



UC Leuven
Limburg

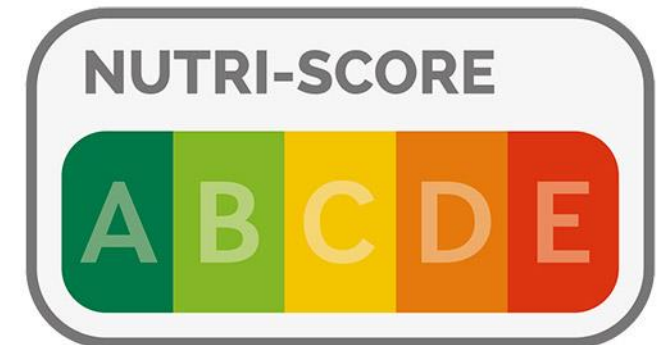
MOVING MINDS

The impact of Nutri-Score on consumers' food choices



What is Nutri-Score?

- Front of Pack label developed by French researchers (*Institut national de la santé et de la recherche médicale*)¹
- Based on British Food Standards Agency's Nutrient Profiling System (FSA-NPS), which allocates points for positive (fibers, fruits, vegetables...) and negative (sugar, fatty acids...) product features
- Provides a **summary evaluation of the nutritional quality of a product**, grading them on a five-point scale, from A (most healthy) to E (least healthy)
- Has been implemented (not obligatory) across Europe:
 - France
 - Spain
 - Belgium
 - Luxemburg
 - Germany
 - The Netherlands



1: Julia, C., & Hercberg, S. (2017). Development of a new front-of-pack nutrition label in France: The five-colour nutri-score. *Public Health Panorama*, 3(4), 712–725.



Background and rationale behind research questions

- Multiple studies have established that Nutri-Score outperforms other FOP labels on the following criteria:
 - Easy to understand
 - Helping consumers to decide which products are more/less healthy than others
 - What remains to be uncovered -> Our Research questions:
 - RQ1: What is the **impact of Nutri-Score** and more detailed **Nutritional Information** at the back of the pack on **healthfulness perception**? Do these two factors **interact**?
 - RQ2: Do Nutri-Score and Nutritional Information affect healthfulness perception for **every product category** and for **every Nutri-Score grade** (going from very Healthy, A, to very unhealthy, E) in the **same way**?
 - RQ3: Does Nutri-Score help consumers to make **healthier choices** in **other environments** than supermarkets?
 - RQ4: Does Nutri-Score help consumers to make **healthier choices in the long run**?
- In these questions, we will also explore if gaze behavior (measured via eye-tracking) can explain the results

Current study

Future studies



Context and set-up case study to investigate RQ1 & 2

- Screen-based eye-tracking experiment at UCLL campus and at KU Leuven Faculty of Arts.
- Set-up: participants completed 2 tasks:
 1. The participants started with a **screen-based eye-tracking exercise** in which they had to evaluate 20 products on a scale from unhealthy (1) to healthy (5). Depending on the experimental condition the participant was randomly assigned to, (s)he was exposed to products with or without the NS (experimental manipulation 1) and with or without nutritional information (experimental manipulation 2). Participants viewed one product at a time, accompanied with the following question:

“How (un)healthy is this product on a scale from (1) unhealthy to (5) healthy?”
 2. Immediately after the eye-tracking experiment the participants were asked to **complete a survey** which comprised questions concerning socio-demographic data (including BMI) and general food-related variables
- Sample characteristics:
 - N=398
 - Gender: 52% female
 - Age: Mean: 31 years; SD: 15,67 years



The experiment ran from February 11 till February 18, including Valentine's day



Participants were recruited in different ways:

- Pre-recruitment via an announcement on UCLL intranet
- Recruitment on UCLL campus
- Recruitment in the center of Leuven (near a KU Leuven lab facility)

Love is ... participating together in an eye-tracking experiment



Stimuli: front of pack of 20 Delhaize-branded¹ products

BEVERAGES

Shown in random order:

A



B



C



D



E



PREPARED MEALS

Shown in random order:

A



B



C



D



E



Shown
in
random
order

DAIRY

Shown in random order:

A



B



C



D



E



ICE CREAM

Shown in random order:

A



B



C



D







E



1: Delhaize is a large Belgian retail chain and (non-financial) partner in our research project



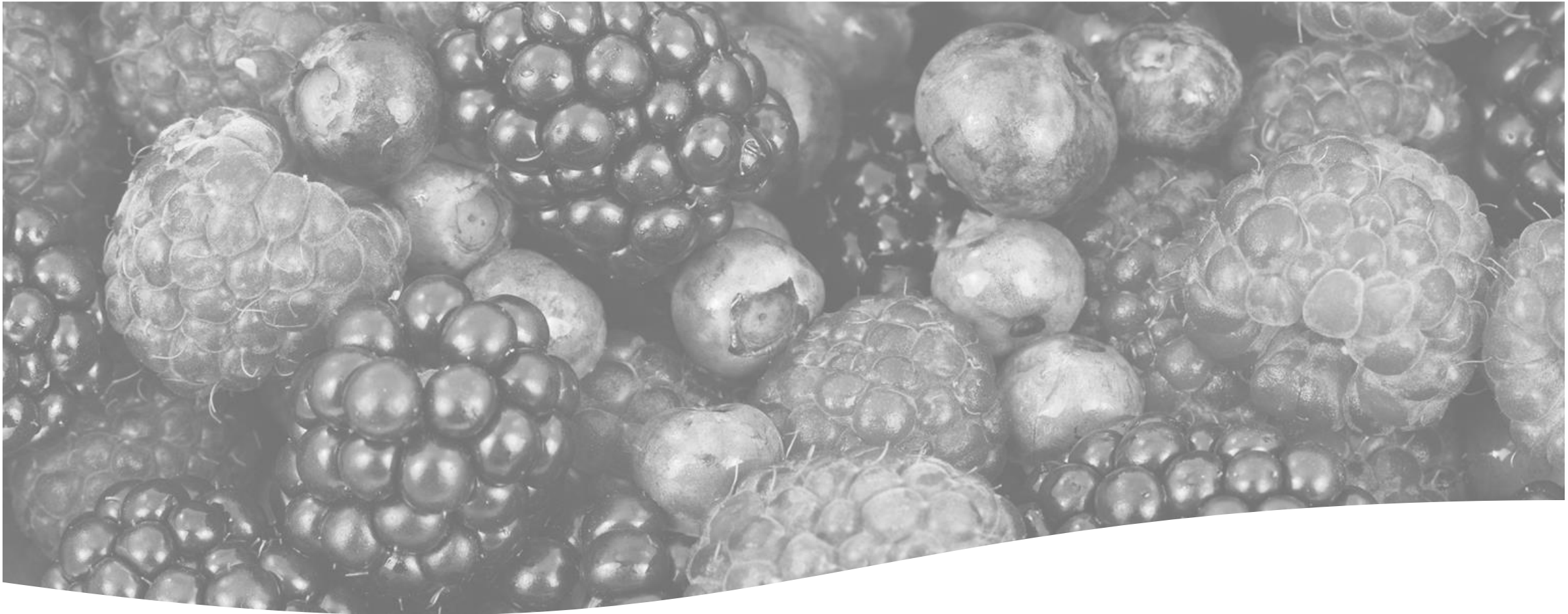
Each participant was assigned to **1** of **4** experimental conditions, created by **2** **manipulations**: Nutri-Score (NS) presence (no/yes) and Nutritional Info (NI) presence (no/yes).

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		No NS	NS																																																																																
Nutritional Info	No NI	<p>Control</p> <table border="1"> <thead> <tr> <th colspan="5">BEVERAGES</th> <th colspan="5">ICE CREAM</th> </tr> </thead> <tbody> <tr> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> </tr> <tr> <th colspan="5">PREPARED MEALS</th> <th colspan="5">DAIRY</th> </tr> <tr> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> </tr> </tbody> </table> 	BEVERAGES					ICE CREAM					A	B	C	D	E	A	B	C	D	E	PREPARED MEALS					DAIRY					A	B	C	D	E	A	B	C	D	E	<p>Nutri-Score</p> <table border="1"> <thead> <tr> <th colspan="5">BEVERAGES</th> <th colspan="5">ICE CREAM</th> </tr> </thead> <tbody> <tr> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> </tr> <tr> <th colspan="5">PREPARED MEALS</th> <th colspan="5">DAIRY</th> </tr> <tr> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> <td>A</td><td>B</td><td>C</td><td>D</td><td>E</td> </tr> </tbody> </table> 	BEVERAGES					ICE CREAM					A	B	C	D	E	A	B	C	D	E	PREPARED MEALS					DAIRY					A	B	C	D	E	A	B	C	D	E
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Dependent variable in the analyses

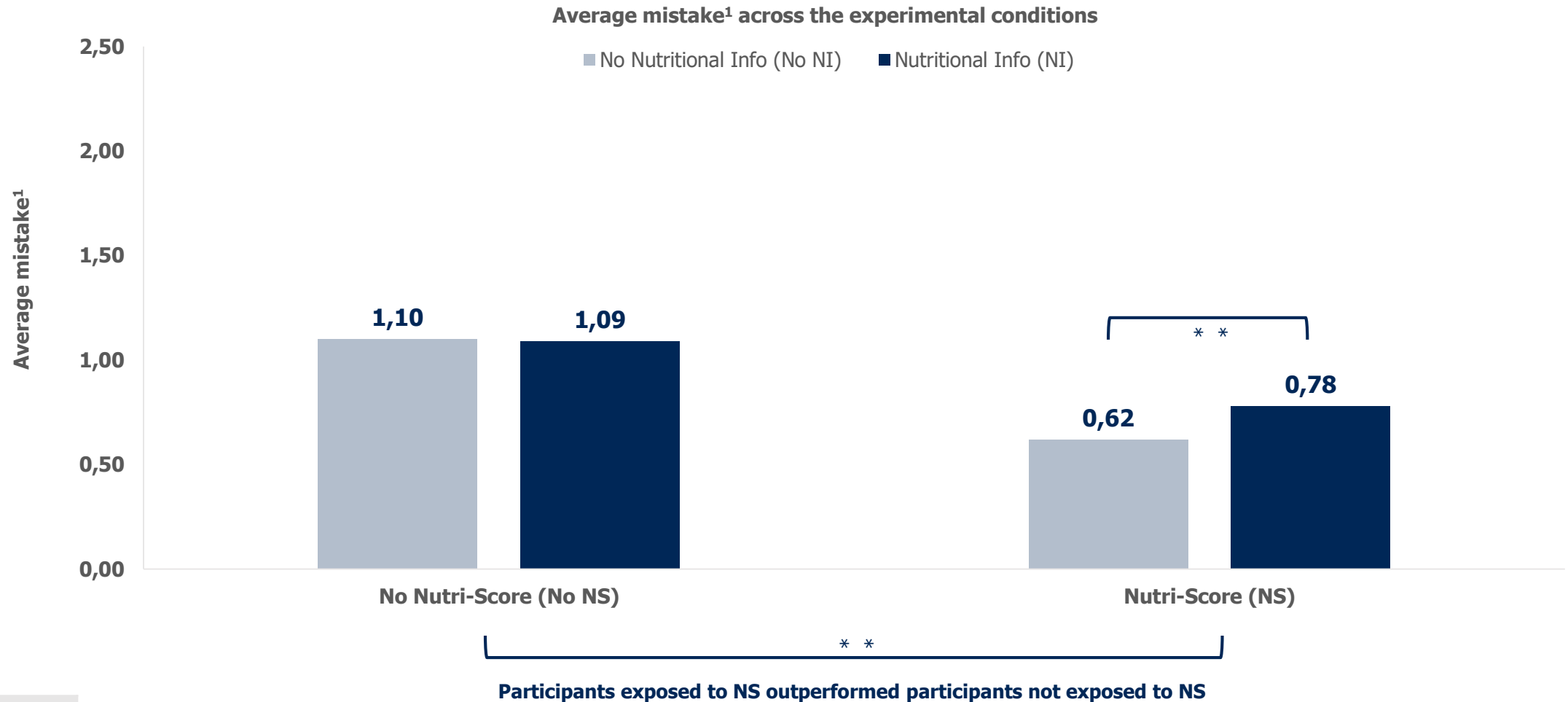
- Remember: Participants were exposed to 20 products and had to answer for each product the following question: “How healthy is this product on a scale from (1) unhealthy to (5) healthy?”
- For each product, we calculated the **absolute difference between the estimated health score by the participants and the Nutri-Score** that is assigned to the product. The lower the score the less mistakes that were made. Example:
 - Rice Pudding has Nutri-Score B, which is a score of 4 (on a 5-point scale)
 - Participant’s estimated health score is 3
 - Absolute difference of $4 - 3 = 1$
- We refer to the dependent variable as the **“average mistake”**. You want this score to be **as low as possible**.



RQ1: What is the impact of Nutri-Score and more detailed Nutritional Information at the back of the pack on healthfulness perception? Do these two factors interact?



Participants exposed to NS significantly outperformed participants who were not exposed to NS. There was a significant interaction effect with NI: those exposed to NS only significantly outperformed those exposed to both NS and NI.



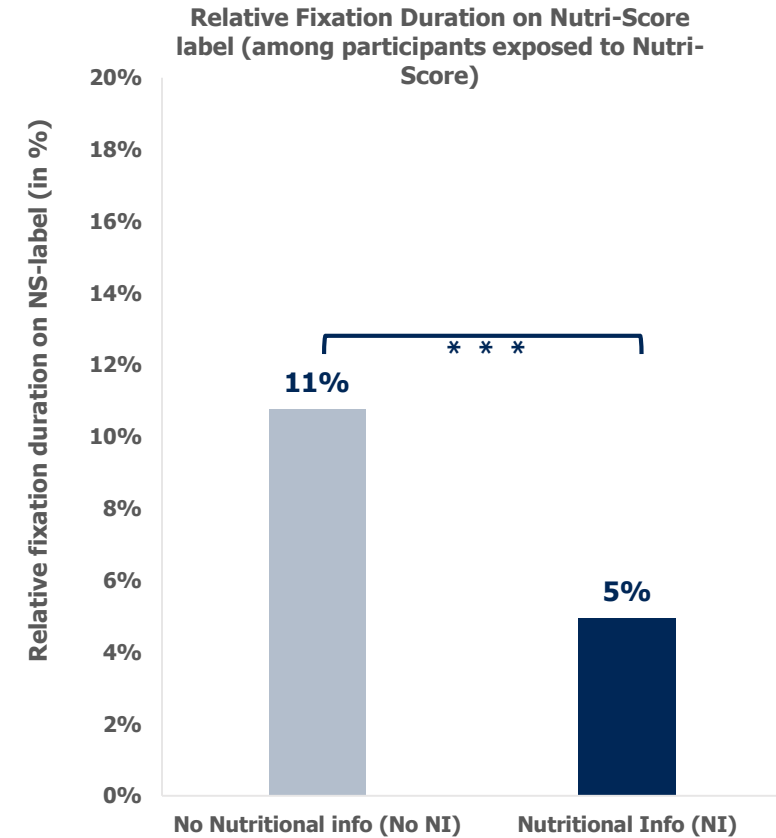
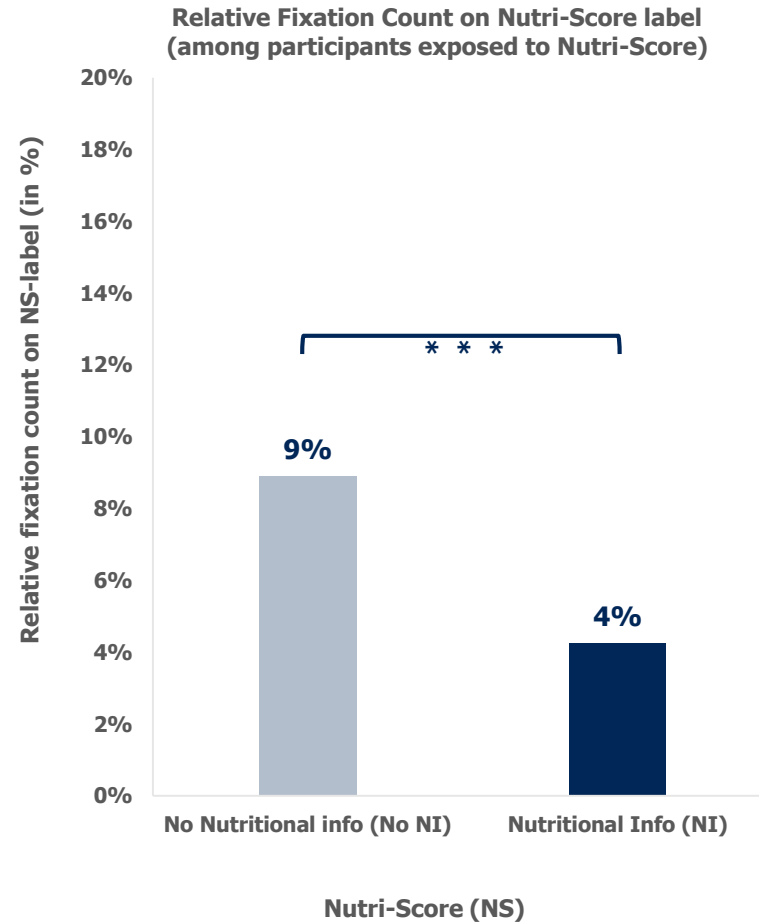
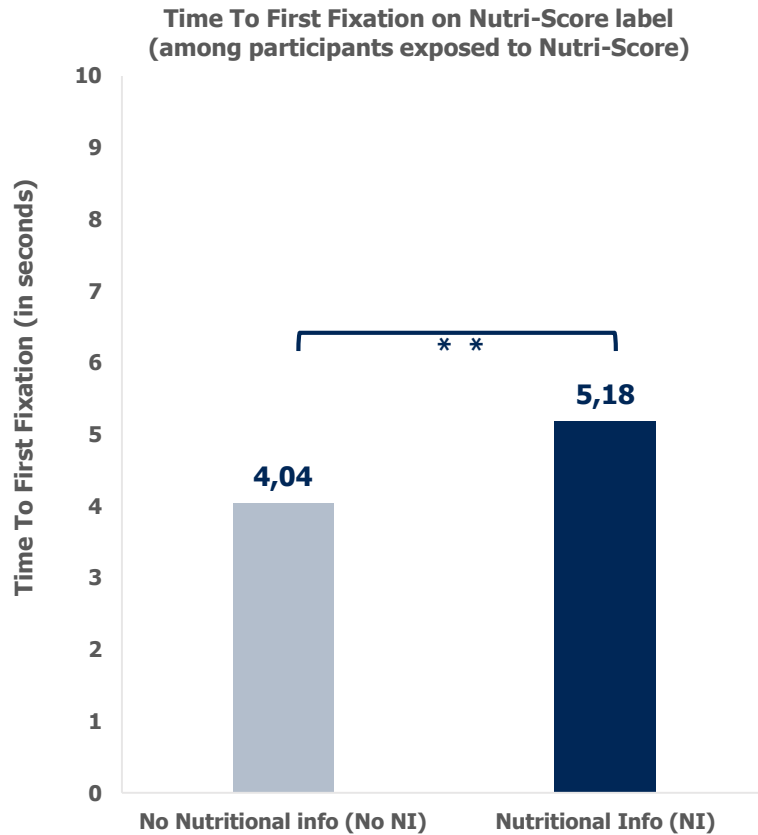
Significant differences

- * $.01 < p < .05$
- ** $p < .01$
- *** $p < .001$

1: You want this score to be as low as possible

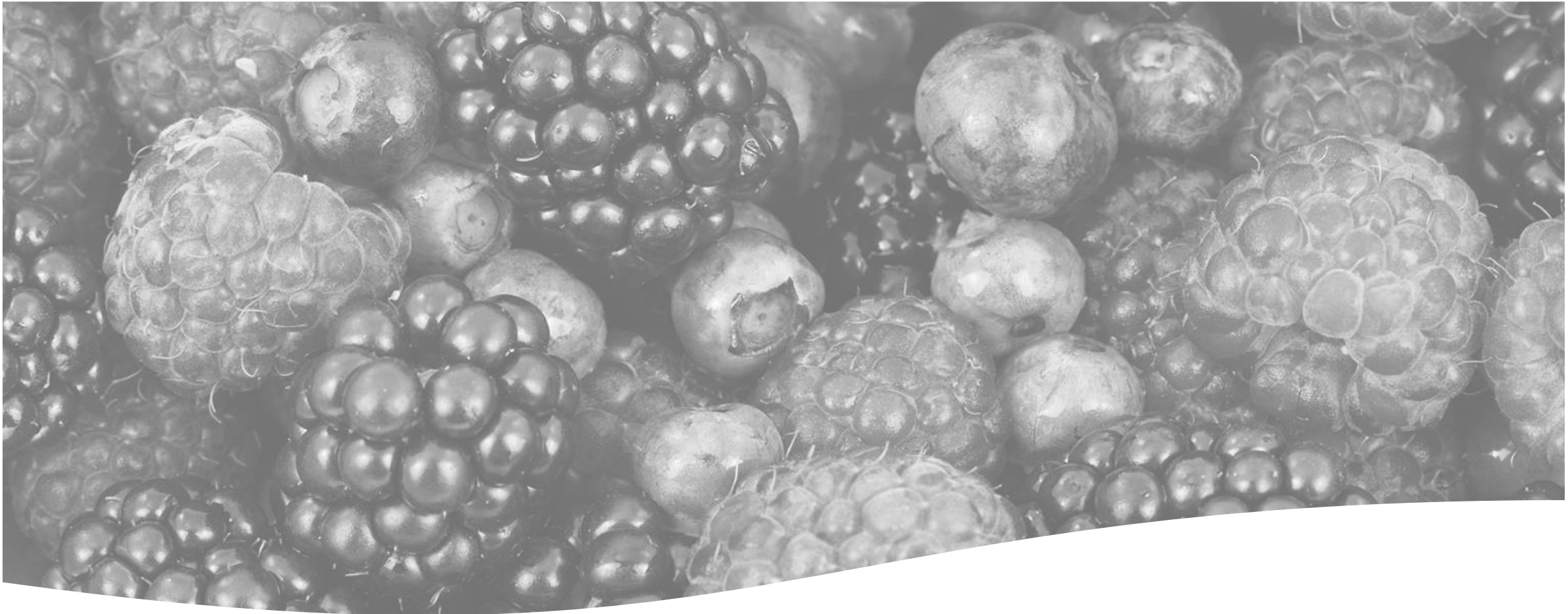


Eye-tracking data could explain the previous finding: participants exposed to NS only focus significantly faster, more often, and longer on the Nutri-Score label than participants exposed to NS and NI.



Significant differences

- * $.01 < p < .05$
- ** $p < .01$
- *** $p < .001$



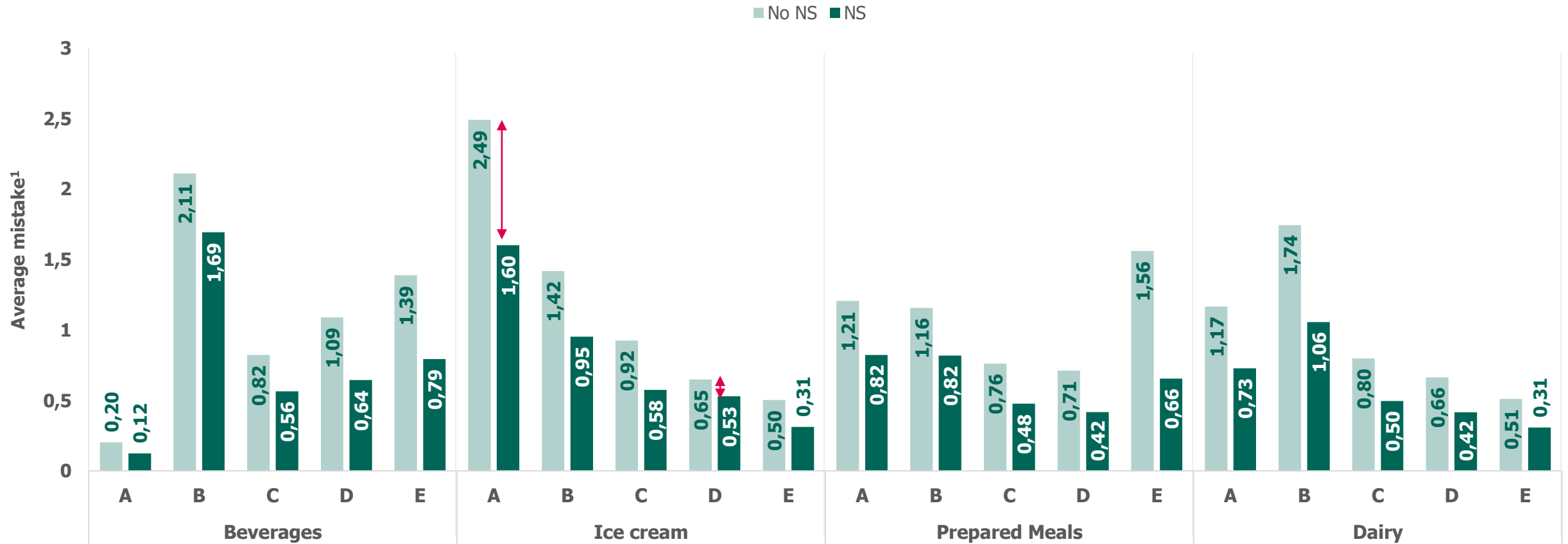
RQ2: Do Nutri-Score and Nutritional Information affect healthfulness perception for every product category and for every Nutri-Score grade (going from very Healthy, A, to very unhealthy, E) in the same way?



The impact of the Nutri-Score label on participants' capability to estimate how (un)healthy a product is depends on the NS grade of the product, as well as the product category.

For instance, compare the impact of adding a Nutri-Score label to a pack of **ice cream with Nutri-Score grade A vs. ice cream with Nutri-Score grade D**.

3-way interaction: Category (Beverages, Ice cream, Prepared meals, Dairy) x NS grade (A, B, C, D, E) x NS (No NS, NS)

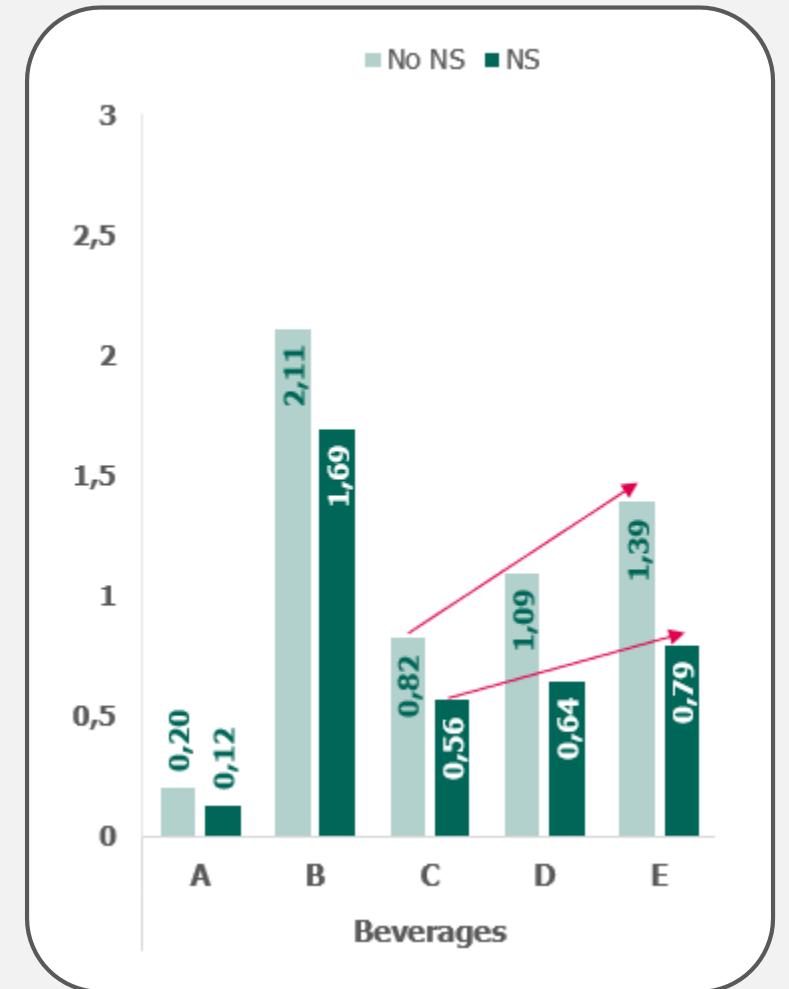


1: You want this score to be as low as possible



Zoom-in on trends in the category 'Beverages'

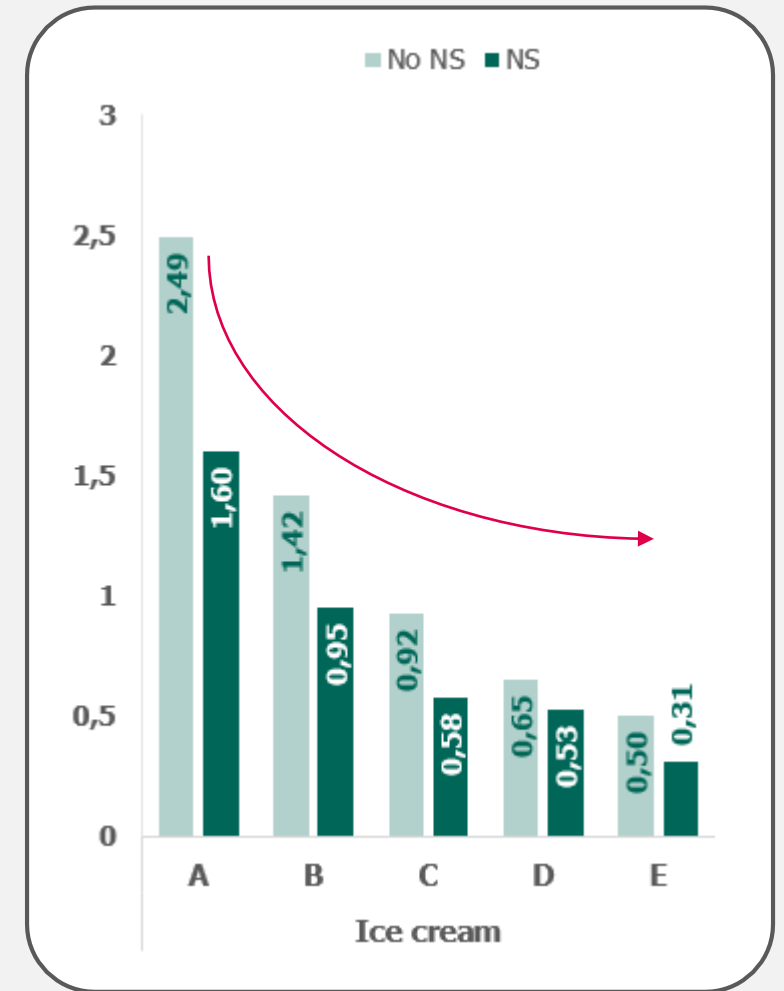
- Participants seem to make more mistakes when estimating how healthy the NS grade B product (cola 0%) is compared to the other products
- The effect of NS on participants' performance is positive, except for the NS grade A product (water), where adding the NS does not make a difference.
- Looking at NS grade C, D, E products, we notice a **steeper incline in mistakes made among participants not exposed to NS** than among participants exposed to NS (the **arrows** indicate this)





Zoom-in on trends in the category 'Ice cream'

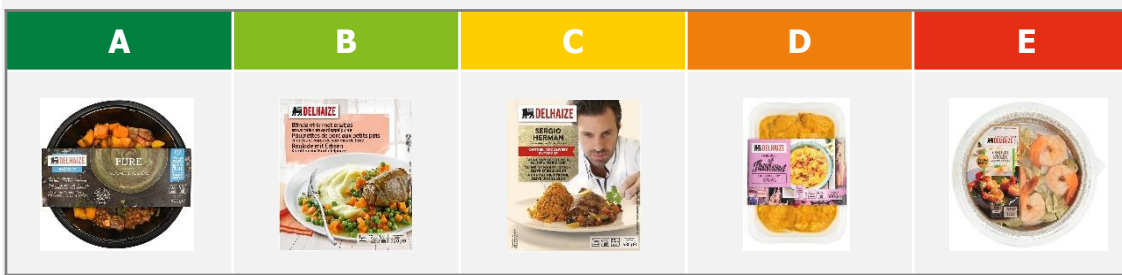
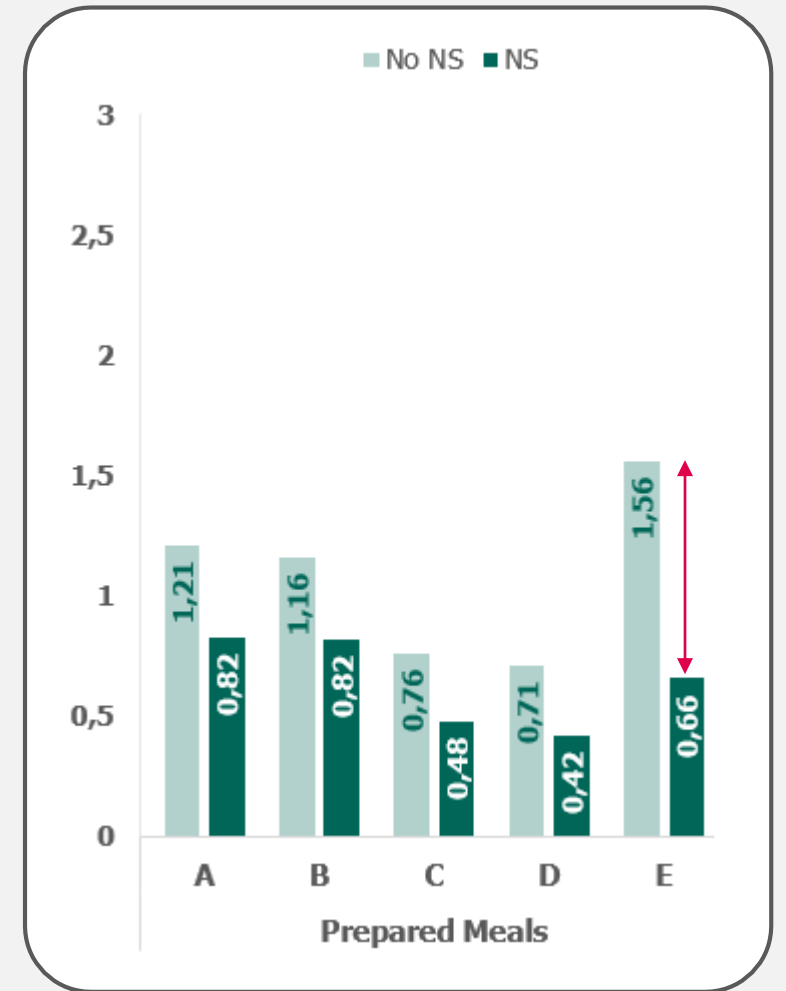
- Participants seem to make **more mistakes** when estimating how healthy the **NS grade A** (low sugar mocha ice cream) and **B** (raspberry sorbet) products are compared to the more unhealthy (NS grade C, D, E) products
- In addition, the **effect of NS** is **more outspoken** for **NS grade A** and **B** products than for NS grade D and E products
- Consumers seem to be hesitant to assign the label 'healthy' to ice cream, even when NS grades are shown





Zoom-in on trends in the category 'Prepared meals'

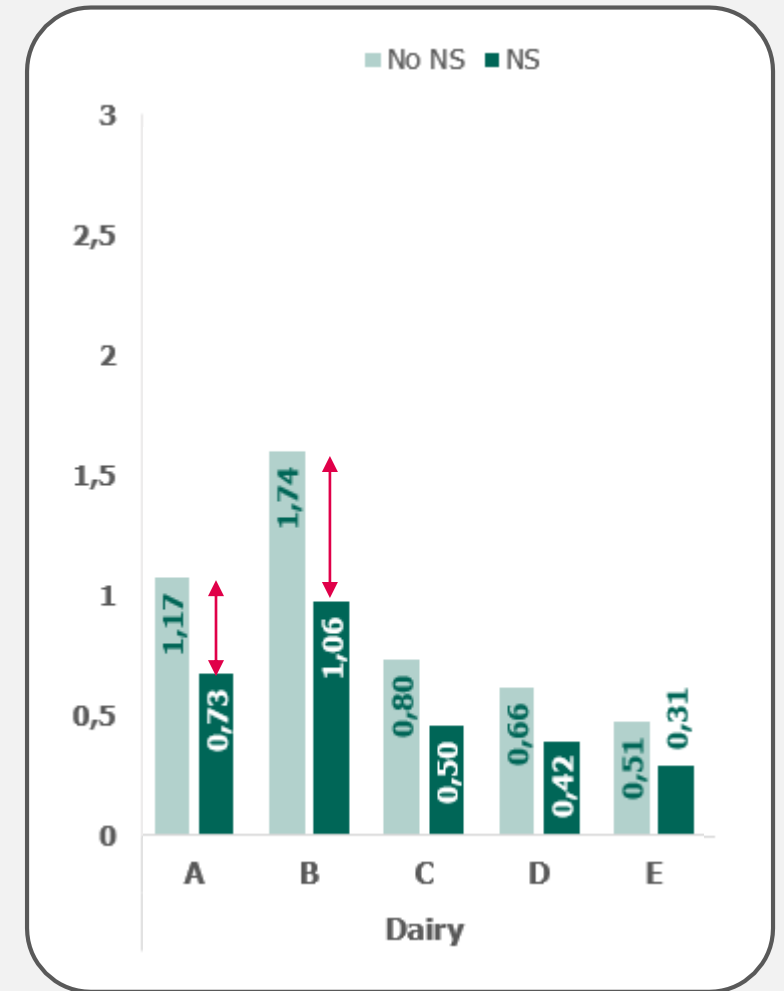
- The effect of NS is fairly similar across NS grades, except for the **NS grade E** product (Shrimps with garlic butter), where the **gap between No NS and NS** is the largest





Zoom-in on trends in the category 'Dairy'

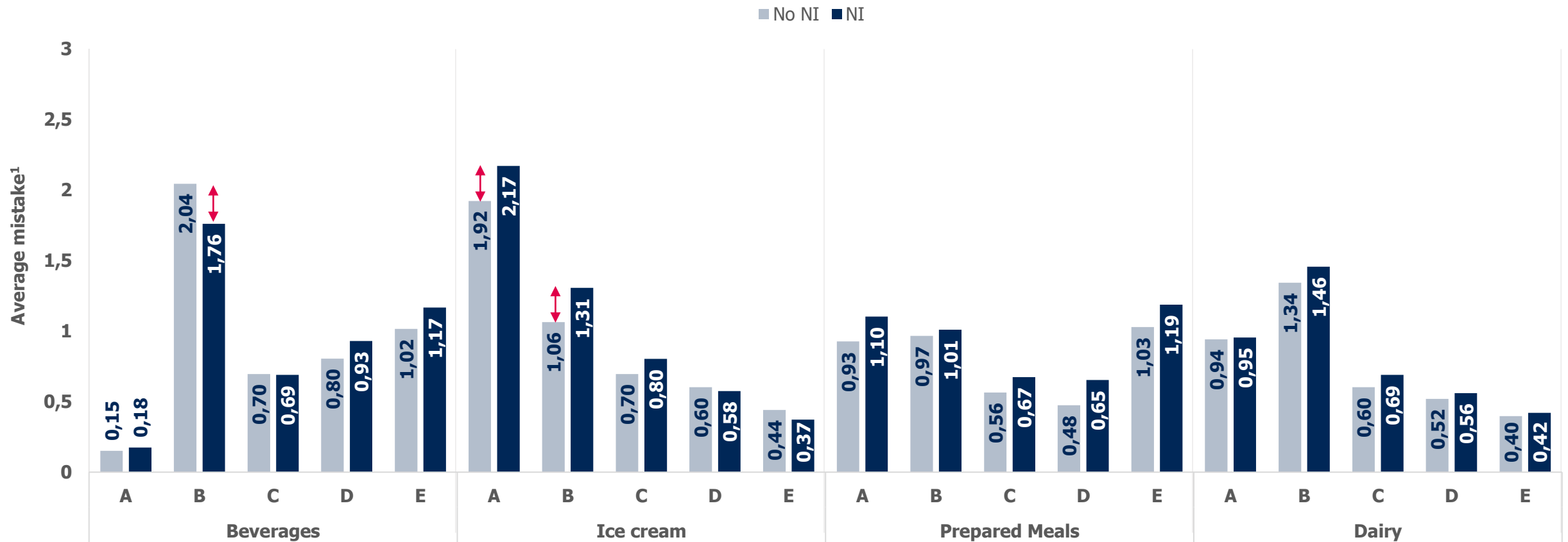
- Participants seem to make **more mistakes** when estimating how healthy the **NS grade A** (Greek yoghurt) and **B** (rice pudding) dairy products are compared to the more unhealthy (NS grade C, D, E) dairy products
- In addition, the **effect of NS** is **more outspoken** for **NS grade A** and **B** products than for NS grade C, D and E products
- In line with the results for ice cream, consumers seem to be hesitant to assign the label 'healthy' to rice pudding, even when the NS grade is shown





The impact of Nutritional Information on participants' capability to estimate how (un)healthy a product is depends on the NS grade of the product, as well as the product category.

3-way interaction: Category (Beverages, Ice cream, Prepared meals, Dairy) x NS grade (A, B, C, D, E) x NI (No NI, NI)

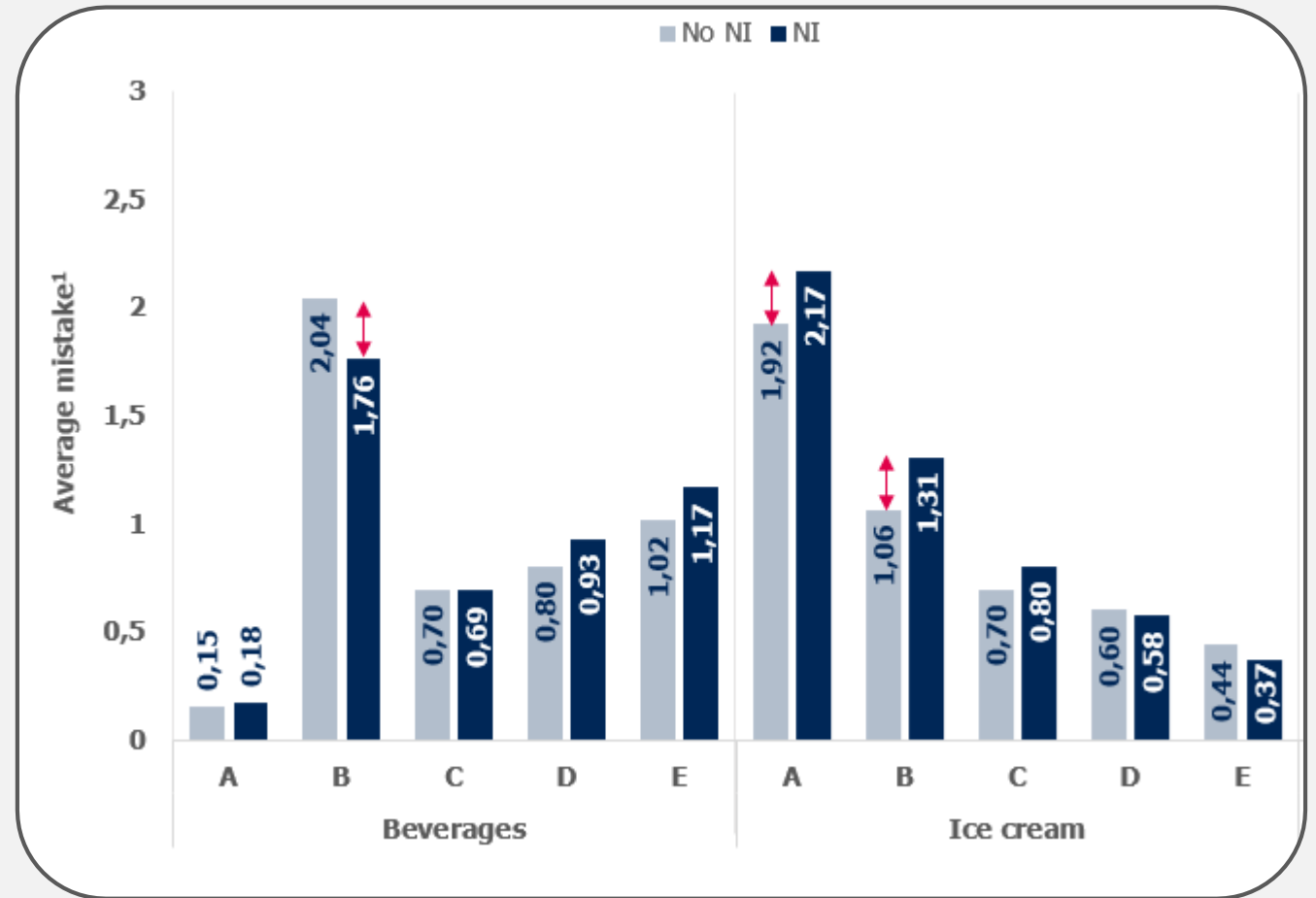


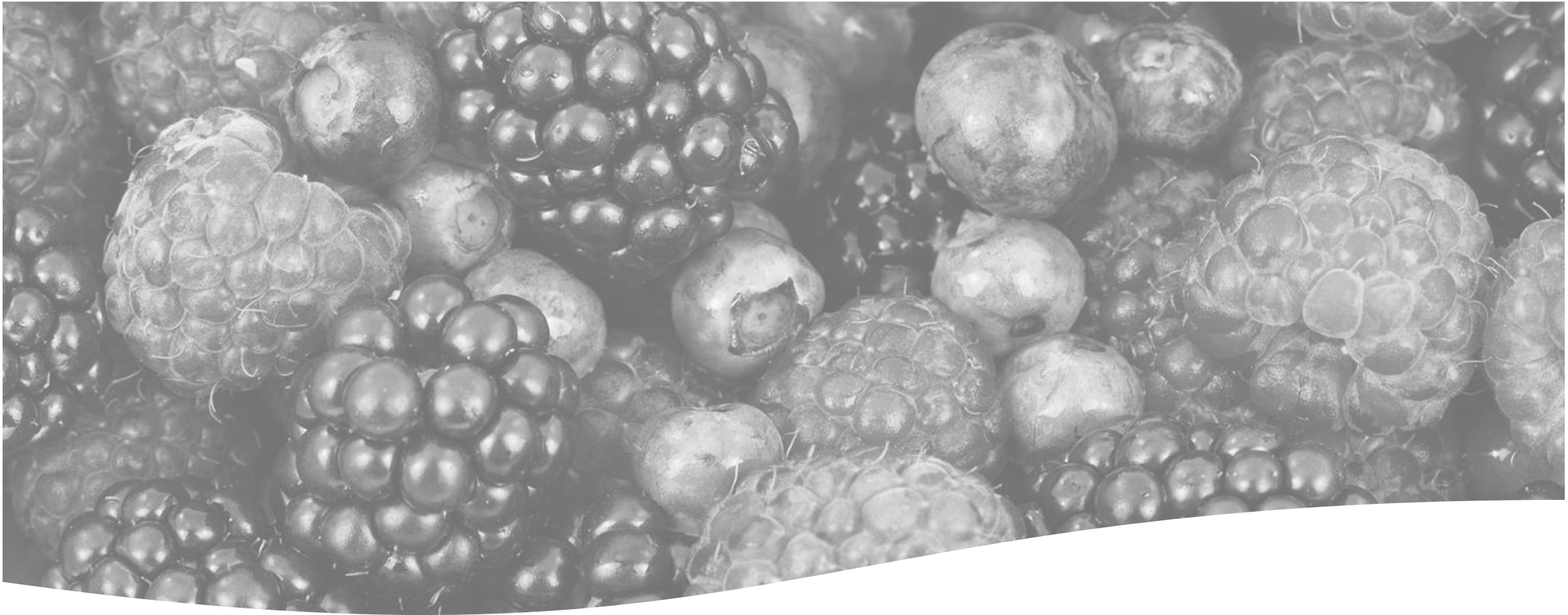
1: You want this score to be as low as possible



Zoom-in on trends in the categories 'Beverages' and 'Ice cream', where we observed opposite trends

- For the **NS grade B beverage** (Cola 0%), participants **exposed to NI** seem to make **less** mistakes compared to participants not exposed to NI
- For **NS grade A** (low sugar mocha ice cream) and **B** (raspberry sorbet) **ice creams**, participants exposed to NI seem to make **more** mistakes compared to participants not exposed to NI

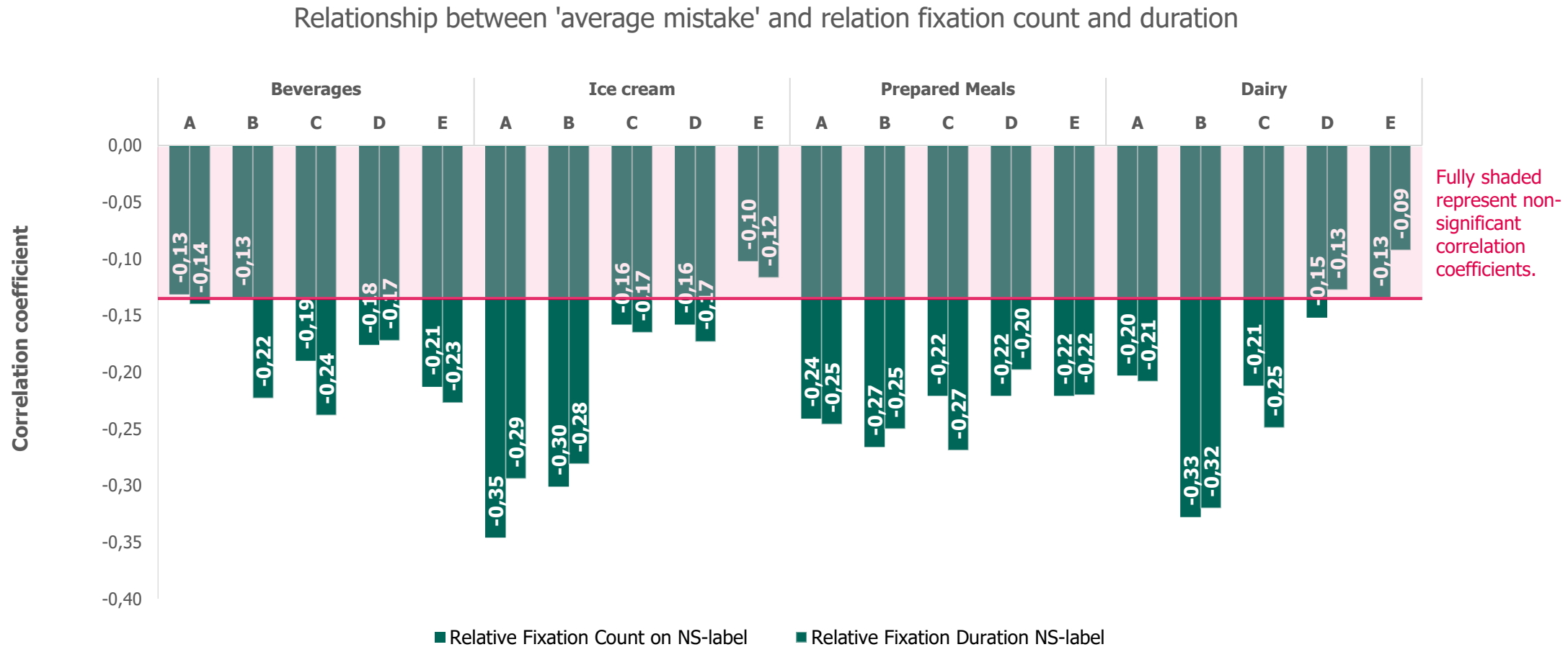




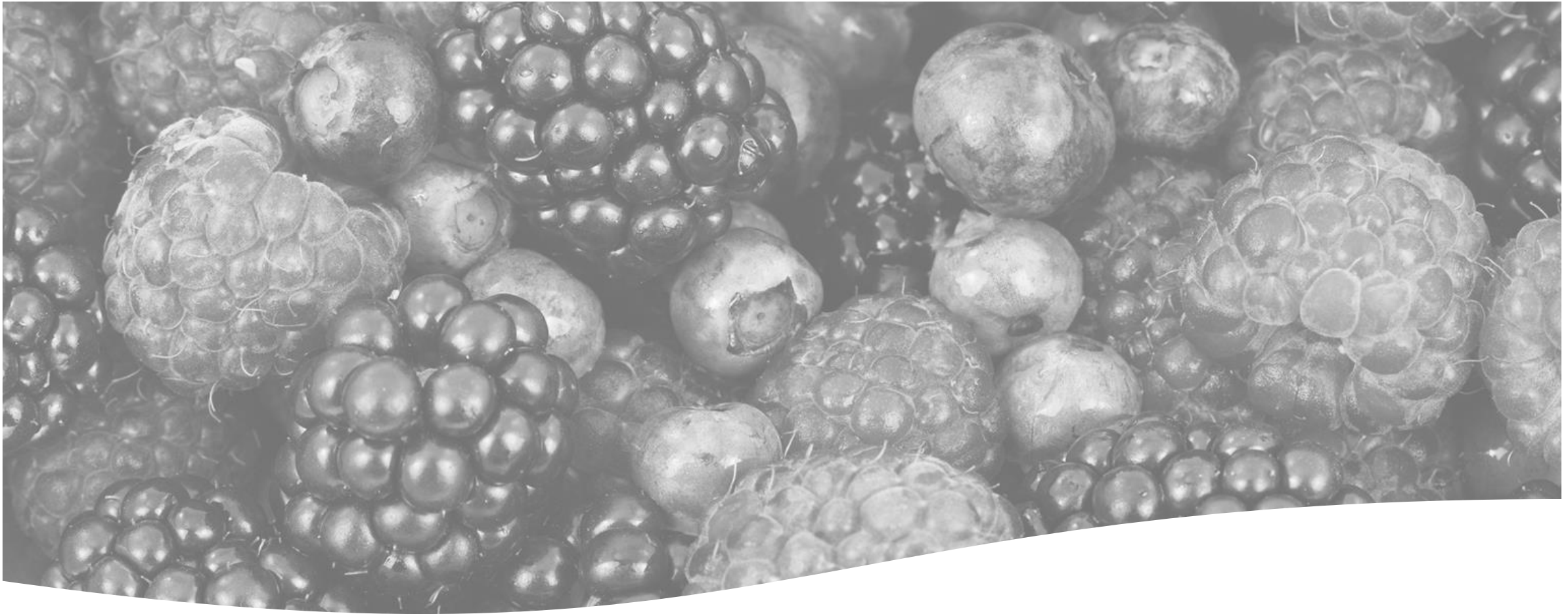
Is the gaze behavior the same for different product categories per Nutri-Score grade (A, B, C, D, E)? And is it in line with the previous results on average mistake?



Attention for the Nutri-Score label is negatively related to average mistake: participants who focus more often and longer on the Nutri-Score label make fewer mistakes. However, there is no significant relationship between attention for the Nutri-Score label and average mistake for products which are naturally perceived as healthy, such as 'water', and unhealthy, such as 'ice cream bars' and 'chocolate mousse'¹.



1: This is consistent with previous findings which showed that the impact of the Nutri-Score label on average mistakes for these products is non-existent.



Conclusions, recommendations & next steps



Main conclusions & recommendations

1. In general, consumers exposed to Nutri-Score (NS) make fewer mistakes in estimating how (un)healthy a product is
2. However, NS is less helpful for products naturally perceived as healthy or unhealthy: consumers do not need to look at NS to correctly estimate the healthfulness of these products
3. Nutritional Information (NI) does not help consumers, unless it is very simple (e.g. Coke zero -> NI = all zeroes)

Recommendations for policy makers:

- Make Nutri-Score mandatory, it has a clear impact on consumers' understanding
- Simplicity is key, too much information confuses consumers



Next steps

Current project:

- Does Nutri-Score help consumers to make healthier choices in other environments than supermarkets?
- Does Nutri-Score help consumers to make healthier choices in the long run?

Potential European project:

- Explore effects of Nutri-Score in the **long run in different environments** in different European countries: restaurants, supermarkets, schools, railway stations, airports...
- Do consumers **actually change their behavior** for the better? Or is the impact of Nutri-Score **short-lived**? And is the impact of Nutri-Score the same in different European countries?
- Does **visual attention** for the Nutri-Score label **change over time**? Do people get used to the label/are they more aware of the Nutri-Score grades of products and therefore pay less attention to it?

Questions?

Saar Bossuyt (saar.bossuyt@ucll.be)

Kathleen Custers (kathleen.custers@ucll.be)

