > 0,36$ for the remaining countries).

Figure 3.5. Objective pictogram comprehension: snow grip



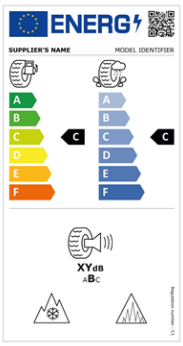
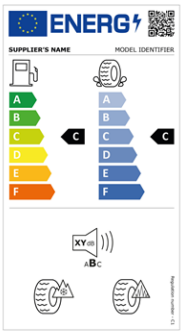
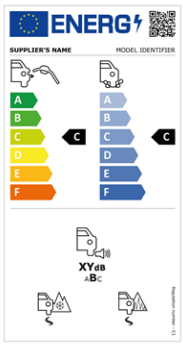
	All respondents	RO	SE	PT	IT	DE	NL
Icon alternative 1	51.9%	67.9%	60.3%	43.5%	48.3%	45.4%	45.7%
Icon alternative 2	55.7%	78.6%	64.8%	43.8%	54.1%	49.1%	44.1%
Icon alternative 3	50.4%	55.6%	58.3%	43.6%	53.6%	42.4%	49.1%

Objective comprehension: in product context

Objective comprehension of the snow grip pictogram was also assessed via a product identification task. Respondents had to select the tyre(s) with good grip on snow. Table 3.10 shows that about 7 out of 10 respondents identified the correct tyre. **There were no differences between pictogram alternatives in objective comprehension** in the product identification task.[44] Thus, whereas in isolation the snow grip pictogram was considered more clear when it included a tyre next to the snow grip symbol, adding such contextual information did not increase respondents' ability to identify the product with good grip on snow when presented with an assortment of products. When presented on a label, the other information on the label (fuel efficiency pictogram, wet grip pictogram, etc.) may also provide context for understanding the meaning of the snow grip pictogram, reducing the need to show a tyre next to the snow grip symbol.

[44] No significant differences between pictogram alternatives: p = 0,357.

Table 3.10. Accurate product identification: snow grip

Alternative 1 (N = 629)	Alternative 2 (N = 618)	Alternative 3 (N = 613)	Total (*N* = 1860)
			
75,4%[a]	72,2%[a]	72,8%[a]	73,4%

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

3.1.4. Ice grip

Since the ice grip is currently not displayed on the tyre label, no comparisons can be made with the current label.[45] Here, we compare the three newly developed pictogram alternatives.

Subjective comprehension: isolated pictogram

Overall, subjective understanding of the ice grip pictogram was low: Only about one third of the respondents indicated the ice grip pictogram to be (very) clear (see Table 3.11). Before any explanation of the ice grip pictogram was provided, **subjective understanding was higher for pictogram alternative 3 (34,5%) and 2 (33,3%)** than for alternative 1, which was considered (very) clear by 21,9% of the respondents. After the explanation of the ice grip pictogram's meaning, understanding remained higher for pictogram alternative 2 (34,5%) and 3 (34,8%), compared to alternative 1 (30,3%). After the explanation, subjective understanding increased for alternative 1, did not increase for alternative 2, and even slightly decreased for alternative 3.[46] Thus, including a tyre in the ice grip pictogram resulted in better understanding of the pictogram compared to presenting only the ice grip symbol itself.

[45] The ice-braking pictogram does not exist yet and it is in the process of being registered.

[46] There is a significant pictogram alternative x explanation interaction: $p < 0,001$. The perceived clarity of pictogram alternative 1 significantly increased after its meaning was explained to respondents: $p < 0,001$. For pictogram alternative 2, perceived clarity did not change after the explanation: $p = 0,447$. Finally, perceived clarity of pictogram alternative 3 significantly decreased after the explanation: $p < 0,001$.

Table 3.11. Subjective pictogram comprehension: ice grip[47]

		Alternative 1 (N = 1236)	Alternative 2 (N = 1258)	Alternative 3 (N = 1252)	Total (*N* = 3746)
					
Total	% (very) clear	26,1%	33,9%	34,7%	31,6%
	% (very) unclear	52,4%	39,0%	38,4%	43,2%
	Average (5-point)	$2,5^{b}$	$2,9^{a}$	$2,9^{a}$	2,8
Before explanation	% (very) clear	21,9%	33,3%	34,5%	30,0%
	% (very) unclear	54,6%	37,1%	34,3%	42,0%
	Average (5-point)	$2,4^{b}$	$2,9^{a}$	$3,0^{a}$	2,8
After explanation	% (very) clear	30,3%	34,5%	34,8%	33,2%
	% (very) unclear	50,2%	40,9%	42,4%	44,5%
	Average (5-point)	$2,6^{b}$	$2,9^{a}$	$2,9^{a}$	2,8

Note – Averages with different superscripts (in rows) indicate statistically significant differences at $p < 0,05$.

Objective comprehension: isolated pictogram

Respondents were asked to identify the correct meaning of the ice grip pictogram in a multiple choice question to which they could tick multiple answers. The results in the last row of Table 3.12 show the percentage of respondents that ticked *both* the answers "tyre grip on snow" and "tyre grip on ice" (which were the correct answers) per pictogram alternative. The results reveal that only about a third of the respondents correctly understood that the ice grip symbol displays tyre grip on snow and ice, when it is presented in isolation (see Table 3.12). **There were no differences in objective comprehension across pictogram alternatives.**[48] Relatively many respondents falsely believed that the pictogram indicates that the tyre is suited for driving in the mountains (31,6%). Moreover, especially for alternative 1, quite a lot of respondents indicated that they did not know the pictogram's meaning (36,3%).

[47] "Do you think this symbol is clear or unclear?" measured on a 5-point scale from (1) *very unclear* to (5) *very clear*.

[48] No significant differences between pictogram alternatives: $p = 0,121$.

Table 3.12. Objective pictogram comprehension: ice grip

	Alternative 1 (N = 1236)	Alternative 2 (N = 1258)	Alternative 3 (N = 1252)	Total (*N* = 3746)
What do you think this symbol indicates?				
Tyre grip on wet road	4,8%	5,8%	9,7%	6,8%
Tyre grip on ice	27,8%	30,1%	30,6%	29,5%
Tyre grip on snow	6,2%	5,1%	8,1%	6,5%
Tyre suited for driving in the mountains	22,3%	32,9%	39,4%	31,6%
Anti-puncture tyre (run flat)	7,3%	6,9%	3,9%	6,0%
I (really) don't know	36,3%	24,1%	17,2%	25,8%
Tyre grip on ice + tyre grip on snow (both answers selected)	30,7%[a]	33,2%[a]	34,4%[a]	32,7%

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Again, the extent to which consumers accurately understood the meaning of the pictogram significantly differed across countries.[49] As before, understanding of the ice grip pictogram was higher, overall, in countries with (regions with) mountains and/or severe winter conditions (with Germany as exception). More specifically, understanding was highest in Romania (32,2%) and Sweden (30,6%[50]), followed by Italy (23,9%[51]), the Netherlands (22,4%[52]), Germany (20,5%[53]), and Portugal (18,1%[54]). Which pictogram alternative was best understood also differed across countries.[55] There were no differences in understanding of the ice grip pictogram between the three pictogram alternatives included in the test in Romania, Sweden, Italy, the Netherlands and Germany. Only in Portugal was the pictogram significantly better understood when the ice grip symbol was accompanied by a car (33,6%) as compared to a tyre (19,2%) or presented alone (19,6%; see Figure 3.6).

49 Differences between countries: $p < 0{,}001$.

50 The difference between Romania (32,2%) and Sweden (30,6%) is not significant: $p = 0{,}385$.

51 The difference between Sweden (30,6%) and Italy (23,9%) is significant: $p = 0{,}002$.

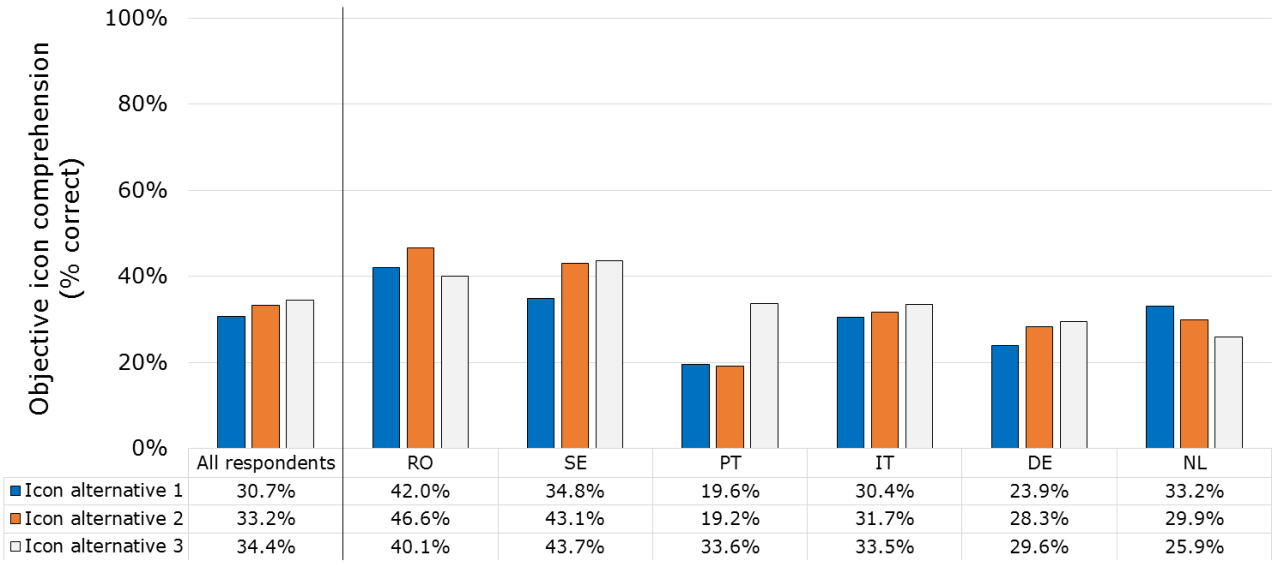
52 The difference between Italy (23,9%) and the Netherlands (22,4%) is not significant: $p = 0{,}379$.

53 The difference between Netherlands (22,4%) and Germany (20,5%) is not significant: $p = 0{,}353$.

54 The difference between Germany (20,5%) and Portugal (18,1%) is not significant: $p = 0{,}150$.

55 The pictogram alternative x country interaction is significant: $p < 0{,}05$.

Figure 3.6. Objective pictogram comprehension: ice grip



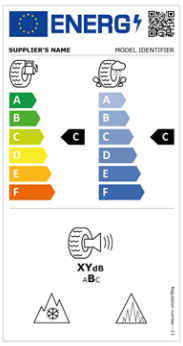
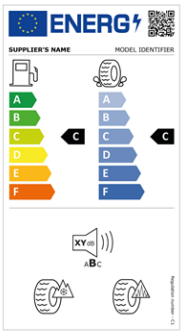
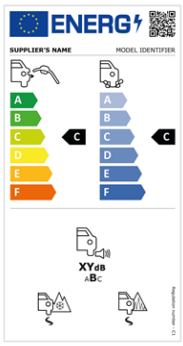
	All respondents	RO	SE	PT	IT	DE	NL
Icon alternative 1	30.7%	42.0%	34.8%	19.6%	30.4%	23.9%	33.2%
Icon alternative 2	33.2%	46.6%	43.1%	19.2%	31.7%	28.3%	29.9%
Icon alternative 3	34.4%	40.1%	43.7%	33.6%	33.5%	29.6%	25.9%

Objective comprehension: in product context

Objective comprehension was also assessed in a product identification task, in which respondents had to identify the tyre with good grip on snow and ice from a small assortment of tyres. About one third of the respondents identified the correct tyre (see Table 3.13). There were significant differences between pictogram alternatives in objective comprehension in this product context.[56] **Objective comprehension was relatively high for alternative 1 (38,5%) and 2 (39,6%),** and lower for alternative 3 (32,3%). Thus, whereas perceived clarity of the ice grip pictogram was higher for the alternatives that provided contextual information when the pictogram was presented in isolation, adding such information did not result in more accurate product identifications (compared to the situation in which the ice grip symbol is presented alone). Similar to the results for the snow grip pictogram, this may indicate that the other information on the label – which also includes tyre pictograms – facilitated understanding of the ice grip pictogram, reducing the need to repeat the tyre in the ice grip pictogram on the label.

[56] Differences between pictogram alternatives: p = 0,039.

Table 3.13. Accurate product identification: ice grip

Alternative 1 (N = 629)	Alternative 2 (N = 618)	Alternative 3 (N = 613)	Total (*N* = 1860)
			
38,5%^{ab}	39,6%^{a}	32,3%^{b}	36,8%

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Unsuitability for snowy and/or icy roads

Furthermore, we investigated whether the specific way of indicating unsuitability of the tyres on snowy and/or icy roads affected understanding of the different pictogram variants. Unsuitability was either represented by not displaying the snow and/or ice grip pictogram on the label, or by putting a cross through the pictogram (see Table 1.3). In general, respondents' ability to find the product with the best grip on snow and ice **was higher when unsuitability on snowy and/or icy roads was indicated with a cross through the pictogram** (snow grip: 74,7%; ice grip: 39,7%) **than when the pictogram was removed** (snow grip: 72,1%; ice grip: 33,9%).[57] For both snow and ice grip, the specific representation of unsuitability did not influence understanding of the different pictogram alternatives differently.[58]

[57] Cross vs. removal: $p = 0,091$ (snow grip) and $p < 0,005$ (ice grip).

[58] Cross vs. removal x pictogram alternative interactions were not significant: $p = 0,789$ (snow grip) and $p = 0,912$ (ice grip).

3.1.5. External rolling noise

Subjective comprehension: isolated pictogram

Overall, 66,4% of the respondents perceived the external rolling noise pictogram as (very) clear (see Table 3.14). Before any explanation was provided, **subjective understanding was highest for pictogram alternative 1 (71,5%),** followed by alternative 2 (62,1%). Understanding was lowest for alternative 3 (58,6%) and 4 (57,1%). Explaining the meaning of the pictogram resulted in improvements in comprehension, especially for pictogram alternatives 1, 2 and 4.[59] After the explanation, **perceived clarity remained highest for pictogram alternative 1**, followed by alternative 2, and lowest for alternative 3 and 4.

Table 3.14. Subjective pictogram comprehension: noise level[60]

		Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)	Total (*N* = 4976)
						
Total	% (very) clear	75,0%	67,3%	61,8%	61,6%	66,4%
	% (very) unclear	9,6%	13,7%	16,5%	16,7%	14,2%
	Average (5-point)	4,1[a]	3,9[b]	3,7[c]	3,7[c]	3,8
Before explanation	% (very) clear	71,5%	62,1%	58,6%	57,1%	62,3%
	% (very) unclear	12,2%	15,1%	17,7%	18,3%	15,8%
	Average (5-point)	4,0[a]	3,8[b]	3,7[bc]	3,6[c]	3,7
After explanation	% (very) clear	78,5%	72,5%	65,0%	66,0%	70,4%
	% (very) unclear	7,1%	12,3%	15,4%	15,2%	12,5%
	Average (5-point)	4,2[a]	4,0[b]	3,8[c]	3,8[c]	3,9

Note – Averages with different superscripts (in rows) indicate statistically significant differences at p < 0,05.

Objective comprehension: isolated pictogram

We further examined whether respondents understood the noise level pictogram, via a multiple choice question. Table 3.15 shows the results. About 6 out of 10 respondents correctly understood that the noise level pictogram indicates the external noise generated by the tyre. There were significant differences in pictogram understanding between pictogram alternatives.[61] **Objective comprehension was higher for pictogram alternative 1 (62,9%)** compared to the other alternatives (alternative 2: 58,9%; 3: 55,5%; 4: 57,4%). Thus, consistent with the results for subjective understanding, objective understanding was highest for pictogram alternative 1.

[59] Significant pictogram alternative x explanation interaction: p = 0,031.

[60] "Do you think this symbol is clear or unclear?" measured on a 5-point scale from (1) *very unclear* to (5) *very clear*.

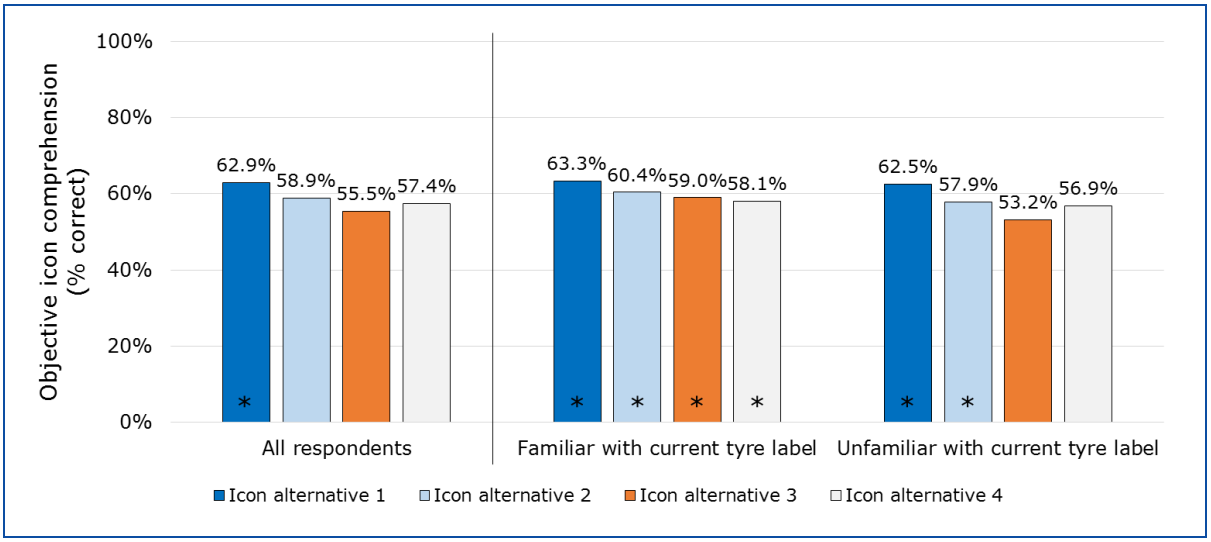
[61] Differences between pictogram alternatives: p = 0,002.

Table 3.15. Objective pictogram comprehension: noise level

	Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)	Total (*N* = 4976)
What do you think this symbol indicates?					
Maximum permitted sound level of the horn	2,0%	2,6%	10,8%	4,9%	5,1%
Maximum permitted sound level of the tyre	19,4%	19,8%	17,1%	19,0%	18,8%
The external noise generated by the tyre	62,9%[a]	58,9%[b]	55,5%[b]	57,4%[b]	58,6%
The car has a tyre-pressure monitoring system	2,0%	3,1%	1,4%	3,1%	2,4%
Vibrations produced by the tyre	6,7%	7,4%	4,8%	6,3%	6,3%
I (really) don't know	7,1%	8,3%	10,4%	9,4%	8,8%

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Figure 3.7. Objective pictogram comprehension: noise level



Note – The bars with asterisks reflect the best performing pictogram alternatives, that is, the alternative with the highest percentage of correct responses and other pictogram alternative(s) with a performance that does not significantly differ from this best performing alternative (i.e. the observed difference may be due to chance).

Figure 3.7 presents the results for consumers who are familiar versus unfamiliar with the current tyre label. On average, objective understanding of the external rolling noise pictogram was slightly higher among consumers who recognised the current tyre label.[62] Consumers who were unfamiliar with the current tyre label understood pictogram alternatives 1 and 2 best. In contrast, consumers who were familiar with the current label understood all pictogram alternatives equally well.[63] Previous exposure to the label may facilitate objective understanding of noise level information (e.g. consumers are more likely to understand what dB means), irrespective of how this information is presented.

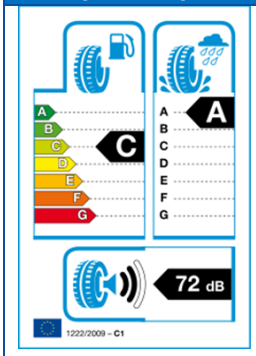
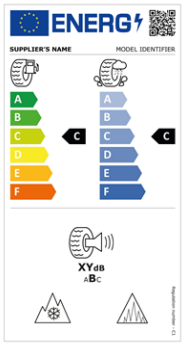
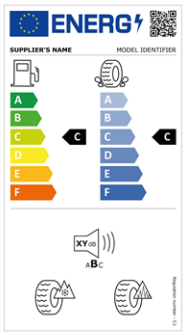
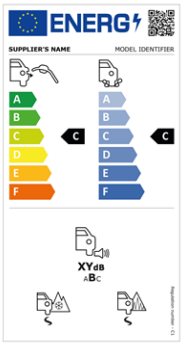
[62] Marginally significant positive effect of familiarity: $p = 0,085$.

[63] Yet, the overall pictogram alternative x familiarity interaction is not significant: $p = 0,575$.

Objective comprehension: in product context

In the product identification task, respondents were asked to select the tyre with the highest noise level. **Objective comprehension was significantly higher for alternative 1 (61,0%) and alternative 2 (58,5%)** than for alternative 3 (52,4%) and 4 (51,2%, see Table 3.16).[64] A follow-up analysis revealed that respondents' ability to accurately identify the tyre with the highest external rolling noise did not significantly depend on their familiarity with current tyre label.[65] The results per consumer group are visualised in Figure 3.8.

Table 3.16. Accurate product identification: noise level

Alternative 1 (N = 615)	Alternative 2 (N = 629)	Alternative 3 (N = 618)	Alternative 4 (N = 613)	Total (*N* = 2475)
				
61,0%^{a}	58,5%^{ab}	52,4%^{bc}	51,2%^{c}	55,8%

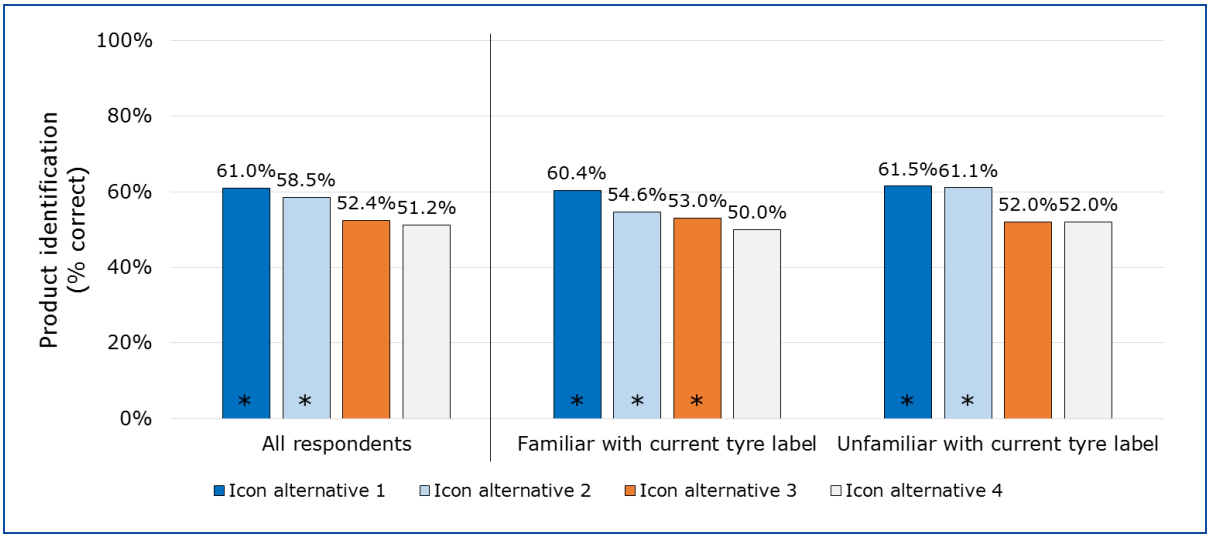
Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Finally, respondents were asked whether they preferred to have the noise level indication on the tyre label presented in decibels, in categories, or both. **41,4% of the respondents preferred to have the noise level information in both decibels and categories**, 23,0% preferred and indication in decibels, 23,1% an indication in categories, and 12,5% did not have a clear preference.

64 Differences between pictogram alternatives: p = 0,001.

65 The pictogram alternative x familiarity interaction is not significant: p = 0,355.

Figure 3.8. Accurate product identification: noise level



Note – The bars with asterisks reflect the best performing pictogram alternatives, that is, the alternative with the highest percentage of correct responses and other pictogram alternative(s) with a performance that does not significantly differ from this best performing alternative (i.e. the observed difference may be due to chance).

3.2. Perceived relevance

Respondents were asked how important information on the fuel efficiency, wet grip, snow grip, ice grip, and noise level, would be to them when comparing tyres and how important it would be for them that this information is displayed on the tyre label. Results are presented in Table 3.17. Overall, the majority of the respondents indicated that they found the features, and receiving information on them via the label, very or extremely important, except for the noise level. **Information on the wet grip was seen as most relevant.**

Table 3.17. Perceived relevance of information

	% not at all important / not very important	% very important / extremely important	Average (5-point)
How important would information about …. be to you when comparing tyres?			
fuel efficiency	12,8%	64,0%	3,7
wet grip	7,0%	75,6%	4,0
snow grip	15,0%	63,7%	3,7
ice grip	16,3%	60,0%	3,7
noise level	26,1%	39,1%	3,2
How important would it be to you that this information is displayed on the tyre label?			
fuel efficiency	12,6%	64,2%	3,8
wet grip	7,7%	74,4%	4,0
snow grip	12,1%	67,3%	3,8
ice grip	13,8%	63,5%	3,7
noise level	23,2%	45,7%	3,3

Note – N = 4976.

Half of the respondents were aware of the existence of a tyre label and 39% of the respondents indicated that they had seen the tyre label before. Overall, trust in the current EU tyre label is high: 85,6% of the respondents indicated that they would trust the information on the current label if they saw this label on tyres in a store, and 84,3% reported to trust this label as the official EU label. For the newly developed labels, 79,0% of the respondents indicated that they would trust the information if they encountered the label in store selling tyres, and 78,2% reported to trust the label as an official EU label. It is not surprising that trust in the newly developed labels is somewhat lower as compared to trust in an existing label that consumers may already be familiar with. It is likely that trust will increase over time once the new labels are implemented.

We also asked respondents whether they thought any important information was missing from the tested label. 72,8% of the respondents reported that they did not miss any information. **Respondents that thought important information was missing, reported that they would like to receive additional information on:**

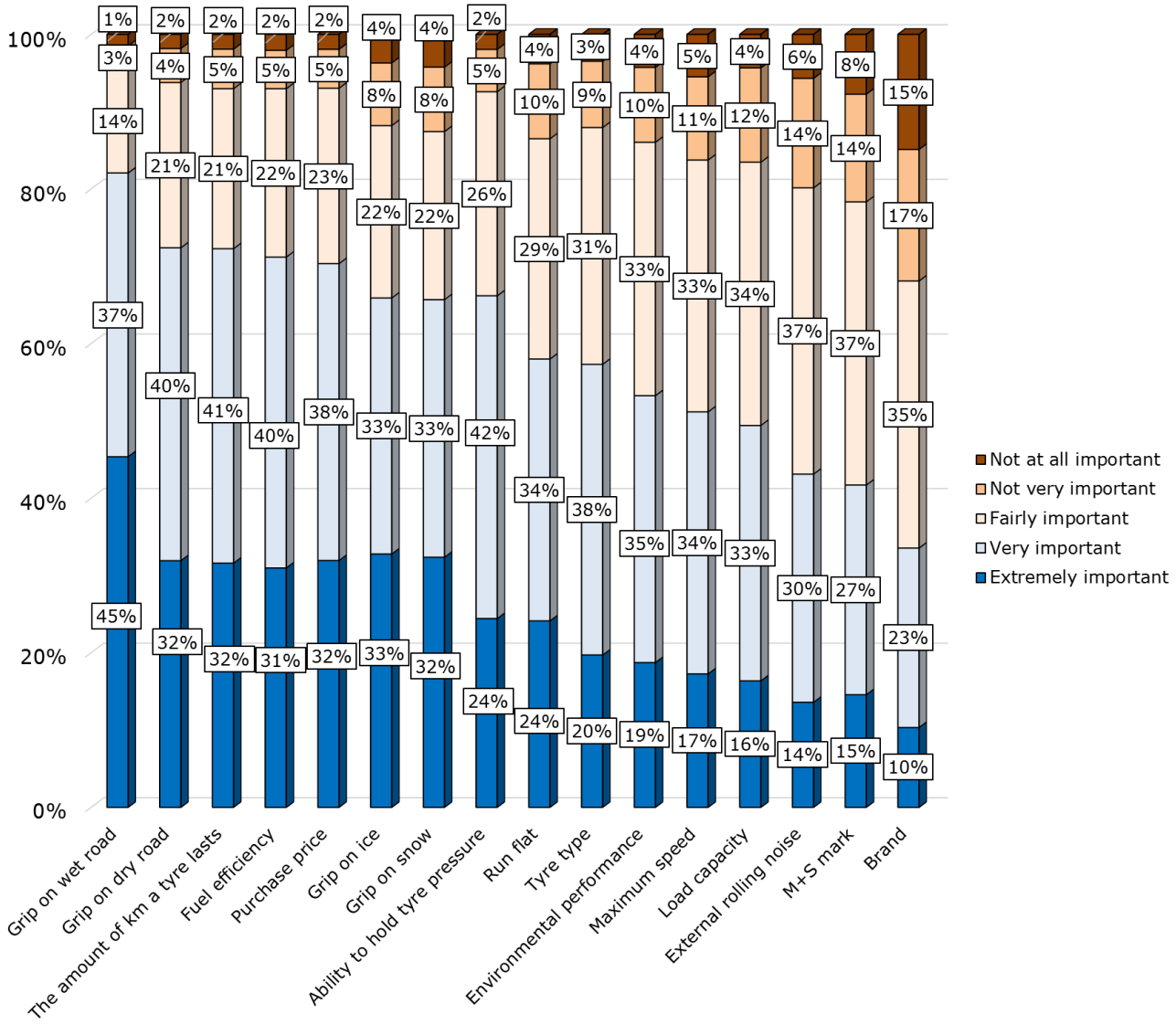
- **Amount of kilometres that a tyre lasts (i.e. "mileage", 13%);**
- Max kilometres per hour (10,0%);
- Run flat (9,1%);
- Load capacity (8,9%);
- Ability to hold tyre pressure (7,9%);
- Presence of the M+S label (7,2%);
- Other information (4,3%), most mentioned: environmental information, grip on dry roads.[66]

3.3. Important aspects when choosing new tyres

Furthermore, we asked how important respondents would consider different aspects when comparing tyres (see Figure 3.9). From the features for which comprehension was tested in this study – fuel efficiency, wet grip, snow grip, ice grip and noise level – the **wet grip is considered (very or extremely) important by most respondents (82%), followed by the fuel efficiency (71%). The noise level was considered least important by respondents (44%).** Of all other features, **the top three features that most respondents consider very or extremely important are: (1) the amount of kilometres that a tyre lasts, or mileage (73%)**, (2) the grip on dry roads (72%), and (3) the purchase price (70%). The tyre brand (33%), M + S mark (42%) and load capacity (49%) are considered least important by respondents. **No relevance found for particle emissions (abrasion). Appendix C provides the results per country.**

[66] When respondents indicated that they were missing 'other information' they could type in the information that they were missing on the tyre label.

Figure 3.9. Importance of aspects when comparing tyres



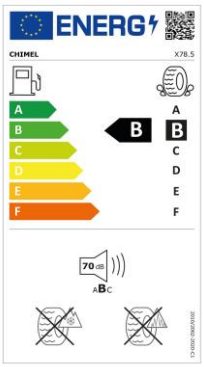
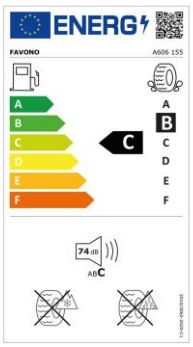
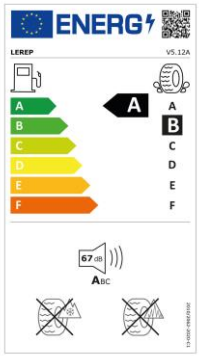
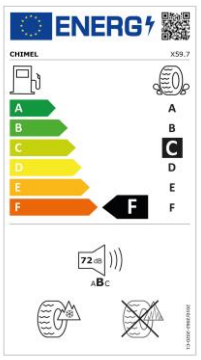
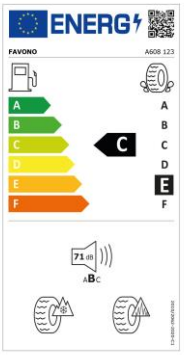
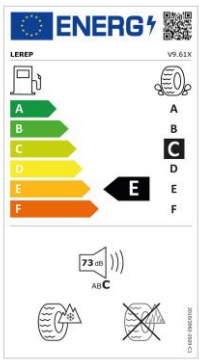
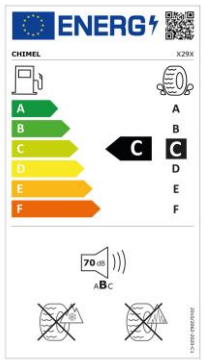
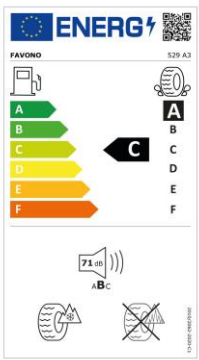
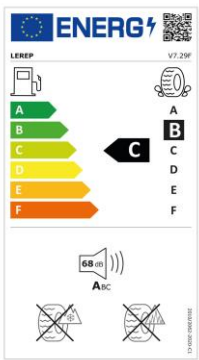
Note – Bars in dark and light blue indicate that the feature was considered very or extremely important, and the features are ordered on very/ extremely important.

Product choice

In the product identification task, respondents were shown a set of nine tyres. They were also asked which tyre they would buy if they would have to make a choice among the nine tyres. The choice shares per tyre are presented in Table 3.18.[67] In this hypothetical purchase situation respondents opted more for the LEREP V5.12A tyre. This tyre has the lowest fuel consumption, has no snow and ice grip and has an average price.

[67] 13,9% of the respondents indicated that they did not know which tyre to choose.

Table 3.18. Choice shares per tyre

% of respondents who selected the specific tyre		
 **CHIMEL X78.5 €47** ➢Zomerband ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: V, tot 240 km/h ➢Draagvermogen index: 91 	 **FAVONO A606 155 €59** ➢Zomerband ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: V, tot 240 km/h ➢Draagvermogen index: 91 	 **LEREP V5.12A €86** ➢Zomerband ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: H, tot 210 km/h ➢Draagvermogen index: 91 
11,1%	1,8%	**31,7%**
 **CHIMEL X59.7 €49** ➢Winterband | M+S ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: H, tot 210 km/h ➢Draagvermogen index: 91 	 **FAVONO A608 123 €66** ➢Winterband | M+S ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: H, tot 210 km/h ➢Draagvermogen index: 91 	 **LEREP V9.61X €101** ➢Winterband | M+S ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: H, tot 210 km/h ➢Draagvermogen index: 91 
2,2%	7,8%	2,5%
 **CHIMEL X29X €59** ➢All-season band ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: H, tot 210 km/h ➢Draagvermogen index: 91 	 **FAVONO 529A3 €77** ➢All-season band | M+S ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: V, tot 240 km/h ➢Draagvermogen index: 91 	 **LEREP V7.29F €99** ➢All-season band | M+S ➢Afmetingen: 205/55 R16 ➢Snelheidsindex: V, tot 240 km/h ➢Draagvermogen index: 91 
5,2%	17,7%	6,3%

4. Conclusions and recommendations

This study aimed to inform the design of a revised tyre label and to assess understanding of the current tyre label. The study provided insights on subjective and objective comprehension of the pictograms on the current tyre label (fuel efficiency, wet grip, noise) and of three newly developed alternatives of these pictograms. One of the tested alternatives was the current pictograms updated to the new (energy label) house style. Further, three variants of an ice grip and snow grip pictogram (not part of the current label) were tested. Finally, we investigated the performance of two different representations of the wet grip scale relative to the current representation, and examined how unsuitability of the tyre for icy or snowy roads could best be communicated to consumers. This chapter provides a summary of the results.

Half of the respondents were aware of the existence of a tyre label and about 4 out of 10 respondents indicated that they had seen the tyre label before. The majority of respondents considered it (very or extremely) important that the fuel efficiency, wet grip, snow grip and ice grip are displayed on the tyre label. Of the tested features, **wet grip was considered the most important, and noise level the least important** to have on the label. When asked what other features might be useful to have on a tyre label, **the amount of kilometres a tyre lasts** (aka **mileage**) **was indicated most frequently. No consideration for aspects such as abrasion (particle emissions) in purchase choice.**

Table 4.1 provides an overview of the **subjective comprehension** results (i.e. does the consumer think s/he understands the meaning of the pictogram, does s/he perceive the pictogram as being clear?). Table 4.2 provides an overview of the **objective comprehension** results (i.e. does the consumer actually understand the meaning of the pictogram?). Objective comprehension was assessed for pictograms presented in isolation (multiple choice quiz question) as well as for pictograms embedded in full labels in the **context of a product assortment** consisting of nine tyres (product identification task). Green shaded pictograms reflect best performing pictogram alternatives and red shaded pictograms reflect worst performing alternatives. Non-shaded pictograms neither performed best nor worst.

Comprehension of the pictograms

The current tyre label provides information on the fuel efficiency, wet grip, and noise level of a specific tyre. Instant comprehension of these pictograms (i.e. the percentage of respondent who found the pictogram (very) clear without providing any explanation[68]) was in the range of 60,8% to 74,6% for the current pictograms, and in the range of 47,1% to 63,1% for the newly developed pictograms. Subjective comprehension generally improved up to 82,8% for the current and up to 75,6% for the newly developed pictograms when the meaning of the pictogram was explained to the consumer.

Overall, **the current pictogram alternatives for fuel efficiency, wet grip and noise level are well understood** (see Table 4.1 and 4.2). Pictogram alternatives 4, which depicted a car, were generally relatively poorly understood. Pictogram alternatives 2 were redesigns of the current pictograms. However, they did not always perform as well as the current pictograms. Further analyses revealed that the generally better performance of the current pictograms is unlikely to be the result of a familiarity advantage: the current pictogram alternatives often also performed better among consumers who were unfamiliar with the current tyre label.

[68] Respondents knew the questionnaire was about the EU tyre label, however.

One plausible explanation for the good performance of the current pictograms relates to the differences in the amount of information that was communicated on the different label alternatives. The current label design included less information elements: it had no snow pictogram, no ice pictogram, and the noise pictogram did not include an A-C scale. It seems easier to understand a label when fewer elements are presented on it. This difference in the amount of information provided on the label may explain the worse performance of alternative 2 of the fuel efficiency pictogram when tested in a product context (understanding was not lower when alternative 2 was presented in isolation). The worse performance of alternative 2 of the wet grip pictogram relative to the current pictogram may similarly be due to such a “visual clutter” effect. In addition, the semantic overlap between the wet grip, snow grip and ice grip may have further complicated interpretation of the wet grip indication. All three features relate to the grip of the tyre, which increases the likelihood that consumers confuse them. This may explain the worse performance of alternative 2 of the wet grip pictogram not only in a product context, but also in isolation: in the current label, no other grip-related information is provided that could cause confusion. Finally, in contrast to alternative 2 of the noise level pictogram, the current noise level pictogram does not communicate an A-C scale and therefore might have been easier to understand when presented in isolation. The inclusion of the A-C scale in alternative 2 did not compromise consumers’ ability to identify the tyre with the highest noise level, however.

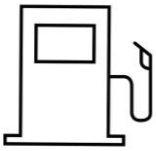
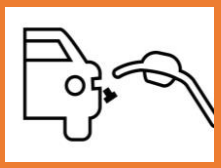
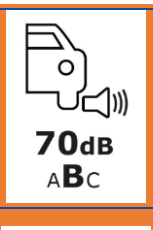
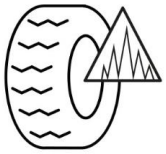
An alternative explanation relates to the specific pictogram and label designs. The fuel tank in the fuel efficiency pictogram and rain drops in the wet grip pictogram may be more salient in the current pictograms than in the redesigned versions. When designing the new tyre label in the new house style, it would then seem advisable to ensure that these elements are visually prominent, aligning the designs even more with the original pictograms. Relatedly, the class indications (black arrows) of the fuel efficiency and wet grip scales are considerably larger, and hence more salient, in the current tyre labels. This could have made it easier to select the best performing product.

The **snow grip and ice grip pictograms** are currently not displayed on the tyre label. Whereas perceived clarity of the snow and ice grip pictograms was higher for the alternatives that provided contextual information when the pictogram was presented in isolation, adding such information did not result in more accurate product identifications (compared to the situation in which the ice grip symbol is presented alone) in a product context. This may indicate that the other information on the label – which also includes tyre pictograms – facilitated understanding of the snow and ice grip pictograms, reducing the need to repeat the tyre in the ice grip pictogram on the label.

In general, however, the ice grip pictogram seemed not well understood: a considerable proportion of consumers indicated to either have no idea what the pictogram meant, or thought the pictogram indicated that the tyre is suitable for driving in the mountains (likely due to the depiction of a mountain in the ice grip symbol).

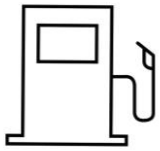
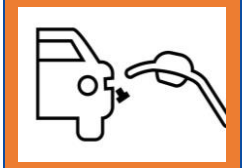
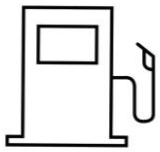
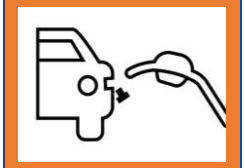
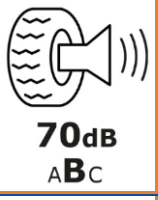
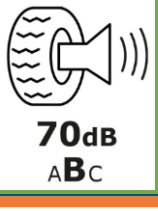
Finally, country differences in understanding of the snow and ice grip pictograms were generally as expected: consumers living in countries in which driving on snowy or icy conditions is common – i.e., Sweden and Romania in the present country sample – showed a better understanding of these pictograms. However, one might have expected similar findings for German consumers.

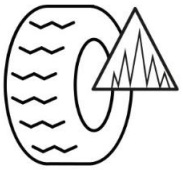
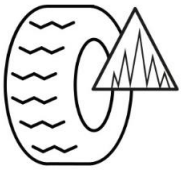
Table 4.1. Subjective comprehension results

Pictograms	Pictogram alternative 1 (current label)	Pictogram alternative 2	Pictogram alternative 3	Pictogram alternative 4
Fuel efficiency				
Wet grip				
External rolling noise				
Snow grip	NA			
Ice grip	NA			

Note – Green shaded pictograms reflect best performing alternatives and red shaded pictograms reflect worst performing alternatives. Non-shaded pictograms neither performed best nor worst.

Table 4.2. Objective comprehension results

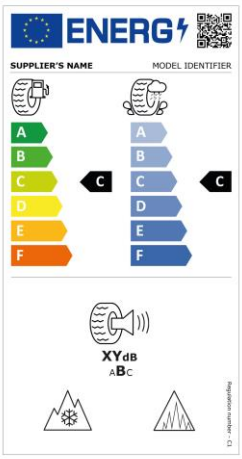
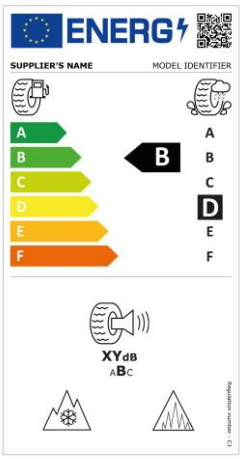
Pictograms		Pictogram alternative 1 (current label)	Pictogram alternative 2	Pictogram alternative 3	Pictogram alternative 4
Fuel efficiency	Isolated pictogram				
	Pictogram in product context				
Wet grip	Isolated pictogram				
	Pictogram in product context				
External rolling noise	Isolated pictogram				
	Pictogram in product context				
Snow grip	Isolated pictogram	NA			
	Pictogram in product context	NA			

Ice grip	Isolated pictogram	NA			
	Pictogram in product context	NA			

Note – Green shaded pictograms reflect best performing alternatives and red shaded pictograms reflect worst performing alternatives. Non-shaded pictograms neither performed best nor worst.

Finally, for the indication of the wet grip, **two scale formats** were tested next to the current format (see Table 4.3). Similar levels of understanding were found for these two scales.

Table 4.3. Tested representations of the wet grip scale

Appendix A: Questionnaire

For scripter:

Value of X1	Order	Number of respondents per country
1	First Part 1, then Part 2	400
2	First Part 2, then Part 1	400
Value of X2	**Label configuration**	**Number of respondents per country**
1	Variant 1 (current label)	200
2	Variant 2	200
3	Variant 3	200
4	Variant 4	200
Value of X3	**Choice questions**	**Number of respondents per country**
1	Group 1 (lowest)	400
2	Group 2 (highest)	400
Value of X4	**Label configuration (subtypes for label 2, 3, 4)[69]**	**Number of respondents per country**
1	Variant A	50
2	Variant B	50
3	Variant C	50
4	Variant D	50

*Respondents are **randomly assigned** to the levels of X1, X2, X3, and X4*
X4 is randomized if X2 =2, 3, 4

Images displayed in each condition of X2:

Label configuration (X2)			
Variant 1	**Variant 2**	**Variant 3**	**Variant 4**
SET_P1_V1.jpg *SET_P2_V1.jpg* *SET_P3_V1.jpg* *SET_P4_V1.jpg* *SET_P5_V1.jpg* *SET_P6_V1.jpg* *SET_P7_V1.jpg* *SET_P8_V1.jpg* *SET_P9_V1.jpg*	*SET_P1_V2X.jpg* *SET_P2_V2X.jpg* *SET_P3_V2X.jpg* *SET_P4_V2X.jpg* *SET_P5_V2X.jpg* *SET_P6_V2X.jpg* *SET_P7_V2X.jpg* *SET_P8_V2X.jpg* *SET_P9_V2X.jpg*	*SET_P1_V3X.jpg* *SET_P2_V3X.jpg* *SET_P3_V3X.jpg* *SET_P4_V3X.jpg* *SET_P5_V3X.jpg* *SET_P6_V3X.jpg* *SET_P7_V3X.jpg* *SET_P8_V3X.jpg* *SET_P9_V3X.jpg*	*SET_P1_V4X.jpg* *SET_P2_V4X.jpg* *SET_P3_V4X.jpg* *SET_P4_V4X.jpg* *SET_P5_V4X.jpg* *SET_P6_V4X.jpg* *SET_P7_V4X.jpg* *SET_P8_V4X.jpg* *SET_P9_V4X.jpg*
EL1_V1.jpg *EL2_V1.jpg* *EL3_V1.jpg* *EL4_V1.jpg* *EL5_V1.jpg*	*EL1_V2.jpg* *EL2_V2.jpg* *EL3_V2.jpg* *EL4_V2.jpg* *EL5_V2.jpg*	*EL1_V3.jpg* *EL2_V3.jpg* *EL3_V3.jpg* *EL4_V3.jpg* *EL5_V3.jpg*	*EL1_V4.jpg* *EL2_V4.jpg* *EL3_V4.jpg* *EL4_V4.jpg* *EL5_V4.jpg*
TOP_V1.jpg *FULL_V1.jpg*	*TOP_V2X.jpg* *FULL_V2X.jpg*	*TOP_V3X.jpg* *FULL_V3X.jpg*	*TOP_V4X.jpg* *FULL_V4X.jpg*

X = value of X4 (e.g. either SET_P1_V2A.jpg or SET_P1_V2B.jpg or SET_P1_V2C.jpg or SET_P1_V2D.jpg)

EL1 = fuel efficiency
EL2 = wet grip
EL3 = snow grip

[69] Two representations of the wet grip scale and two ways to represent unsuitability of the tyre for snowy and/or icy roads were tested (in a 2 x 2 experimental design, see Table 3.2).

EL4 = ice grip
EL5 = noise level

GENERAL INTRODUCTION
Screen 1 [General introduction]
All respondents:
Thank you for taking part in this important study for the European Commission.

There are a number of considerations to make when buying tyres. To facilitate a quick and easy comparison in terms of environmental and safety aspects, tyres that are sold in the European Union carry an EU label. This label is compulsory in all EU countries. To remain in step with developments and continue to provide information that consumers find useful, this label will soon be updated.

This questionnaire consists of three parts and takes about 15 minutes to complete.

PART 1&2. PRODUCT IDENTIFICATION TASK AND COMPREHENSION OF TYRE PICTOGRAMS
Scripter:
If X1 = 1, then first show PART 1, and then PART 2.
If X1 = 2, then first show PART 2, and then PART 1.

PART 1. PRODUCT IDENTIFICATION TASK

Screen 2
If X1 = 1:
This is the first part of the questionnaire. Imagine that the tyres of your car need to be replaced. You visit a store to buy new tyres. If you usually let your garage decide on the type of tyres we ask you to imagine that you are buying them yourself this time.

If X1 = 2:
This is the second part of the questionnaire. Now, imagine that the tyres of your car need to be replaced. You visit a store to buy new tyres. If you usually let your garage decide on the type of tyres we ask you to imagine that you are buying them yourself this time.

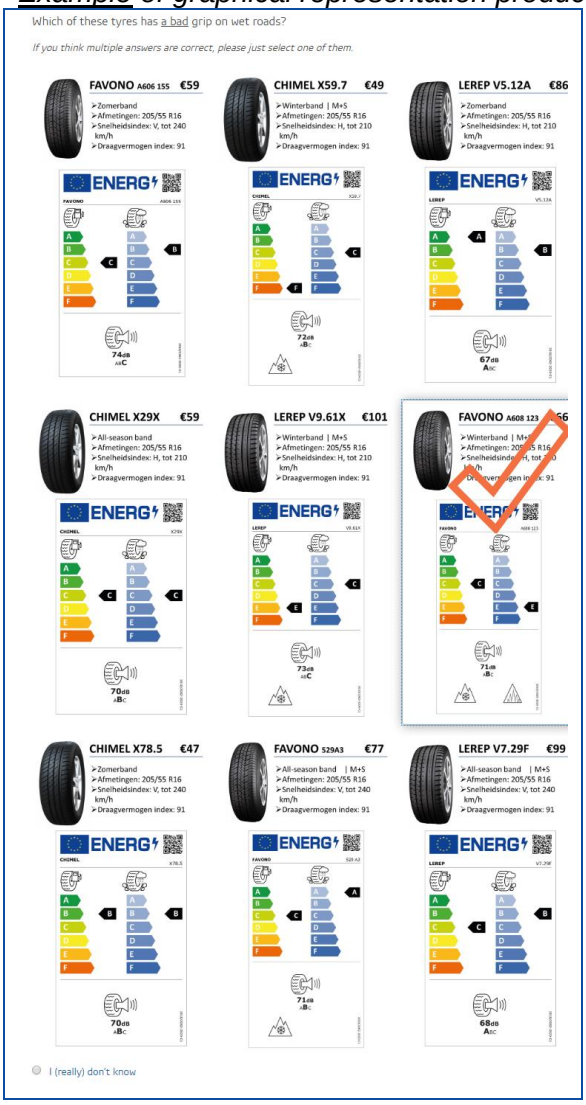
Screen 3 [Introduction product identification task]
All respondents:
On the next screen, you will see nine tyres that are available in the store. Each tyre carries a label. We will ask you to find a tyre with a specific feature. It is possible that there are multiple tyres with that feature. If you can't find the tyre you are looking for, you can select the option "I (really) don't know" at the bottom.

Screen 4-9 [Product identification task]
(nine images, see example below)
If X2 = 1, then display "SET_P1_V1.jpg" until "SET_P9_V1.jpg"
If X2 = 2 & X4 = 1 then display "SET_P1_V2A.jpg" until "SET_P9_V2A.jpg"
If X2 = 2 & X4 = 2 then display "SET_P1_V2B.jpg" until "SET_P9_V2B.jpg"
If X2 = 2 & X4 = 3 then display "SET_P1_V2C.jpg" until "SET_P9_V2C.jpg"
If X2 = 2 & X4 = 4 then display "SET_P1_V2C.jpg" until "SET_P9_V2D.jpg"

If X2 = 3 & X4 = 1 then display "SET_P1_V3A.jpg" until "SET_P9_V3A.jpg"
If X2 = 3 & X4 = 2 then display "SET_P1_V3B.jpg" until "SET_P9_V3B.jpg"
If X2 = 3 & X4 = 3 then display "SET_P1_V2C.jpg" until "SET_P9_V3C.jpg"
If X2 = 3 & X4 = 4 then display "SET_P1_V2C.jpg" until "SET_P9_V3D.jpg"

If X2 = 4 & X4 = 1 then display "SET_P1_V4A.jpg" until "SET_P9_V4A.jpg"
If X2 = 4 & X4 = 2 then display "SET_P1_V4B.jpg" until "SET_P9_V4B.jpg"
If X2 = 4 & X4 = 3 then display "SET_P1_V2C.jpg" until "SET_P9_V4C.jpg"
If X2 = 4 & X4 = 4 then display "SET_P1_V2C.jpg" until "SET_P9_V4D.jpg"

Example of graphical representation product set:



Scripter: randomize Q1 t/m Q5 (and store display order in data set)

Scripter: Respondents should be able to select a product from the choice set OR response option "I (really) don't know".

Q1. Which of these tyres leads to [*if X3 = 1, then* the lowest; *if X3 = 2, then* the highest] fuel consumption? *If you think multiple answers are correct, please just select one of them.*
Scripter: Please record the time spent on the screen and store this in the data.

Q2. Which of these tyres has the best grip on snow? *If you think multiple answers are correct, please just select one of them.*
Scripter: Please record the time spent on the screen and store this in the data.

Q3. Which of these tyres has the best grip on ice? *If you think multiple answers are correct, please just select one of them.*
Scripter: Please record the time spent on the screen and store this in the data.

Q4. Which of these tyres has [*if X3 = 1, then* the worst; *if X3 = 2, then* the best] grip on wet roads? *If you think multiple answers are correct, please just select one of them.*
Scripter: Please record the time spent on the screen and store this in the data.

Q5. Which of these tyres is the [*if X3 = 1, then* most; *if X3 = 2, then* least] silent? *If you think multiple answers are correct, please just select one of them.*
Scripter: Please record the time spent on the screen and store this in the data.

Scripter: Response options Q1 to Q6 (multiple answers possible):
1 Tyre 1
2 Tyre 2
3 Tyre 3
4 Tyre 4
5 Tyre 5
6 Tyre 6
7 Tyre 7
8 Tyre 8
9 Tyre 9
10 I (really) don't know
Respondents should be able to click the product that they want to select, such that a checkmark appears.

Q6. If you would have to make a choice among these tyres, which one would you buy?
Scripter: Please record the time spent on the screen and store this in the data.

Scripter: Respondents should be able to select one product from the choice set OR response option "I (really) don't know". Respondents should be able to click the product that they want to select, such that a checkmark appears.

PART 2. COMPREHENSION TEST

Screen 10

If X1 = 1, then: Now, you will see the pictograms on the tyre label one by one.

If X1 = 2, then: On the next screens, you will see various pictograms that [if X2 = 1: are used on the tyre label; if X2 >1: may be used on a new label for tyres]. You will see the pictograms one by one.

Screen 11

All respondents:

We are interested in your opinion regarding how clear or unclear these pictograms are. If you think a symbol is not clear, please do not hesitate to indicate that. Your answers help us in improving the label design to ensure that it is well understood by consumers across Europe. There are no right or wrong answers.

Scripter: randomize order of blocks 1, 2, 3, 4, and 5 (and store display order in data set).

BLOCK 1

Screen 12 [Fuel efficiency pictogram]

If X2 = 1, then display "EL1_V1.jpg"

If X2 = 2, then display "EL1_V2.jpg"

If X2 = 3, then display "EL1_V3.jpg"

If X2 = 4, then display "EL1_V4.jpg"

Example:

All respondents:

Q7. Do you think this symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Q8. What do you think this symbol indicates?

1 The fuel efficiency of the tyre (*)

2 The fuel efficiency of the car

3 That it should be regularly checked at a gas station if the tyre pressure is still at the recommended level

4 Acceleration efficiency of the tyre

5 The tyre pressure can easily be topped up at a gas station

6 I (really) don't know

Scripter: randomize answer options, except answer 6 (always show last)

Screen 13 [Fuel efficiency pictogram]

If X2 = 1, then display "EL1_V1.jpg"
If X2 = 2, then display "EL1_V2.jpg"
If X2 = 3, then display "EL1_V3.jpg"
If X2 = 4, then display "EL1_V4.jpg"

Example:

This symbol represents the fuel efficiency of the tyre. The tyre's fuel efficiency depends on its rolling resistance, which is the friction created between the tyre and the road surface when the tyre rolls. When the friction is reduced the tyre rolls easier and therefore less fuel is consumed.

All respondents:
Q9. Now you know its meaning, do you think the symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Screen 14 [Perceived importance]
All respondents:
Imagine that you are planning to buy new tyres.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Q10. How important would information about the fuel efficiency be to you when comparing tyres?	1	2	3	4	5
Q11. How important would it be to you that this information is displayed on the tyre label?	1	2	3	4	5

BLOCK 2
Screen 15 [wet grip]
If X2 = 1, then display "EL2_V1.jpg"
If X2 = 2, then display "EL2_V2.jpg"
If X2 = 3, then display "EL2_V3.jpg"
If X2 = 4, then display "EL2_V4.jpg"

Example:

All respondents:
Q12. Do you think this symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Q13. What do you think this symbol indicates?
1 Tyre grip on wet road (*)
2 Fuel efficiency on wet roads
3 Tyre suited for off-road driving
4 Protection against wear in wet-weather
5 Tyre suited for gravel surfaces
6 I (really) don't know
Scripter: randomize answer options, except answer 6 (always show last)

Screen 16 [wet grip]
If X2 = 1, then display "EL2_V1.jpg"
If X2 = 2, then display "EL2_V2.jpg"
If X2 = 3, then display "EL2_V3.jpg"
If X2 = 4, then display "EL2_V4.jpg"

Example:

This symbol represents the wet grip, which is the grip of a tyre on wet road surfaces. Tyres with good grip on wet roads have shorter braking distances when it rains.

All respondents:
Q14. Now you know its meaning, do you think the symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Screen 17 [Perceived importance]
All respondents:
Imagine that you are planning to buy new tyres.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Q15. How important would information about the wet	1	2	3	4	5

grip be to you when comparing tyres?					
Q16. How important would it be to you that this information is displayed on the tyre label?	1	2	3	4	5

BLOCK 3
If X2 > 1

Screen 18 [snow grip]
If X2 = 2, then display "EL3_V2.jpg"
If X2 = 3, then display "EL3_V3.jpg"
If X2 = 4, then display "EL3_V4.jpg"

Example:

Q17. Do you think this symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Q18. What do you think this symbol indicates?
1 Tyre grip on wet road
2 Tyre grip on ice
3 Tyre grip on snow (*)
4 Tyre suited for driving in the mountains
5 Anti-puncture tyre (run flat)
6 I (really) don't know
Multiple answers possible
Scripter: randomize answer options, except answer 6 (always show last)

Screen 19 [snow grip]
If X2 = 2, then display "EL3_V2.jpg"
If X2 = 3, then display "EL3_V3.jpg"
If X2 = 4, then display "EL3_V4.jpg"

Example:

This symbol represents the snow grip, which indicates the grip of a tyre on snowy road surfaces. This symbol indicates that the tyre has good control on snowy roads. Tyres with good grip on snowy roads have shorter braking distances.

Q19. Now you know its meaning, do you think the symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Screen 20 [Perceived importance]
Imagine that you are planning to buy new tyres.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Q20. How important would information about the snow grip be to you when comparing tyres?	1	2	3	4	5
Q21. How important would it be to you that this information is displayed on the tyre label?	1	2	3	4	5

BLOCK 4
If X2 > 1

Screen 21 [ice grip]
If X2 = 2, then display "EL4_V2.jpg"
If X2 = 3, then display "EL4_V3.jpg"
If X2 = 4, then display "EL4_V4.jpg"

Example:

Q22. Do you think this symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Q23. What do you think this symbol indicates?
1 Tyre grip on wet road
2 Tyre grip on ice (*)
3 Tyre grip on snow (*)
4 Tyre suited for driving in the mountains
5 Anti-puncture tyre (run flat)
6 I (really) don't know
Multiple answers possible

Scripter: randomize answer options, except answer 6 (always show last)

Screen 22 [ice grip]
If X2 = 2, then display "EL4_V2.jpg"
If X2 = 3, then display "EL4_V3.jpg"
If X2 = 4, then display "EL4_V4.jpg"

Example:

This symbol represents the ice grip, which indicates the grip of a tyre on snow and icy road surfaces. It indicates that the tyre provides good control on snowy and icy roads. Tyres with good grip on snowy and icy roads have shorter braking distances.

Q24. Now you know its meaning, do you think the symbol is clear or unclear?

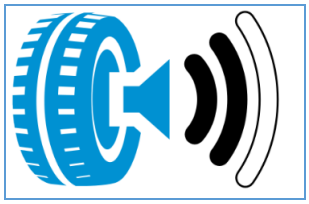
Very unclear	1	2	3	4	5	Very clear

Screen 23 [Perceived importance]
Imagine that you are planning to buy new tyres.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Q26. How important would information about the ice grip be to you when comparing tyres?	1	2	3	4	5
Q27. How important would it be to you that this information is displayed on the tyre label?	1	2	3	4	5

BLOCK 5
Screen 24 [external rolling noise pictogram]
If X2 = 1, then display "EL5_V1.jpg"
If X2 = 2, then display "EL5_V2.jpg"
If X2 = 3, then display "EL5_V3.jpg"
If X2 = 4, then display "EL5_V4.jpg"

Example:



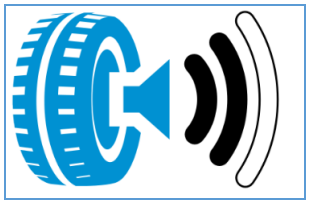
All respondents:
Q28. Do you think this symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Q29. What do you think this symbol indicates?
1 Maximum permitted sound level of the horn
2 Maximum permitted sound level of the tyre
3 The external noise generated by the tyre (*)
4 The car has a tyre-pressure monitoring system
5 Vibrations produced by the tyre
6 I (really) don't know
Scripter: randomize answer options, except answer 6 (always show last)

Screen 25 [external rolling noise pictogram]
If X2 = 1, then display "EL5_V1.jpg"
If X2 = 2, then display "EL5_V2.jpg"
If X2 = 3, then display "EL5_V3.jpg"
If X2 = 4, then display "EL5_V4.jpg"

Example:



This symbol indicates the external rolling noise generated by the tyre in decibel. This symbol thus indicates how quiet (or noisy) the tyre is when it rolls across the road surface, what you would hear if it drove past you.

All respondents:
Q30. Now you know its meaning, do you think the symbol is clear or unclear?

Very unclear	1	2	3	4	5	Very clear

Screen 26 [Perceived importance]
All respondents:
Imagine that you are planning to buy new tyres.

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Q31 How important would information about the external rolling noise be to you when comparing tyres?	1	2	3	4	5
Q32. How important would it be to you that this information is displayed on the tyre label?	1	2	3	4	5

All respondents:
if X2=1: display "EL5_V1.jpg"
if X2=2: display "EL5_V2.jpg"
if X2=3: display "EL5_V3.jpg"
if X2=4: display "EL5_V4.jpg"

Currently, the tyre label provides information on the maximum noise level of the tyre, expressed in decibels (e.g. 71dB). This allows consumers to spot even small differences in the noise level of different tyres.

if X2=1:
However, it is also possible to classify the tyre's sound level into three broader categories – quiet (1 sound wave), medium (2 sound waves), and noisy (3 sound waves) – and show on the label the category that the particular tyre belongs to, as indicated by the sound waves. This allows consumers to quickly spot large differences in the noise level of different tyres.

if X2>1:
However, it is also possible to classify the tyre's sound level into three broader categories – quiet (A), medium (B), and noisy (C) – and show on the label the category that the particular tyre belongs to. This allows consumers to quickly spot large differences in the noise level of different tyres.

The symbol you just saw provided both types of information (decibel and categories).

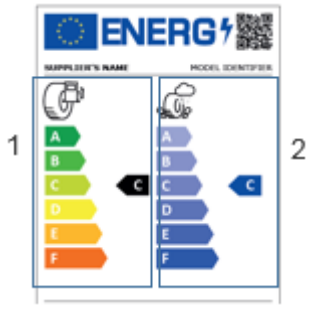
Q33. If you were looking for new tyres, which information would you prefer to find on the label?
1 An indication of the noise level in decibels
2 An indication of the noise level in categories (quiet, medium, noisy)
3 An indication of the noise level both in decibels and categories (quiet, medium, noisy)
4 I do not have a clear preference

END of BLOCK 1 - 5

Screen 27 [wet grip and fuel efficiency scales clarity]

If X2 = 1, then display "TOP _V1.jpg"
If X2 = 2 & X4 = 1, then display "TOP_V2A.jpg"
If X2 = 2 & X4 = 2, then display "TOP_V2B.jpg"
If X2 = 2 & X4 = 3, then display "TOP_V2C.jpg"
If X2 = 2 & X4 = 4, then display "TOP_V2D.jpg"
If X2 = 3 & X4 = 1, then display "TOP_V3A.jpg"
If X2 = 3 & X4 = 2, then display "TOP_V3B.jpg"
If X2 = 3 & X4 = 3, then display "TOP_V3C.jpg"
If X2 = 3 & X4 = 4, then display "TOP_V3D.jpg"
If X2 = 4 & X4 = 1, then display "TOP_V4A.jpg"
If X2 = 4 & X4 = 2, then display "TOP_V4B.jpg"
If X2 = 4 & X4 = 3, then display "TOP_V4C.jpg"
If X2 = 4 & X4 = 4, then display "TOP_V4D.jpg"

Example:



All respondents:
Here, you see a part of the tyre label. There are two scales: one for fuel efficiency (part 1) and one for wet grip (part 2).

The following statements are about the fuel efficiency (part 1) and wet grip (part 2) scales. Please indicate per statement if this applies to you ('yes') or not ('no').

Q34_1 In part 1, the specific design of the scale helped me to understand it.	yes	no
Q34_2 In part 2, the specific design of the scale helped me to understand it.	yes	no
Q34_3 The different designs of the fuel efficiency and wet grip scales helped me to understand that these are two different types of information.	yes	no

PART 3. BACKGROUND INFORMATION

Screen 28 [Product category expertise]
All respondents:
Finally, in this third and last part, we would like to ask you a few general questions.

Q35. Have you purchased tyres in the past 12 months?
1 Yes, and I purchased the tyres myself
2 Yes, but my garage or dealer selected the tyres
3 Yes, but a friend or family member selected the tyres
4 No, I did not purchase tyres in the past 12 months

Q36. Have you looked up information about tyres in the past 12 months?
1 Yes, extensively
2 Yes, a little
3 No, none

Screen 29 [important features when buying tyres]
Q37. Which of the following aspects is most important to you when buying tyres?
1 Environmental aspects (e.g. fuel efficiency)
2 Safety aspects (e.g. grip)
3 Health aspects (e.g. noise)
4 All aspects are equally important to me
5 None of these aspects are important to me

Q38. For each of the following aspects, please indicate how important you would consider that aspect when comparing different types of tyres.

A. Brand
B. Purchase price
C. Fuel efficiency
D. The amount of kilometres that a tyre lasts
E. Tyre grip on dry road
F. Tyre grip on wet road
G. Tyre grip on snow
H. Tyre grip on ice
I. Ability to hold tyre pressure
J. Environmental performance
K. External rolling noise
L. Presence of the M+S mark*
M. Load capacity (maximum carrying capacity of the tyre)
N. Run flat (tyre designed to resist the effects of deflation when punctured)
O. Maximum speed capability of the tyre (max kmh)
P. Type of tyre

Scripter:
** Mouse roll-over 1: Mud and Snow has been used to indicate winter tyres, but these tyres not necessarily pass the legal snow grip threshold*

Scripter: randomize order of product attributes
1 Not at all important
2 Slightly important
3 Moderately important
4 Very important
5 Extremely important

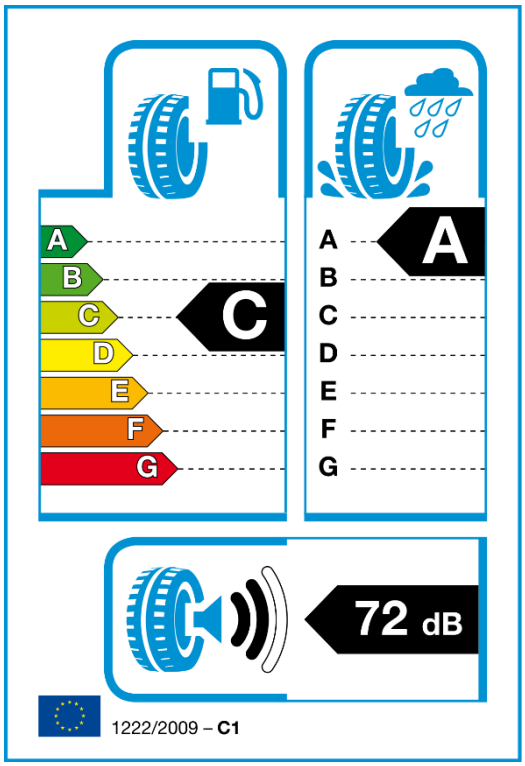
Screen 30 [Awareness, recognition and trust]
Q39. Were you aware of the existence of a tyre label before you began this survey?
1 Yes
2 No

Screen 31 [Awareness, recognition and trust]
Show FULL_V1.jpg
If X2 = 1

Q40. Have you seen this label before, before you began this survey?
1 Yes
2 No

If X2 > 1
Q41. Have you seen this label before?

Example



1 Yes
2 No

Screen 32 [Awareness, recognition and Trust]
Imagine again that you are in a store to buy tyres. You see this label on the tyres that the store sells.

If X2 = 1, then display "FULL_V1.jpg"
If X2 = 2 & X4 = 1, then display "FULL_V2A.jpg"
If X2 = 2 & X4 = 2, then display "FULL_V2B.jpg"
If X2 = 2 & X4 = 3, then display "FULL_V2C.jpg"
If X2 = 2 & X4 = 4, then display "FULL_V2D.jpg"
If X2 = 3 & X4 = 1, then display "FULL_V3A.jpg"
If X2 = 3 & X4 = 2, then display "FULL_V3B.jpg"
If X2 = 3 & X4 = 3, then display "FULL_V3C.jpg"
If X2 = 3 & X4 = 4, then display "FULL_V3D.jpg"
If X2 = 4 & X4 = 1, then display "FULL_V4A.jpg"
If X2 = 4 & X4 = 2, then display "FULL_V4B.jpg"
If X2 = 4 & X4 = 3, then display "FULL_V4C.jpg"
If X2 = 4 & X4 = 4, then display "FULL_V4D.jpg"

Q42. Would you trust the information on this label to be correct?
1 Definitely
2 I think so
3 I really don't know
4 I don't think so
5 Definitely not

Q43. Would you trust this label as the official EU tyre label?

1 Definitely
2 I think so
3 I really don't know
4 I don't think so
5 Definitely not

Screen 33 [missing of information]
The EU tyre label helps consumers to quickly and easily find and compare different tyres on fuel efficiency, wet grip, snow grip, ice grip and noise level. Below, the label is shown once more in its entirety.

If X2 = 1, then display "FULL_V1.jpg"
If X2 = 2 & X4 = 1, then display "FULL_V2A.jpg"
If X2 = 2 & X4 = 2, then display "FULL_V2B.jpg"
If X2 = 2 & X4 = 3, then display "FULL_V2C.jpg"
If X2 = 2 & X4 = 4, then display "FULL_V2D.jpg"
If X2 = 3 & X4 = 1, then display "FULL_V3A.jpg"
If X2 = 3 & X4 = 2, then display "FULL_V3B.jpg"
If X2 = 3 & X4 = 3, then display "FULL_V3C.jpg"
If X2 = 3 & X4 = 4, then display "FULL_V3D.jpg"
If X2 = 4 & X4 = 1, then display "FULL_V4A.jpg"
If X2 = 4 & X4 = 2, then display "FULL_V4B.jpg"
If X2 = 4 & X4 = 3, then display "FULL_V4C.jpg"
If X2 = 4 & X4 = 4, then display "FULL_V4D.jpg"

Q44. Do you think important information is missing on this label?
1 No
2 Yes

Screen 34 [Missing of information]
If QXX = 1, skip this screen.
If QXX = 2:
Q45. What information do you think is missing?

A. The amount of kilometers that a tyre lasts
B. Ability to hold tyre pressure
C. Presence of the M+S label
D. Load capacity (maximum carrying capacity of the tyre)
E. Run flat (tyre designed to resist the effects of deflation when punctured)
F. Max kmh
G. Other, namely [*open textbox]*

Screen 35 [self-reported product category expertise/ pro-environmental self-identity]
All respondents:
Q46. Please indicate how much you agree or disagree with the following statements.

		Strongly Disagree						Strongly agree
1	I know a great deal about tyres.	1	2	3	4	5	6	7
2	I know more about tyres than most other people.	1	2	3	4	5	6	7

3	In my daily activities, I am conscious about saving energy.	1	2	3	4	5	6	7
4	I am worried about the environment.	1	2	3	4	5	6	7
5	I am worried about climate change.	1	2	3	4	5	6	7

Screen 36
Q47. There are various reasons why people pay attention to fuel efficiency when buying new tyres. What would be the most important reason for you, personally?
1 I want to save costs (a lower fuel bill)
2 I want to protect the environment and combat climate change
3 Other, namely…
4 I really don't know

Screen 37 [socio-demographics]
All respondents:
Q48. What is your gender?
1 Man
2 Woman

Q49. What is your age?

Q50. At what stage did you complete your full-time studies?
1 Elementary (primary) school or less
2 Some high (secondary) school
3 Graduation from high (secondary) school
4 Graduation from college, university or other third-level institute
5 Post-graduate degree (Masters, PhD)
6 Still studying full-time
7 Other qualification
8 Prefer not to answer

Q51. Thinking about your household's financial situation, would you say that making ends meet every month is:
1 Very difficult
2 Fairly difficult
3 Neither easy nor difficult
4 Fairly easy
5 Very easy
6 Don't know

Appendix B: Familiarity with the current tyre label

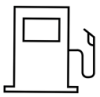
B.1. Comprehension of the fuel efficiency pictogram per consumer group

Table B.1. Subjective pictogram comprehension: fuel efficiency

		Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)
					
Familiar with current label	% (very) clear	76,8%	71,3%	69,3%	60,8%
	% (very) unclear	9,2%	9,2%	12,6%	21,1%
	Average (5-point)	4,2[a]	4,0[b]	4,0[b]	3,6[c]
Unfamiliar with current label	% (very) clear	55,9%	50,8%	48,9%	39,9%
	% (very) unclear	21,0%	24,6%	27,3%	36,4%
	Average (5-point)	3,5[a]	3,4[b]	3,3[b]	3,0[c]

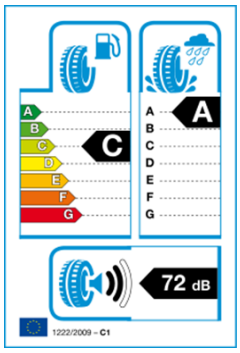
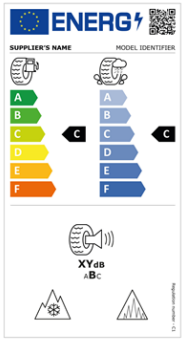
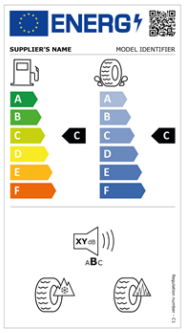
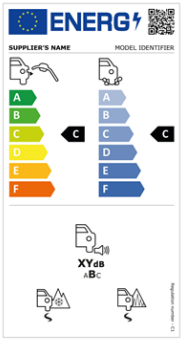
Note – Averages with different superscripts (in rows) indicate statistically significant differences at p < .05.

Table B.2. Objective pictogram comprehension: fuel efficiency

	Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)
				
Familiar with current label	60,6%[a]	54,6%[a*]	48,8%[b]	39,5%[c]
Unfamiliar with current label	49,9%[a]	47,7%[a]	38,6%[b]	30,1%[c]

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Table B.3. Accurate product identification: fuel efficiency

	Alternative 1 (N = 615)	Alternative 2 (N = 629)	Alternative 3 (N = 618)	Alternative 4 (N = 613)
				
Familiar with current label	67,6%[a]	59,8%[ab]	59,4%[ab]	57,8%[b]
Unfamiliar with current label	64,1%[a]	59,2%[a]	63,1%[a]	57,5%[a]

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

B.2. Comprehension of the wet grip pictogram per consumer group

Table B.4. Subjective pictogram comprehension: wet grip

		Current pictogram (N = 1230)	Alternative 1 (N = 1236)	Alternative 2 (N = 1258)	Alternative 3 (N = 1252)
					
Familiar with current label	% (very) clear	86,5%	76,3%	76,2%	63,9%
	% (very) unclear	3,7%	6,8%	6,5%	15,1%
	Average (5-point)	4,4[a]	4,1[b]	4,1[b]	3,8[c]
Unfamiliar with current label	% (very) clear	73,8%	64,5%	62,7%	49,8%
	% (very) unclear	7,4%	12,8%	13,0%	23,9%
	Average (5-point)	4,1[a]	3,7[b]	3,8[b]	3,4[c]

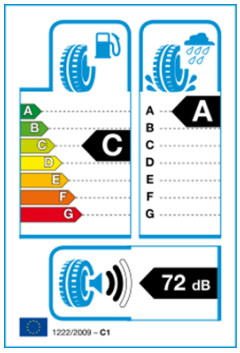
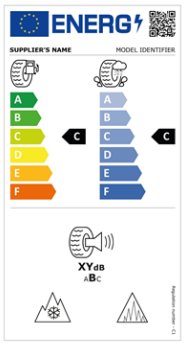
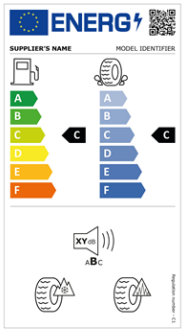
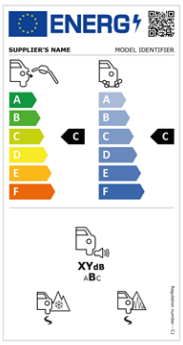
Note – Averages with different superscripts (in rows) indicate statistically significant differences at p < .05.

Table B.5. Objective pictogram comprehension: wet grip

	Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)
				
Familiar with current label	83,8%[a]	80,1%[ab]	78,3%[b]	72,0%[c]
Unfamiliar with current label	84,2%[a]	77,4%[b]	76,6%[b]	69,4%[c]

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

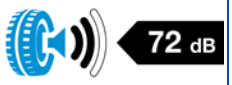
Table B.6. Accurate product identification: wet grip

	Alternative 1 (N = 615)	Alternative 2 (N = 629)	Alternative 3 (N = 618)	Alternative 4 (N = 613)
				
Familiar with current label	71,6%[a]	51,0%[b]	49,4%[bc]	41,4%[c]
Unfamiliar with current label	64,1%[a]	52,9%[b]	46,3%[bc]	41,2%[c]

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

B.3. Comprehension of the noise level pictogram per consumer group

Table B.7. Subjective pictogram comprehension: noise level

		Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)
					
Familiar with current label	% (very) clear	83,4%	76,0%	74,3%	74,2%
	% (very) unclear	5,5%	7,5%	9,6%	9,8%
	Average (5-point)	4,3[a]	4,1[b]	4,1[b]	4,1[b]
Unfamiliar with current label	% (very) clear	69,8%	61,3%	53,5%	54,0%
	% (very) unclear	12,1%	18,0%	21,2%	20,9%
	Average (5-point)	3,9[a]	3,7[b]	3,5[c]	3,5[c]

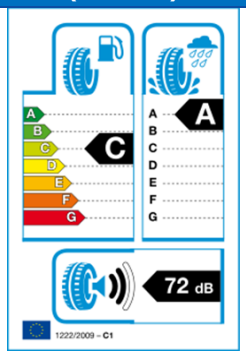
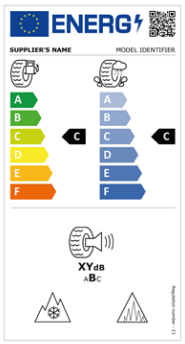
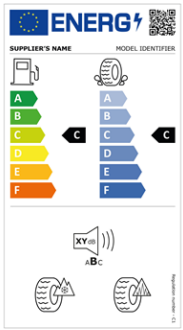
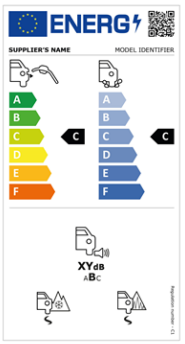
Note – Averages with different superscripts (in rows) indicate statistically significant differences at p < .05.

Table B.8. Objective pictogram comprehension: noise level

	Alternative 1 (N = 1230)	Alternative 2 (N = 1236)	Alternative 3 (N = 1258)	Alternative 4 (N = 1252)
				
Familiar with current label	63,3%[a]	60,4%[a]	59,0%[a]	58,1%[a]
Unfamiliar with current label	62,5%[a]	57,9%[ab]	53,2%[b]	56,9%[b]

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Table B.9. Accurate product identification: noise level

	Alternative 1 (N = 615)	Alternative 2 (N = 629)	Alternative 3 (N = 618)	Alternative 4 (N = 613)
				
Familiar with current label	60,4%[a]	54,6%[ab]	53,0%[ab]	50,0%[b]
Unfamiliar with current label	61,5%[a]	61,1%[a]	52,0%[b]	52,0%[b]

Note – Percentages with different superscripts indicate statistically significant differences at p < 0,05.

Appendix C: Importance of aspects per country

Figure C.1. Importance of aspects when comparing tyres: Germany

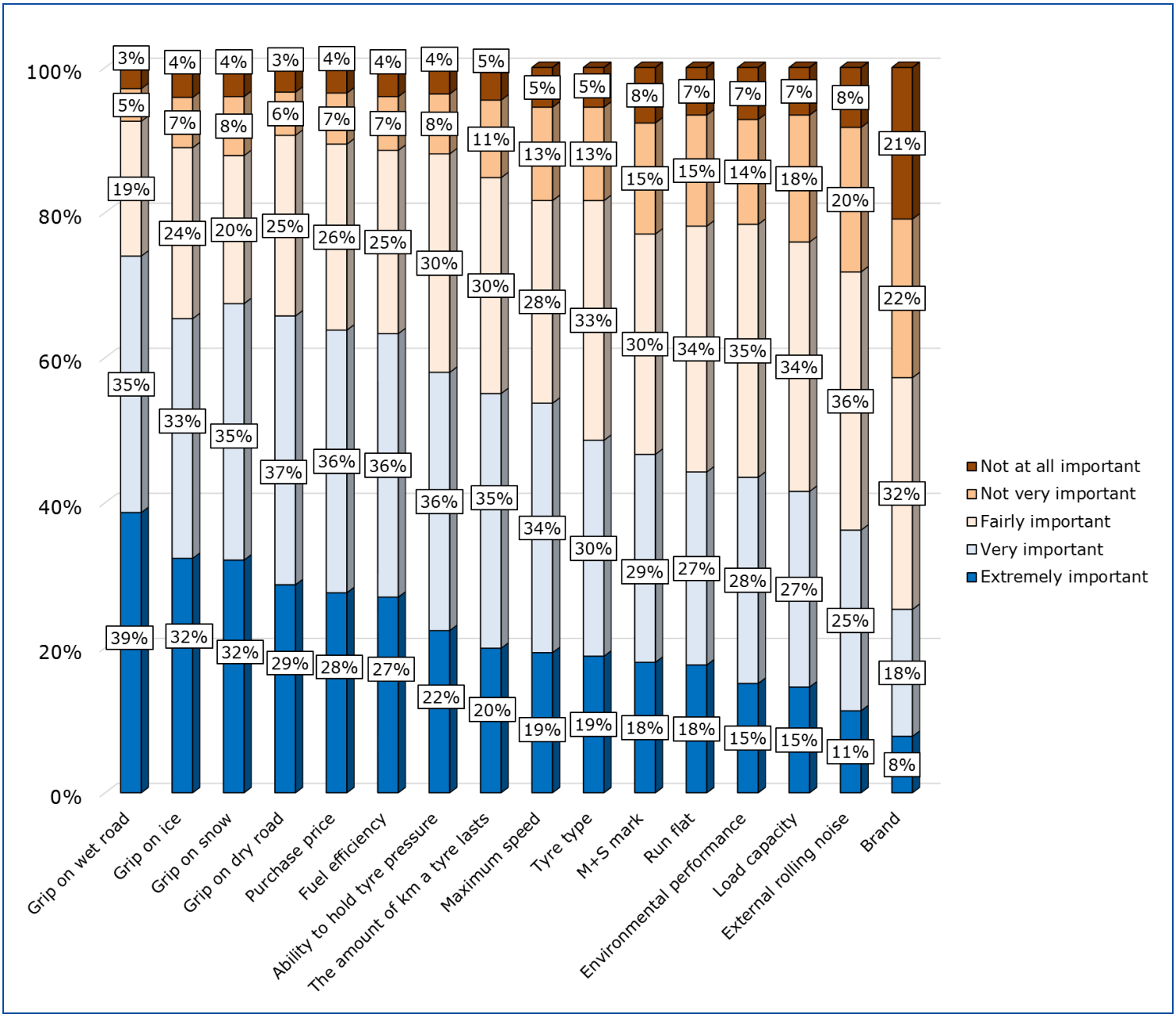


Figure C.2. Importance of aspects when comparing tyres: Italy

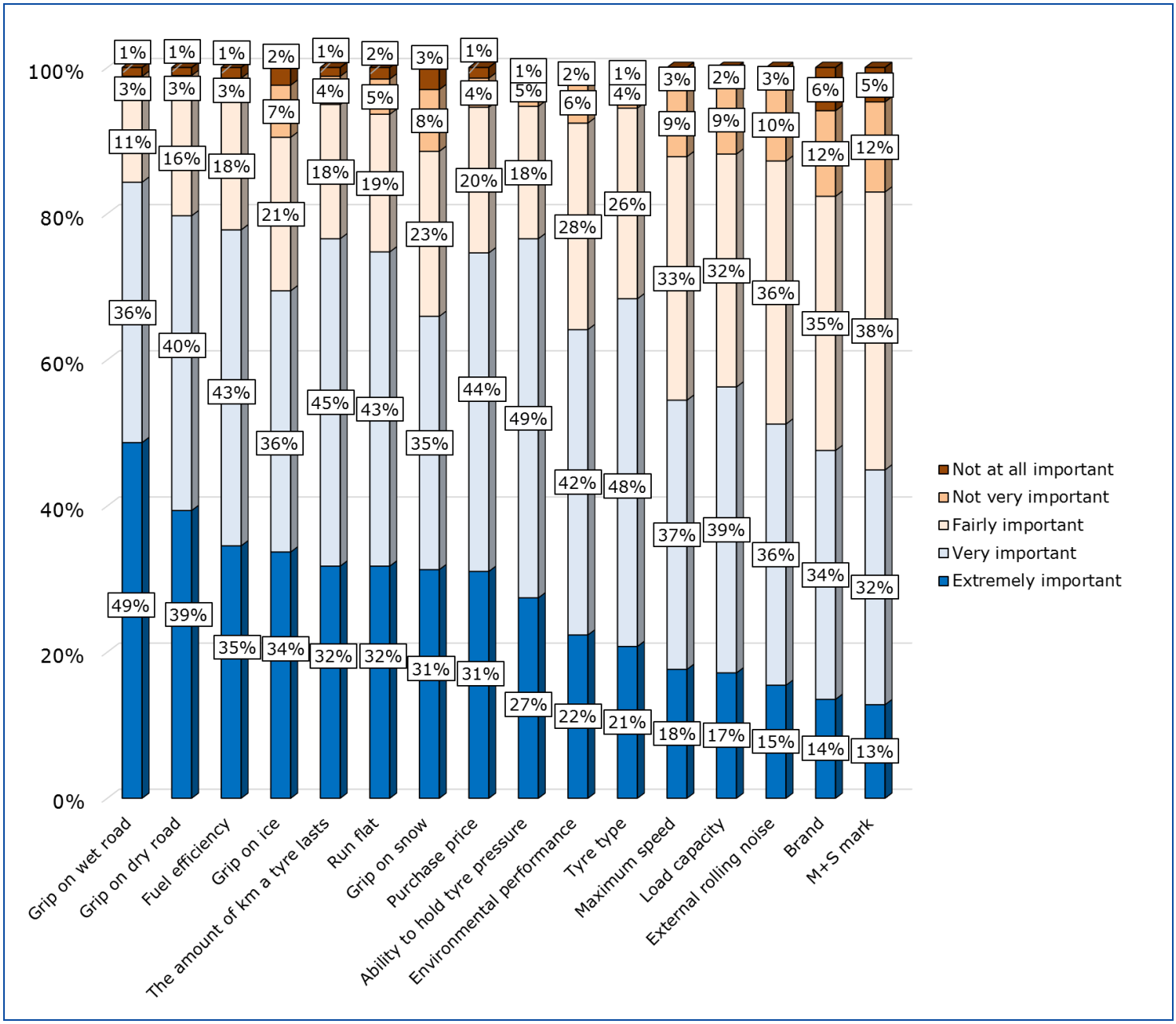


Figure C.3. Importance of aspects when comparing tyres: the Netherlands

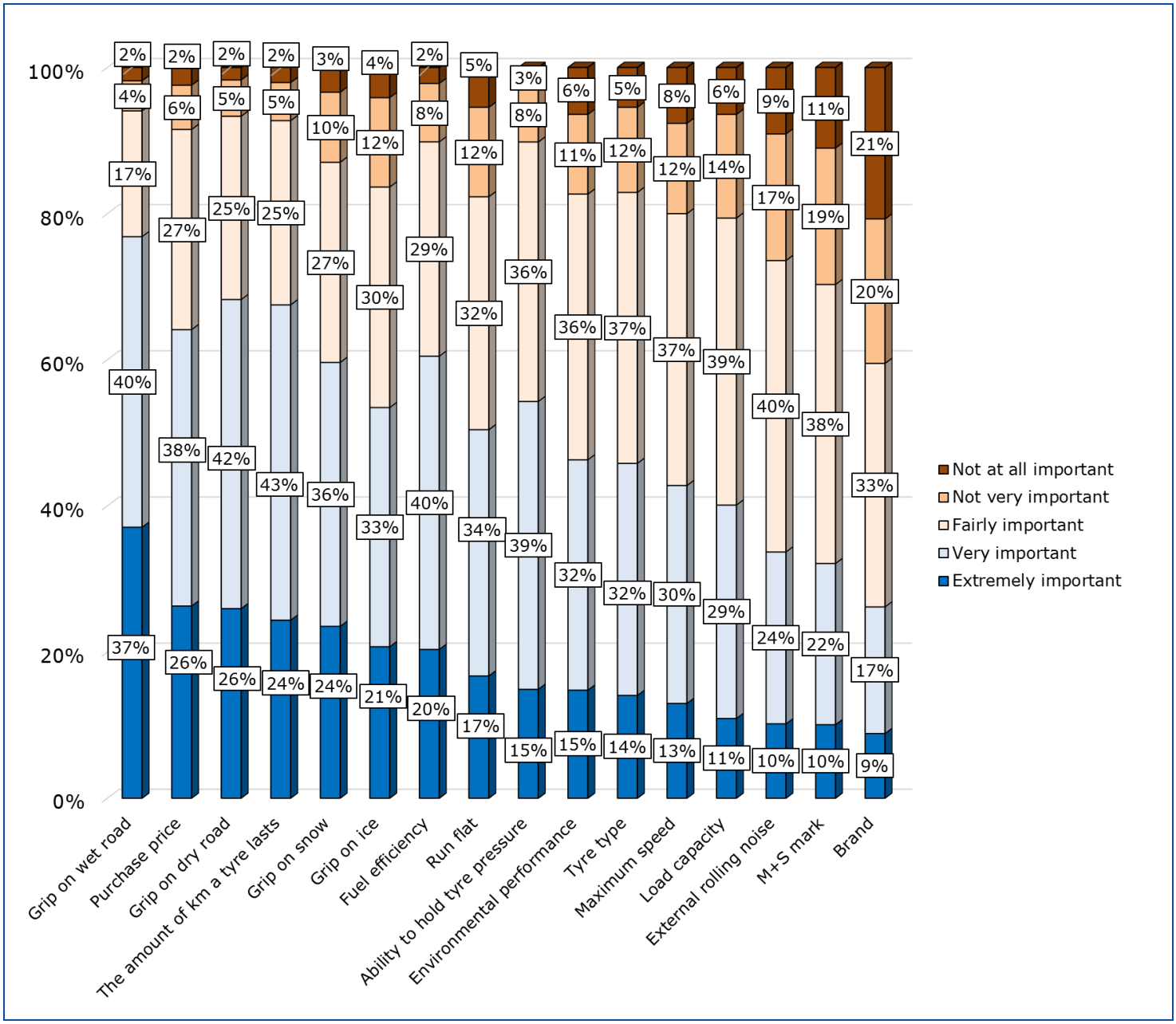


Figure C.4. Importance of aspects when comparing tyres: Portugal

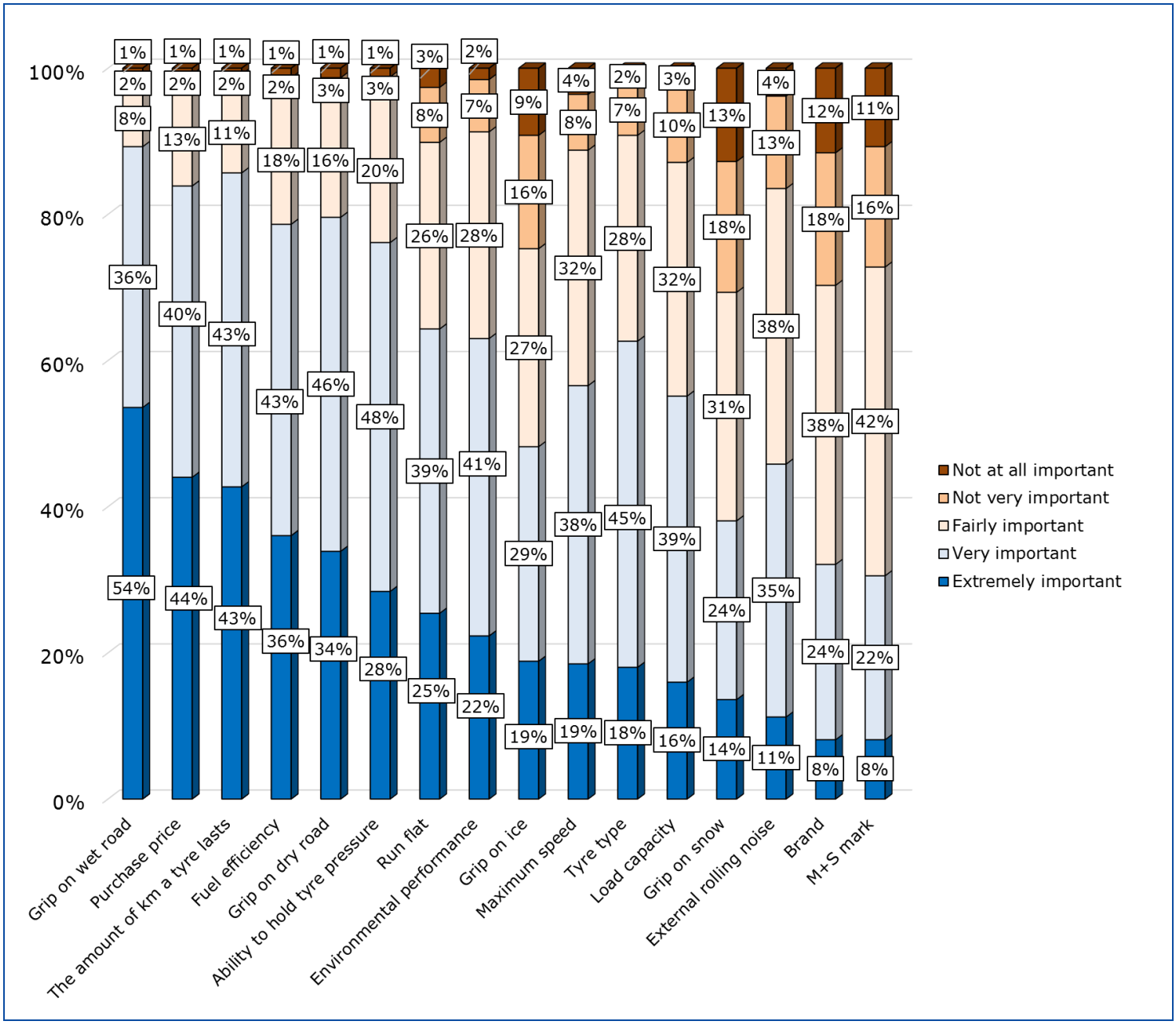


Figure C.5. Importance of aspects when comparing tyres: Romania

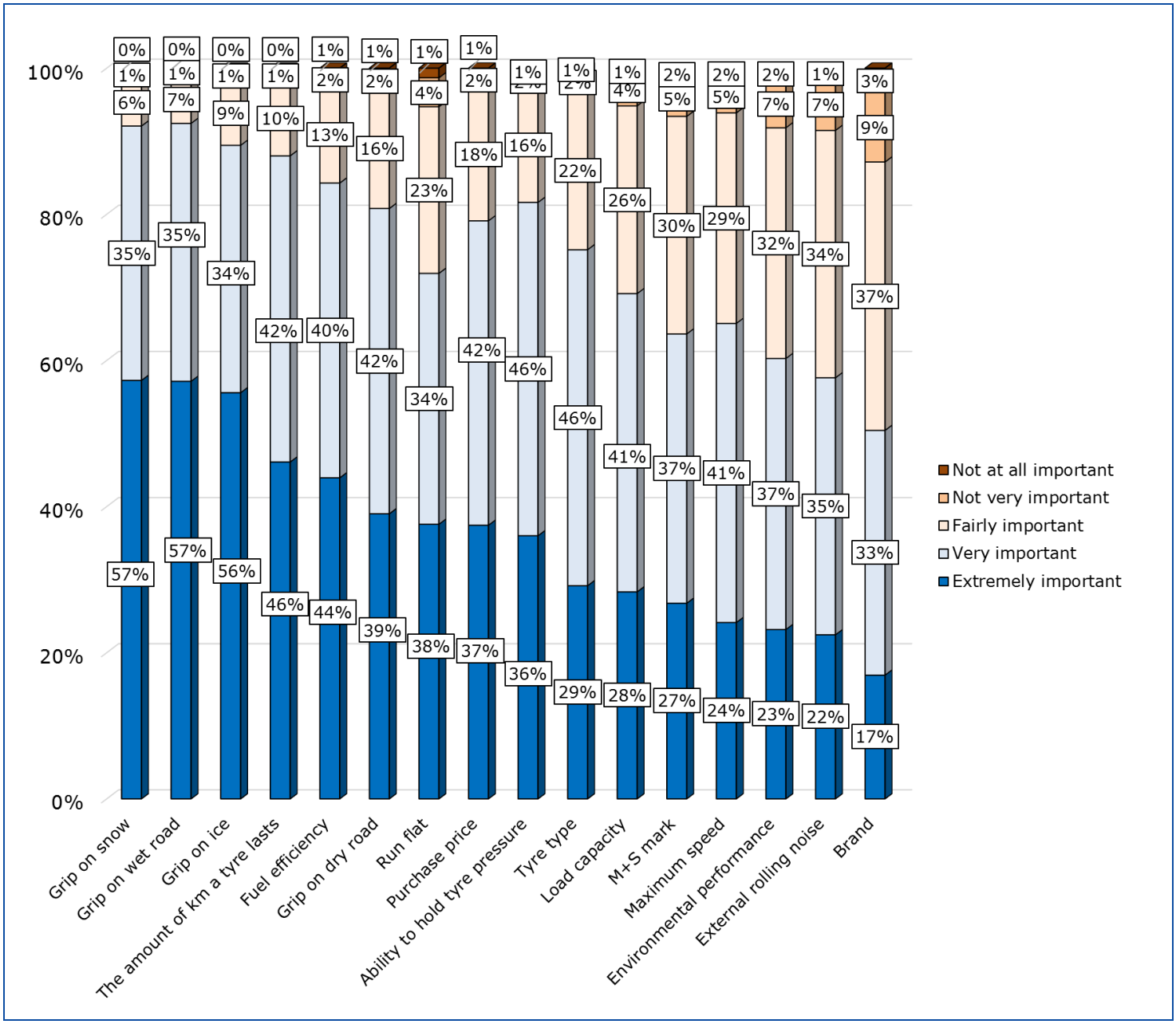
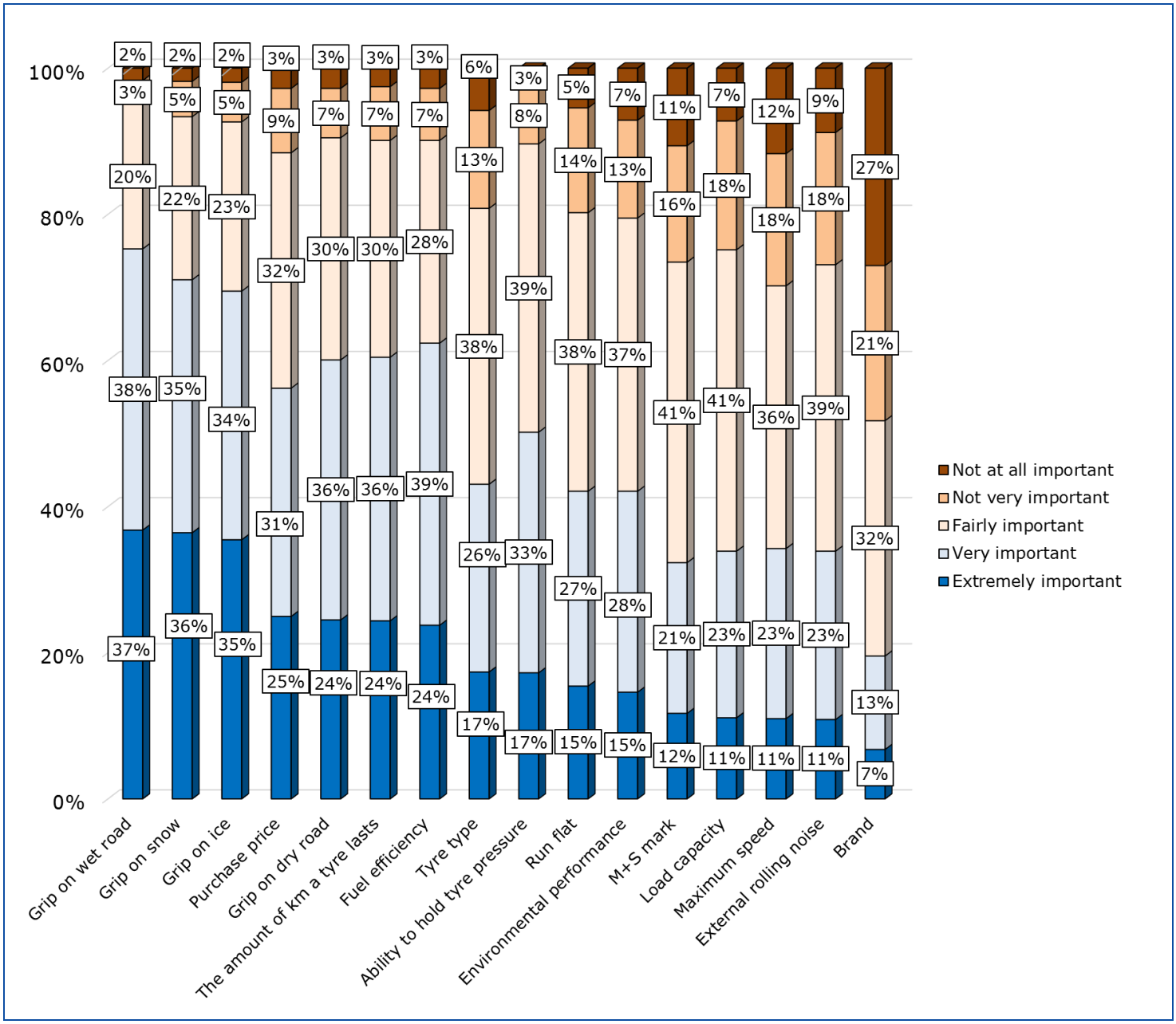


Figure C.6. Importance of aspects when comparing tyres: Sweden



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