FOOD STANDARDS
Australia New Zealand
Te Mana Kounga Kai – Ahitereiria me Aotearoa

Health Star Rating – 2024 Monitoring

Consumer Research Report

April 2025

Executive summary

The interpretive, front-of-pack Health Star Rating (HSR) system was introduced in Australia and New Zealand in June 2014. It aims to provide convenient, easily understood nutrition information on food packaging to assist consumers in making informed, healthier food purchases. Food Standards Australia New Zealand (FSANZ) undertook a survey to monitor consumer awareness, use, understanding and trust of the HSR system in Australia and New Zealand, on behalf of the Australian Department of Health and Aged Care and the New Zealand Ministry for Primary Industries. A nationally representative sample of 2,250 household shoppers (1,554 Australians and 696 New Zealanders) completed the 38-question survey in January 2025. Key findings are outlined below. Any differences between groups noted below are statistically significant[1].

Awareness

The majority of participants (89.3%) were aware of the HSR when prompted.

- 36.4% of participants reported being aware of the HSR when asked to think of anything shown on food packages that could help them choose a healthier food.
- This rose to 89.3% when prompted with the HSR. This was lower than prompted awareness of the Nutrition Information Panel (94.8%) and the Ingredients List (93.6%).
- A greater proportion of Australians (90.6%) were aware of the HSR when prompted compared to New Zealanders (86.4%).

Understanding

The majority of participants (86.9%) indicated that they knew at least a little bit about the HSR system.

- More New Zealanders (5.9%) than Australians (2.9%) reported having never seen or heard of the HSR before, when asked how much they knew about it.

Most participants (77.6%) understand the HSR can be used to compare similar food products, but there remains significant confusion about using the HSR to compare different foods.

- Most participants (74%) did not understand that the HSR cannot be used to compare dissimilar food products.
- There was no difference between Australia and New Zealand in understanding that dissimilar food products should not be compared using the HSR.
- A greater proportion of Australians correctly understood that you can compare similar food products (79.7%) relative to New Zealanders (72.8%).

The majority of participants (54.1% to 90.3%, across the HSR label formats tested) understand that when comparing products, more stars indicate a healthier choice.

- However, as more information is added to the HSR format (e.g. the addition of energy information or energy and nutrient information), participants find it harder to identify

[1] Significant throughout this document refers to being statistically significant ($p < 0.05$) unless stated otherwise.

the healthier product, it takes them longer, and a greater proportion incorrectly select the label with the lower star rating as being healthier.
- Qualitative responses indicate that participants who selected a label with a lower star rating as being healthier use information about the amount of energy and/or nutrients to make their decision, instead of the star rating.

Trust

Over half of participants (56.4%) trust the HSR system, 19.0% were neutral and 24.5% distrust it.

- Australians had a higher mean level of trust in the HSR compared to New Zealanders (4.7 vs 4.5 on a 7-point scale).
- Over half of participants agreed that the HSR is accurate and honest (52.3%) and having a HSR on a product's label increased their trust in the food product/company (59.6%).
- Less than half (41.3%) thought the HSR had a good reputation.
- Key reasons participants trusted the HSR included 'It's helpful', 'It's a regulated system' and 'It's accurate and credible'.
- Key reasons participants distrusted the HSR included 'It's not accurate', 'It's not comprehensive', 'It's not independent', and 'I don't know enough about it'.
- Participants trusted all HSR formats tested, and as the amount of information in the HSR format increased, the mean level of trust also increased.

Use

The majority of participants (69.2%) reported using the HSR at least some of the time, while 12.7% never use the HSR system.

- Of those that report using the HSR, there was a relatively even split of those reporting that they either frequently looked at the HSR (45.0%), or that they only looked for the HSR when buying a product for the first time (44.6%).
- Of participants that recall purchasing a product with the HSR on it in the last 3 months, the majority (63.9%) said that it influenced their choice.
- Over half of participants (58.1%) said they would be at least likely to use the HSR in the future while 18.1% said they would be unlikely to use the HSR.
- Of those who were unlikely to use the HSR in the future, the most commonly selected reasons were "Other nutrition information is more important than the Health Star Rating" (57.6%), "I don't think the Health Star Rating is accurate" (46.6%) and "I think the Health Star Rating is a marketing tool" (43.1%).

New Zealand Education Campaign

The majority (84.9%) of New Zealand participants had not seen a recent HSR education campaign.

- The New Zealand Government ran the first phase of a HSR education campaign from the 14th October to 14th November 2024.
- 8.2% (n = 49) of participants reported that they had seen the campaign, 84.9% had not, and 7.0% were unsure.
- Of those who had seen it, the most frequent places to have seen the campaign were on signs in store (46.9%) or on digital display boards (42.9%).

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Introduction

The interpretive, front-of-pack Health Star Rating (HSR) system was introduced in Australia and New Zealand in June 2014. It aims to provide convenient, easily understood nutrition information on food packaging to assist consumers in making informed, healthier food purchases. Previously, the Department of Health and Aged Care (DoHAC) contracted the National Heart Foundation to monitor Australian consumers' understanding, awareness and trust in the HSR. This was done from 2015 to 2018 (i.e., years 2, 3 and 4 after the HSR was introduced) using the HSR Tracker. The Ministry for Primary Industries (MPI) in New Zealand contracted Colmar Brunton to collect similar data from New Zealanders in 2015, 2016 and 2018.

DoHAC and MPI requested Food Standards Australia New Zealand (FSANZ) undertake the 2024 HSR monitoring for Area of Enquiry 2: Consumer use and understanding, under the Post Five Year Review Monitoring Framework. FSANZ is an Independent Statutory Authority with expertise in undertaking research on consumer attitudes, perceptions, and behaviours regarding food.

Objectives of the Research

The primary purpose of this survey was to monitor Australian and New Zealand consumers' current awareness, use, trust and understanding of the HSR system. A secondary purpose was to inform potential future considerations around mandating the HSR, should this be decided by Food Ministers. In particular, the survey explored how current variants[2] of the HSR format may impact consumer understanding, use and trust.

The research aimed to answer the following questions:

- What proportion of consumers are aware of the HSR system?
- Do consumers understand how to use and interpret the HSR system?
- How do different HSR formats with increasing levels of information impact consumer understanding and trust?
- What proportion of consumers trust the HSR system?
    - Why and why not?
- What proportion of consumers use the HSR system?
    - Why and why not?

And for the New Zealand sample:

- What proportion of consumers remember seeing a 2024 New Zealand HSR education campaign and where did they see it?

[2] The formats included the HSR only, HSR with energy declaration, and HSR with energy and prescribed nutrient declarations. The survey did not explore the addition of other possible components such as % Daily Intake or HIGH/LOW text, nor did it explore potential improvements to the current HSR format(s).

Methods

Development of survey

The survey instrument was designed by FSANZ social scientists, in consultation with DoHAC, MPI, the HSR Advisory Committee, and the jurisdictions. The majority of survey questions were adapted from existing Australian or New Zealand consumer surveys about the HSR system.

The survey was piloted with a sample of 224 participants from 17-18 Dec 2024. Participants were drawn from PureProfile's Australian and New Zealand market research consumer panels before being fully implemented. Changes following piloting involved slight amendments to the wording of two qualitative questions (question 19 and 30), so pilot participants were excluded from the final sample. The amended survey was further piloted with 156 participants between 14-15 Jan 2025. No further changes to the survey were made, and these participants were included in the final sample.

The final survey instrument consisted of 38 questions (34 quantitative, 4 qualitative), split across 6 sections:

- Demographics
- Awareness of the HSR
- Understanding of the HSR
- Trust in the HSR
- Use of the HSR
- New Zealand education campaign (New Zealand sample only)

Key elements of each section are described below. The full survey instrument is provided in Appendix A.

Demographics

Key demographics were gathered including age (years), gender, location, cultural background, household composition, education, language, and household income (questions 1-9). Participants self-rated their nutrition knowledge (question 10) and health consciousness (question 11) and identified any dietary factors that influence their food choices (question 12).

Awareness of the HSR

To assess unprompted awareness of the HSR, participants were asked an open-ended question to identify anything shown on food packaging that can help them choose a healthier food (question 13). To assess prompted awareness, participants were then shown the HSR and asked if they were aware of it (question 14).

Understanding of the HSR

Subjective understanding was measured by asking participants to rate how much they know about the HSR (question 15).

Objective understanding was tested in two key ways: 1) if participants understand what types of products can be compared using the HSR system; and 2) if participants can make an overall healthier choice when presented with two HSR labels that vary on the number of stars presented. Further details on each of these areas are provided below.

1) Comparison between types of products (question 16)

To investigate if consumers understand what types of products can be compared using the HSR, participants were shown two pairs of food products, one after the other. For each pair they were asked to identify if the HSR can be used to decide which is the healthier product. To increase the generalisability of the results to multiple product types, participants were randomised to view one of two choice sets, which contained dissimilar food products (breakfast cereal, baked beans, yoghurt, fruit juice and bread) (Figure 1). Each choice set had two pairs of food products, including one pair where the HSR can be used to compare (i.e. foods that are similar such as breakfast cereals), and one pair where the HSR cannot be used to compare (i.e. dissimilar food products, such as yoghurt and juice). Each product displayed a HSR, with one product in each pair displaying 3.5 stars while the other displayed 4.5 stars. The order in which the pair of food products was shown was randomised.

Figure 1 - Image sets to test understanding of what products can be compared using the HSR

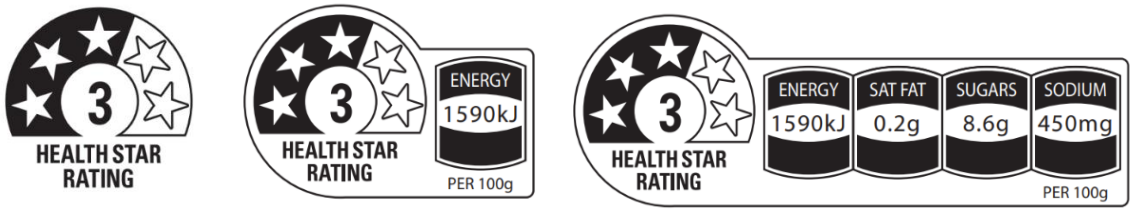
	*Set 1* *Pair A: breakfast cereal and breakfast cereal (similar foods that can be compared)* *Pair B: canned baked beans and breakfast cereal (different foods that cannot be compared)*
	*Set 2* *Pair A: orange juice and yoghurt (different foods that cannot be compared)* *Pair B: loaf of bread and loaf of bread (similar foods that can be compared)*

2) Selecting the overall healthier label (question 17)

The survey also assessed whether consumers understand that more stars indicate an overall healthier product, including investigating if this understanding is affected by the HSR format presented. Three different HSR formats were assessed (Figure 2), which increased in the amount of information provided. They included: the HSR only (HSR only), HSR + energy declaration (HSR + energy), and HSR + energy and prescribed nutrient declarations (HSR + tail). These three formats were the most frequently

displayed formats of the HSR found on products found in an implementation monitoring survey conducted in New Zealand in 2018[3].

Figure 2 - HSR formats investigated



HSR only HSR + energy HSR + tail

Participants were presented with a pair of HSR labels that were of the same format and were asked to select which label would indicate an overall healthier product. The labels were shown on their own, not applied to a product. Participants were presented with three pairs in total, one pair for each of the three formats. Each label in the pair differed by the number of HSR stars. For the HSR + energy format, the labels presented in the pair differed by the number of HSR stars as well as the energy amount. For the HSR + tail format, the labels presented in the pair differed by the number of HSR stars, as well as the energy amount; and the total saturated fat, sugars and sodium. Respondents were asked to select the overall healthier label for each of the three pairs shown (see example of a pair in Figure 3). The correct answer was defined as the label with the higher star rating. The order of different HSR formats and the left/right presentation of the labels (if the higher stars were on the left or right) of the screen was randomised. 50% of participants saw pairs of HSR that differed by 0.5 stars for all of the three formats (i.e., HSR values of 3.5 and 4.0), while the other 50% saw pairs that differed by 1 star for all three formats (i.e., HSR values of 3.0 and 4.0) (See Appendix B for all label images). The nutritional profiles underpinning the labels were based on real products in the market from the same food category.

Figure 3 - Example HSR label pair



For each pair of labels shown (3 in total) participants also rated how easy or hard it was to select the healthier label on a seven-point scale (1 - very hard, 7 - very easy) (question 18) and provided a text response to the open-ended question of ‘why did you select this the healthier label’ or if they selected unsure ‘why were you uncertain which label was healthier’ (question 19). Participant’s attitude to each of the three HSR formats was assessed with three measures relating to participant’s trust, and the suitability of the amount of information provided (question 20).

[3] Ministry for Primary Industries. (2018). Health Star Rating monitoring implementation for the five year review. Wellington: Ministry for Primary Industries.

Trust in the HSR

Trust in the HSR was assessed using agreement with four belief statements surrounding participants trust in the HSR, its reputation, its accuracy, and how it impacts trust in the food product/company (question 29). Qualitative responses were then gathered on reasons why participants trusted, felt neutral towards, or distrusted the HSR (question 30).

Use of the HSR

Participants were asked to self-report how often they use the HSR (question 31) and how they use it (question 32). Participants were asked if they had purchased a product with the HSR in the last three months (question 33), if it influenced their choice (question 34), and how it influenced their choice if it did (question 35). All participants were asked if they would use the HSR in the future (question 36) and if not, reasons for this (question 37).

New Zealand Education Campaign

New Zealand participants were asked if they had seen or heard any messages about the HSR recently and, if so, where (question 38a and b).

Sampling

2,250 participants (1,554 Australians and 696 New Zealanders) completed the survey via PureProfile's online market research panel from 14 - 28 Jan 2025. PureProfile is an Australian company with a panel of 450,000 members in Australia and 180,000 members in New Zealand. Participants had to be aged 18 years or older and a household shopper (defined as someone who does all of the shopping for their household or shares the shopping with others). The sample was nationally representative by the interlocked quotas of age, gender and location in each country. Separate quotas were also used to ensure representative proportions of Aboriginal and Torres Strait Islander peoples in Australia, and Māori and Pasifika in New Zealand. Details of the sample achieved are outlined in Tables 1 - 3.

Analysis

Analysis was carried out by FSANZ using IBM SPSS Statistics software, Version 28 and Rstudio v4.4.0. Significance was set at the .05 level. The analysis plan was peer reviewed by a member of FSANZ's Social Science and Economics Advisory Group with specialist skills in statistical analysis.

Data cleaning and manipulation

For regression analysis (details below), education was recategorised into those who had completed tertiary education (defined as those who selected 'Undergraduate degree' or 'Postgraduate degree' to question 7) and those who had no tertiary education (defined as those who selected 'high school or below' or 'vocational/trade qualification'). Household income (question 6 and 9) was recategorised into Equivalised Annual Household Income (EHHI)[4] (low income (≤ $41,599); middle income ($41,600–$77,999); high income (≥

[4] Equivalised annual household income is an adjusted measure that takes into account the size of the household and the age of its members. This variable reflects that a larger household would normally need more income than a smaller household to achieve the same standard of living. Equivalised annual household income was calculated according to the OECD-modified equivalence scale using the average income for each income bracket response.

$78,000)) that takes into account differences in household composition and size. Cultural background (question 4) was recategorised into 'European background' (those who selected at least one type of European cultural background, including Australian/New Zealand background), 'no European background' (those who did not select at least one type of European cultural background) and 'prefer not to say'. It is recognised that this approach may overstate the number of people identifying as European. Dietary factors (question 12) were split into whether a respondent selected a medical-related dietary factor (food allergy, digestive concerns, diet-related health concerns, pregnancy or breast-feeding, coeliac disease) and lifestyle-related dietary factors (watching weight, vegetarian or vegan, religious/ethical beliefs, training for sports).

For the length of time taken to identify the healthier HSR label, outliers were removed (HSR only n = 148; HSR + energy n = 155; HSR + tail n = 124). Outliers were defined as either 1.5 x the Interquartile Range of the sample (IQR) below the 25th quartile or 1.5 x the IQR above the 75th quartile (Dash 2023).

Descriptive statistics

Descriptive statistics (percentages, means, standard deviations) are reported where appropriate.

Differences in means

Differences in means between countries for trust factors, health consciousness and nutrition knowledge were tested using ANOVAs/t-tests with Bonferroni-corrected p values/alphas. Chi-square test of homogeneity was used to test whether there were any statistically significant difference in the proportions for prompted awareness, understanding and perceived knowledge. If there was a statistically significant difference in the proportions, a post hoc test using a z-test of two proportions (with Bonferroni correction) was used to determine where the differences were.

Differences in means between HSR formats for ease of use, trust and adequacy of information were tested using ANOVAs with Bonferroni-corrected p values.

Exploratory factor analysis

Exploratory factor analysis was undertaken to confirm that all four questions in 29 that assessed participants trust in the HSR measured the same underlying construct (see Appendix C for full details of the factor analysis). Once this was confirmed, an implied index was created with participants overall trust for the HSR and this was used as a predictor variable for participants trust in the HSR in regression analysis (details below).

Regression analysis

For predictor variables where the number of participants was less than 30, these participants were excluded from regression analyses. This included prefer not to say and non-binary for gender, and prefer not to say for cultural background.

Multinomial regression was used to determine whether independent variables predict 1) self-rated HSR knowledge and 2) frequency of use of the HSR. Multinomial logistic regression was used for these two variables rather than ordinal logistic regression, as the data violated

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option. EHHI tiers were determined to allow comparison between groups. Tiers were based on the approximate distribution of EHHI's.

the proportional odds assumption of ordinal regression analysis. Relevant statistical assumptions were tested and met (e.g., no multicollinearity, proportional odds assumption, etc.) (Field 2018).

A multilevel logistic regression was used to identify factors that were associated with selecting the correct HSR label whilst accounting for the fact that participants answered the same set of questions for each HSR format. A multi-level model can account for the fact that repeating a similar question may influence the way participants answer it the next time. For example, because a participant saw the HSR + tail format first, this may impact the way they answered the same questions for other HSR formats.

Cochrane's Q-test

Cochrane's Q-test was used to check the difference in the proportion of participants who objectively understood the different HSR formats. Unsure was coded as no for this analysis. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons to assess what differences there were. Adjusted p values are presented.

Qualitative analysis

Open text responses were coded into overall themes using Excel by one researcher. For the question relating to trust of the HSR a subset of the sample was independently coded by a second researcher and discrepancies in themes discussed. The themes arising from the remaining questions were checked for face validity by a second researcher. For all questions, an inductive reflexive thematic approach was used, where themes emerged from the data as opposed to interpreting themes under a pre-existing framework. Where appropriate, frequency of responses by theme has been provided, along with illustrative quotes for key themes.

Comparison to past monitoring

Findings from this survey have been narratively compared to previous HSR Monitoring results, where appropriate. Between survey statistical analysis was not undertaken due to the unavailability of data from previous surveys and differences in question wording between surveys. As such, comparisons should be interpreted with caution.

Results

Demographics

The sample was nationally representative of each country by the interlocked quotas of age, gender and location. The survey slightly oversampled Aboriginal and Torres Strait Islanders in Australia (4.8% vs 3.2%) and Māori in New Zealand (23.9% vs 17.8%), while the sample of Pasifika in New Zealand was slightly lower than the desired quota (8.0% vs 9.8%). The final sample was somewhat skewed to those with a higher education, relative to the most recent census figures in each country. A detailed overview of the key demographics of the respondents are provided in Table 1-3 below.

Table 1: Age, gender, level of education, cultural background, household composition, equivalised annual household income, shopper status and languages spoken at home.

	Australia *n* = 1,554 *n* (%)	**New Zealand *n* = 696 *n* (%)**	**Total *n* = 2,250 *n* (%)**
Age group			
Mean age (*SD*)	48.34 (17.51)	48.36 (17.10)	48.35 (17.38)
18–24 years	97 (6.2)	53 (7.6)	150 (6.7)
25–34 years	329 (21.2)	133 (19.1)	462 (20.5)
35–44 years	300 (19.3)	128 (18.4)	428 (19.0)
45–54 years	239 (15.4)	110 (15.8)	349 (15.5)
55–64 years	236 (15.2)	124 (17.8)	360 (16.0)
65+ years	353 (22.7)	148 (21.3)	501 (22.3)
Gender			
Male	753 (48.5)	328 (47.1)	1081 (48.0)
Female	797 (51.3)	367 (52.7)	1164 (51.7)
Nonbinary and Other	3 (0.2)	1 (0.1)	4 (0.2)
Prefer not to say	1 (0.1)	0 (0.0)	1 (0.0)
Education			
High school or below	408 (26.3)	188 (27.0)	596 (26.5)
Vocational/trade qualification	406 (26.1)	217 (31.2)	623 (27.7)

	Australia *n* = 1,554 *n* (%)	New Zealand *n* = 696 *n* (%)	Total *n* = 2,250 *n* (%)
Undergraduate degree	494 (31.8)	198 (28.4)	692 (28.4)
Postgraduate degree	246 (15.8)	93 (13.4)	339 (15.1)
Cultural Background*			
Australian	832 (53.5)	4 (0.6)	836 (37.2)
New Zealand European	8 (0.5)	490 (70.4)	498 (22.1)
Aboriginal and/or Torres Strait Islander	75 (4.8)	0 (0.0)	75 (3.3)
Māori	2 (0.1)	166 (23.9)	168 (7.5)
Pacific Islander	4 (0.3)	56 (8.0)	60 (2.7)
European	709 (45.6)	24 (3.4)	836 (37.2)
Asian	179 (11.5)	91 (13.1)	270 (12.0)
African and Middle Eastern	14 (0.9)	7 (1.0)	21 (0.9)
People of the Americas	10 (0.6)	3 (0.4)	13 (0.6)
Prefer not to say	10 (0.6)	5 (0.7)	15 (0.7)
European/Non-European Background			
AU/NZ and/or European background	1326 (85.3)	514 (73.9)	1840 (81.8)
No AU/NZ or European background	218 (14.0)	177 (25.4)	395 (17.6)
Prefer not to say	10 (0.6)	5 (0.7)	15 (0.7)
Household Composition			
Children < 15 years in household	428 (27.5)	233 (33.5)	661 (29.4)
No children < 15 years in household	1126 (72.5)	463 (66.5)	1589 (70.6)
Equivalised Annual Household Income Tiers#			
Low income (≤ $41,599)	497 (32.0)	255 (36.6)	752 (33.4)
Middle income ($41,600–$77,999)	495 (31.9)	213 (30.6)	708 (31.5)

	Australia ***n* = 1,554** ***n*** **(%)**	**New Zealand** ***n* = 696** ***n*** **(%)**	**Total** ***n* = 2,250** ***n*** **(%)**
High income (≥ $78,000)	474 (30.5)	159 (22.8)	633 (28.1)
Prefer not to say	88 (5.7)	69 (9.9)	157 (7.0)
Shopper Status			
Does the majority of food shopping	1172 (75.4)	454 (65.2)	1626 (72.3)
Shares the food shopping	382 (24.6)	242 (34.8)	624 (27.7)
Language spoken at home			
English only	1362 (87.6)	538 (77.3)	1900 (84.4)
Another language	192 (12.4)	158 (22.7)	350 (15.6)

** As respondents were able to select multiple responses, percentages may not add up to 100.*
 # Equivalised annual household income was calculated according to the OECD-modified equivalence scale using the average income for each income bracket response option.

Table 2: Location of Australian respondents.

	***n* (%)**
Australian State of Territory	
New South Wales	481 (31.0)
Victoria	412 (26.5)
Queensland	326 (14.5)
South Australia	116 (7.5)
Western Australia	156 (10.0)
Tasmania	21 (1.4)
Northern Territory	11 (0.7)
Australian Capital Territory	31 (2.0)
Total	1554 (100.0)
Metro or Regional Location	
Metro Australia	1133 (72.9)
Regional Australia	421 (27.1)

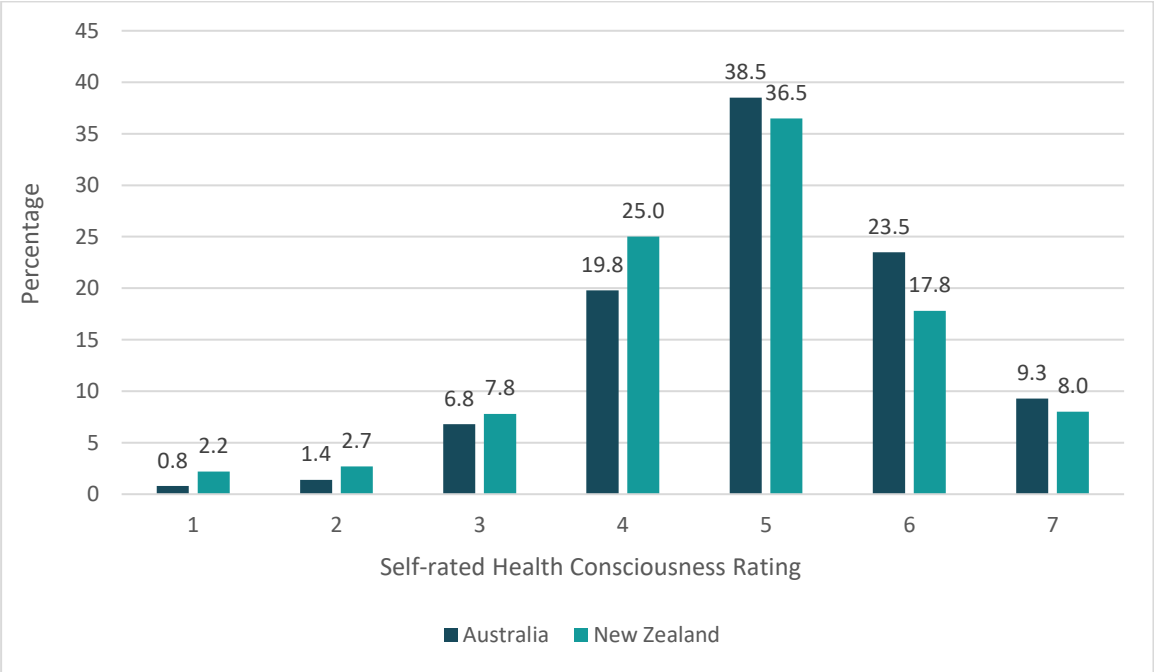
Table 3: Location of New Zealand respondents.

	***n* (%)**
New Zealand Regions	
Northland Region	23 (3.3)
Auckland Region	236 (33.9)
Bay of Plenty Region	41 (5.9)
Waikato	74 (10.6)
Gisborne District	4 (0.6)
Hawke's Bay Region	23 (3.3)
Taranaki	17 (2.4)
Manawatu-Wanganui	42 (6.0)
Wellington Region	91 (13.1)
Tasman District	2 (0.3)
Nelson	8 (1.1)
Marlborough Region	5 (0.7)
Canterbury	88 (12.6)
West Coast	3 (0.4)
Otago	29 (4.2)
Southland	10 (1.4)
Total	696 (100.0)

Health Consciousness and Nutrition Knowledge

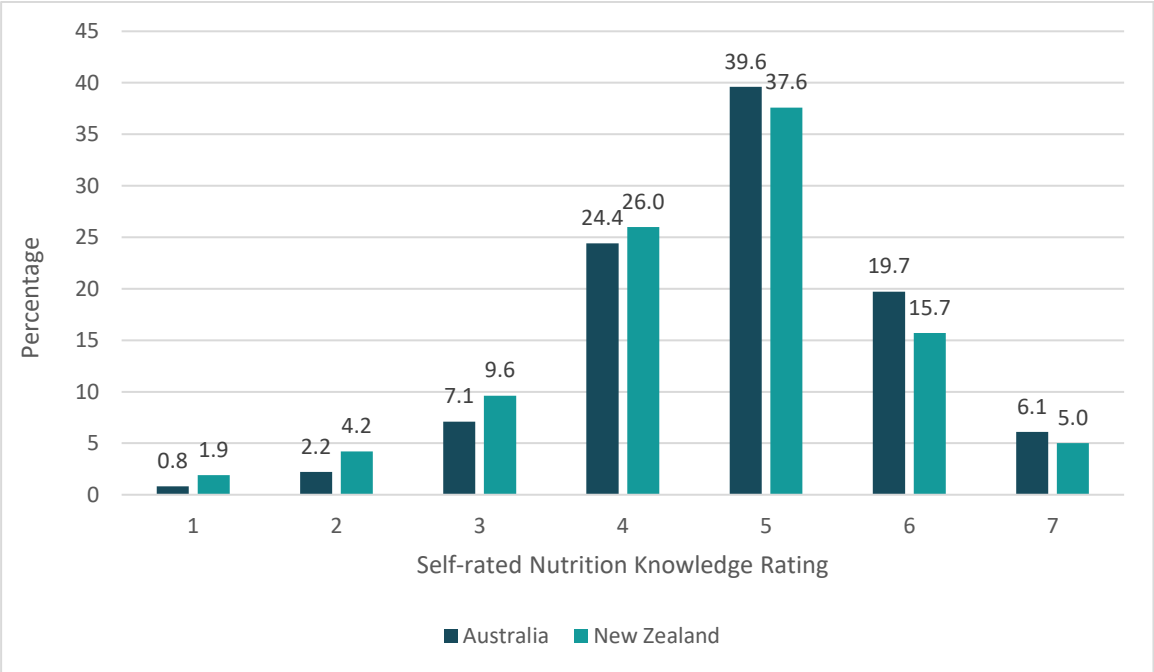
Participants were asked to rate how much effort they put into maintaining a healthy diet as a proxy for health consciousness (Figure 4) and asked to self-rate how much they know about nutrition as a proxy for level of nutrition knowledge (Figure 5). These measures were used as predictor variables in further regression analysis investigating respondents use and understanding of the HSR. The mean level of health consciousness was 4.94 (± standard deviation (SD) of 1.19) on a 7-point scale with 7 being "A lot of effort" (Table 4). The mean level of nutrition knowledge was 4.76 (SD ± 1.17) on a 7-point scale with 7 being "I know a lot about nutrition" (Table 4).

Figure 4. Participants self-rated health consciousness.



Q: How much effort do you generally put into maintaining a healthy diet for you and/or your household? Scale: 1 = "No effort", 7 = "A lot of effort".

Figure 5: Participants self-rated nutrition knowledge.



Q: How much do you know about nutrition? Scale: 1 = "I know very little about nutrition", 7 = "I know a lot about nutrition".

Table 4. Participant self-rated level of health consciousness and nutrition knowledge.

	Self-rated health consciousness			Self-rated nutrition knowledge		
	Australia	New Zealand	Total	Australia	New Zealand	Total
Mean Rating (±SD)	5.01 (1.15)	4.77 (1.26)	4.94 (1.19)	4.83 (1.13)	4.60 (1.23)	4.76 (1.17)

Q1: How much effort do you generally put into maintaining a healthy diet for you and/or your household? Scale: 1 = "No effort", 7 = "A lot of effort".
Q2: How much do you know about nutrition? Scale: 1 = "I know very little about nutrition", 7 = "I know a lot about nutrition".

Independent t-tests were run to identify if there were any differences between the means for Australia and New Zealand on these measures. Australians mean self-rated nutrition knowledge (4.83 vs 4.60, p <.001) and health consciousness (5.01 vs 4.77, p <.001) were significantly higher than New Zealanders.

Dietary Influences

Participants were asked to select what dietary influences affect their food choices. Cost of living pressures was the most frequently selected influence (55.1%), followed by watching my weight/maintaining a healthy weight (43.1%) (Table 5). Digestive concerns (17.4%) and diet-related health concerns (15.3%) were the next most commonly selected factors. 19.8% of participants did not select any factor as influencing their dietary choices.

*Table 5: Proportion of respondents who selected each factor as influencing their food choices, by country.**

	Australia ***n*** **(%)**	**New Zealand** ***n*** **(%)**	**Total** ***n*** **(%)**
Cost of living pressures	842 (54.2)	398 (57.2)	1240 (55.1)
Watching my weight/maintain a healthy weight	678 (43.6)	292 (42.0)	970 (43.1)
Digestive concerns such as irritable bowel syndrome etc.	277 (17.8)	114 (16.4)	391 (17.4)
Diet-related health concerns, such as diabetes, heart disease, high blood pressure	225 (14.5)	119 (17.1)	344 (15.3)
Food allergy	143 (9.2)	77 (11.1)	220 (9.8)
Vegetarian or vegan	116 (7.5)	61 (8.8)	177 (7.9)
Training for sports that affects food choices	115 (7.4)	43 (6.2)	158 (7.0)
Pregnancy or breast-feeding	46 (3.0)	25 (3.6)	71 (3.2)
Coeliac disease	43	21	64

	Australia *n* (%)	New Zealand *n* (%)	Total *n* (%)
	(2.8)	(3.0)	(2.8)
Religious/ethical beliefs that affect food choices	41 (2.6)	23 (3.3)	64 (2.8)
None of the above	321 (20.7)	124 (17.8)	445 (19.8)

Q: Do any of the following currently affect the food choices you make for you or your household? Please select all that apply.
** As respondents were able to select multiple responses, percentages may not add up to 100.*

Awareness of the HSR

Unprompted Awareness

Approximately one third (36.4%) of participants mentioned the HSR as something that can help them to make healthier food choices, when asked an open-ended question "Other than brand names, can you think of anything shown on food packages that can help you choose a healthier food?" (Table 6). It is possible participants were aware of the HSR but did not think it could personally help them choose a healthier food.

Table 6. Percentage of respondents who were aware of the HSR without prompting.

	Australia *n* (%)	*New Zealand* *n* (%)	*Total* *n* (%)
Aware*	614 (39.5)	205 (29.5)	819 (36.4)
Unaware	940 (60.5)	491 (70.5)	1431 (63.6)

Q: Other than brand names, can you think of anything shown on food packages that can help you choose a healthier food?
**Any responses with "star" coded as aware.*

Prompted Awareness

When prompted, 89.3% of respondents were aware of the HSR. This compared to 94.6% and 93.6% of consumers who were aware of the NIP and Ingredients List, respectively (Table 7). A chi-square test of association was used to determine if there was an association between prompted awareness of each of labelling element (the HSR, the NIP and Ingredients List) and the country in which participants lived. A significant association was found between country and awareness of the HSR (p = .010). A greater proportion of Australians (90.6%) were aware of the HSR when prompted, compared to New Zealanders[5] (86.4%). In contrast, participant awareness of the NIP[6] and Ingredients list[7] was not statistically significantly different between Australia and New Zealand.

[5] $X^2(2, N = 2250) = 9.13, p = .010$, Cramer's $V = 0.064$

[6] $X^2(2, N = 2250) = 2.83, p = .243$

[7] $X^2(2, N = 2250) = 1.40, p = .497$

Table 7: Prompted awareness of the Health Star Rating (HSR), Nutrition Information Panel (NIP) and Ingredients List on food packaging.

	Australia			New Zealand			Total		
	Yes *n* (%)	**No** *n* (%)	**Unsure** *n* (%)	**Yes** *n* (%)	**No** *n* (%)	**Unsure** *n* (%)	**Yes** *n* (%)	**No** *n* (%)	**Unsure** *n* (%)
HSR	1408 (90.6)	83 (5.3)	63 (4.1)	601 (86.4)	55 (7.9)	40 (5.7)	2009 (89.3)	138 (6.1)	103 (4.6)
NIP	1465 (94.3)	51 (3.3)	38 (2.4)	668 (96.0)	16 (2.3)	12 (1.7)	2133 (94.8)	67 (3.0)	50 (2.2)
Ingredients List	1449 (93.2)	65 (4.2)	40 (2.6)	657 (94.4)	22 (3.2)	17 (2.4)	2106 (93.6)	87 (3.9)	57 (2.5)

Q: Are you aware of any of the following labels on food packages?

Comparison to past monitoring

Similar questions measuring unprompted and prompted awareness were asked in previous HSR Monitoring Surveys, with slight wording differences. Such differences in question framing and the unavailability of raw data from previous surveys meant that change over time could not be tested statistically to determine if any differences are likely due to chance. Therefore, comparisons to previous monitoring work should be interpreted with caution.

Noting these limitations, it appears that unprompted awareness of the HSR is increasing. For example, in the Year 4 HSR Tracker (2017-2018), 20.2% of the Australian sample independently raised the HSR when asked to identify any logos that can help customers to choose foods when at the supermarket[8] (Heart Foundation of Australia 2019). In the 2018 New Zealand HSR monitoring survey, 16% of the general population independently raised the HSR when asked to specify anything shown on food packages that can help them decide how healthy a product is[9] (Colmar Brunton 2018).

In Year 4 of the HSR Tracker (2017-2018)[10], 83.3% of the Australian sample were aware of the HSR when prompted (Heart Foundation of Australia 2019). In 2018[11], 76% of the New Zealand general population were aware of the HSR when prompted (Colmar Brunton 2018). These results are consistent with the unprompted results in suggesting awareness of the HSR is increasing in both countries.

[8] AU HSR Tracker: Apart from brand names, thinking about different logos that help customers choose the food they buy in the supermarket, which ones are you aware of?

[9] NZ HSR Monitoring: Other than brand names, can you think of anything shown on food packages that can help you decide how healthy something is?

[10] AU HSR Tracker: Are you aware of the Health Star Rating system? Yes/No/Unsure.

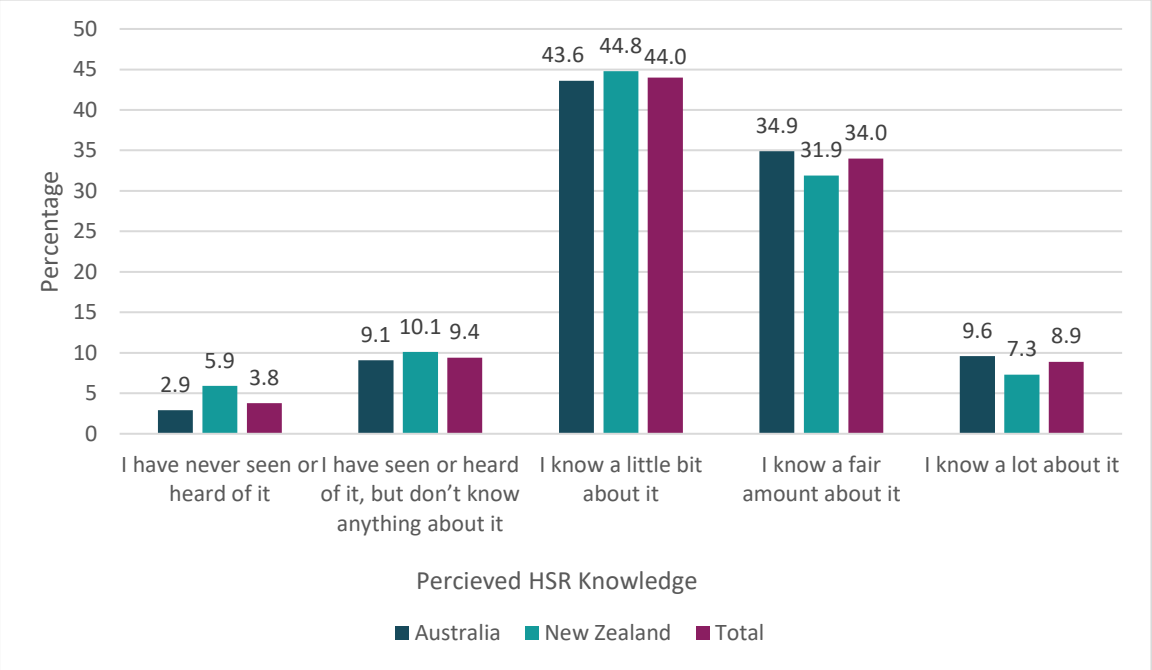
[11] 2018 NZ HSR Monitoring: Have you seen or heard about the following food package labels? Yes/No.

Understanding of the HSR

Perceived Knowledge

Participants were asked to self-rate their knowledge of the HSR. The majority of participants (86.9%) stated that they knew at least a little bit about the HSR (Figure 6). Less than 10% felt that they knew a lot about it. A Chi-Square Test of Independence was performed to assess the relationship between self-rated HSR knowledge and country. There was a significant relationship between the two variables[12] (p = .003). A greater proportion of New Zealanders (5.9%) than Australians (2.9%) reported having never seen or heard of the HSR before.

Figure 6. Perceived Health Star Rating knowledge



Q: How much, if anything, do you believe you know about the Health Star Rating?

Table 8: Perceived knowledge of the HSR, number and proportion, by country

	Australia ***n* (%)**	**New Zealand** ***n* (%)**	**Total** ***n* (%)**
I have never seen or heard of it	45 (2.9)	41 (5.9)	86 (3.8)
I have seen or heard of it, but don't know anything about it	141 (9.1)	70 (10.1)	211 (9.4)
I know a little bit about it	677 (43.6)	312 (44.8)	989 (44.0)
I know a fair amount about it	542 (34.9)	222 (31.9)	764 (34.0)
I know a lot about it	149 (9.6)	51 (7.3)	200 (8.9)

Q: How much, if anything, do you believe you know about the Health Star Rating?

[12] $X^2(4, N = 2250) = 15.97$, p = .003, Cramer's V = 0.084

Comparison to past monitoring

The results on perceived knowledge align with findings from FSANZ's Consumer Insights Tracker (CIT) 2024, in which 87% of consumers self-reported knowing at least a little bit about the HSR in response to the same question[13] (FSANZ 2024). A similar question was also asked of New Zealand consumers who reported being aware of the HSR in 2018 HSR Monitoring[14]. Of these, 58% reported knowing at least a little bit about it, 18% had seen or heard of it but don't know anything about it, and 24% reported not being aware of it (Colmar Brunton 2018). This may suggest self-reported knowledge of the HSR is increasing in the New Zealand population.

Factors predicting perceived knowledge of the HSR

A multinomial logistic regression was undertaken to investigate what factors predicted self-reported knowledge of the HSR. See Appendix D for full results.

Knowing a lot about the HSR (compared to having never seen or heard of it) was associated with the following characteristics (higher odds ratios, all *p* values < .05):

- Higher self-rated nutrition knowledge;
- Higher trust in the HSR (trust index);
- Being from Australia (compared to New Zealand);
- Higher level of health consciousness;
- Being younger.

Knowing a fair amount about the HSR (compared to having never seen or heard of it) was associated with the following characteristics (higher odds ratios, all *p* values < .05).

- Having higher self-rated nutrition knowledge;
- Being from Australia (compared to New Zealand);
- Having a medical-related dietary influence;
- Having higher trust in the HSR (trust index);
- Having a higher level of health consciousness;
- Being younger.

Knowing a little bit about the HSR (compared to having never seen or heard of it) was associated with the following characteristics (higher odds ratios, all *p* values < .05):

- Being from Australia (compared to New Zealand);
- Having higher self-rated nutrition knowledge;
- Being younger.

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[13] CIT: How much, if anything, do you feel you know about the Health Star Rating? I know a lot about it/ I know a fair amount about it/ I know a little bit about it/ I have seen or heard of it, but don't know anything about it/ I have never seen or heard of it.

[14] NZ HSR Monitoring: Asked only to those who had heard of the HSR: How much, if anything, do you know about the Health Star Rating? I know a lot about it/ I know a fair amount about it/ I know a little bit about it/ I have seen or heard of it, but don't know anything about it.

Having seen or heard of the HSR but knowing nothing about it (compared to having never seen or heard of it) was associated with the following characteristics (higher odds ratios, all *p* values < .05):

- Being from Australia (compared to New Zealand);
- Being younger.

Understanding – Comparing Products

When asked to identify if the HSR could be used to decide which is the healthier product between two foods/pairs of images, the majority of participants (77.6%) correctly identified that the HSR can be used to compare food products that were similar, while 12% incorrectly selected it couldn't be used to compare similar food products and 10.4% didn't know.

However, only 26.0% of participants correctly identified that the HSR cannot be used to compare dissimilar food products (e.g. baked beans vs bread, and yoghurt vs juice). 61.7% incorrectly selected that the HSR can be used to compare food products that were dissimilar and 12.3% didn't know (Table 9).

Table 9. Percentages of participants who believe the HSR can be used to compare similar and dissimilar foods, by country.

	Australia ***n* (%)**	**New Zealand** ***n* (%)**	**Total** ***n* (%)**
Similar food products			
Yes, the Health Star Rating can be used to decide which of these food products is the healthier option (correct answer)	1238 (79.7)	507 (72.8)	1745 (77.6)
No, the Health Star Rating cannot be used to decide which of these food products is the healthier option (incorrect answer)	177 (11.4)	94 (13.5)	271 (12.0)
Don't know	139 (8.9)	95 (13.6)	234 (10.4)
Dissimilar food products			
Yes, the Health Star Rating can be used to decide which of these food products is the healthier option (incorrect answer)	973 (62.6)	415 (59.6)	1388 (61.7)
No, the Health Star Rating cannot be used to decide which of these food products is the healthier option (correct answer)	405 (26.1)	180 (25.9)	585 (26.0)
Don't know	176 (11.3)	101 (14.5)	277 (12.3)

Q: Can the Health Star Rating be used to decide which of these foods is healthier? If you are not sure please select 'Don't know'.

Chi-Square Tests of Independence were performed to assess differences between Australia and New Zealand. A greater proportion of Australians correctly selected that you can compare similar food products (79.7%) relative to New Zealanders (72.8%), and a greater proportion of New Zealanders were unsure if you could compare similar food products

(13.6%) relative to Australians (8.9%) ($p < .001$)[15]. In contrast, there was no difference between the countries in understanding that dissimilar foods should not be compared using the HSR ($p = .243$)[16], with both having a relatively low understanding of this (62.6% in Australia and 59.6% in New Zealand selecting that the HSR can be used to compare food products that were dissimilar) (Table 9).

Comparison to past monitoring

In the 2018 New Zealand HSR monitoring, when the HSR format was the same, 81% of the general population sample correctly agreed that the HSR could be used to compare similar products, with 10% disagreeing and 9% unsure (Colmar Brunton 2018)[17]. The current survey results suggest that this understanding may have declined slightly (72.8% of New Zealand participants correctly agreeing). When HSR format was the same, 33% of the general population sample in 2018 correctly identified that dissimilar food products could not be compared using the HSR. The current survey results also suggest that this understanding may have declined (25.9% of New Zealand participants correctly disagreeing). However, due to an inability to undertake statistical testing on previous survey data, it is not possible to know whether this decline represents a statistically significant decrease in understanding, or if it was due to chance. It may also be explained by differences in sampling strategies (noting both samples were large and nationally representative) or be impacted by the different product images used. For instance, in these previous surveys the HSR format differed across the choice sets (i.e. sometimes the HSR format was the same on the two products participants were asked about, and sometimes the format differed). To focus on the primary aim of investigating consumer understanding of which products can be compared (rather than which label formats), the current survey did not vary HSR format in this question.

However, in comparison to the 2024 CIT, the results from this survey suggest that understanding may be higher than previously reported. The 2024 CIT asked participants who found the HSR to be an important labelling element whether they agreed if similar and different products can be compared using the HSR. With this different question wording[18], a smaller proportion of Australian and New Zealand consumers (16%) understood that the HSR should not be used to compare dissimilar food products. A smaller proportion (61%) also correctly identified that the HSR allows comparison of similar foods (CIT 2024). In contrast to the previous New Zealand survey, this could indicate understanding may be improving. Differences in the results across studies may be due to differences in question wording and/or due to the subsample of the CIT that was being asked (i.e., only those that rated the HSR as at least somewhat important to their food purchasing decisions) compared to asking all respondents. As such, definitive conclusions on how this understanding has changed over time cannot be made.

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[15] $X^2(2, N = 2250) = 14.90$, $p < .001$ Cramer's V = 0.081

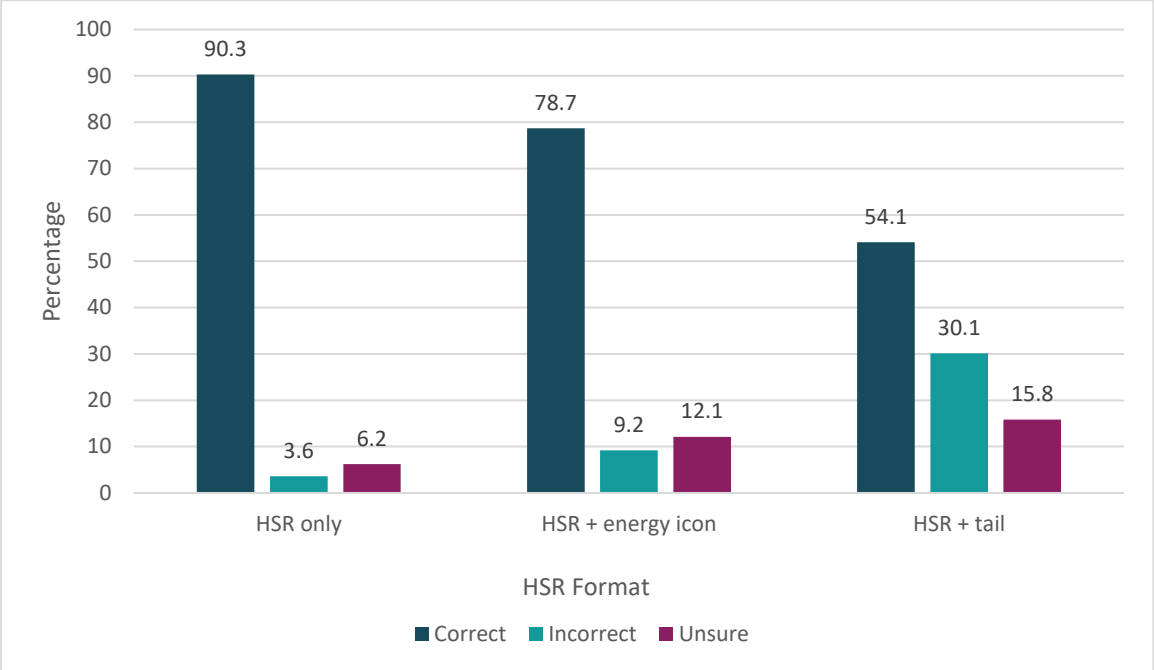
[16] $X^2(2, N = 2250) = 2.83$, $p = .243$, Cramer's V = 0.035

[17] NZ HSR Monitoring: Can the Health Star Rating be used to decide which of these is healthier? Yes/No/Don't Know. The product types used in the NZ Monitoring were the same as this survey but exact images, including HSR formats presented, differed.

[18] CIT 2024: Please indicate how strongly you agree or disagree that the Health Star Rating system… (i) Allows me to compare the healthiness of different kinds of foods, (ii) Allows me to compare the healthiness of similar foods." Seven-point Likert scale (1 = "Strongly disagree", 4 = "neutral", 7 = "Strongly agree").

Understanding – HSR Formats

Figure 7. Percentage of participants correctly, incorrectly and unsure in selecting healthier HSR label by format



Participants were presented with three pairs of HSR labels, with pairs of images in the same format (e.g. HSR only 3.5 stars vs HSR only 4 stars), and asked to select which label would indicate an overall healthier product. For the HSR only label format, 90.3% of respondents selected the correct label (higher star rating). 78.7% selected the correct label for the HSR + energy format and 54.1% selected the correct label for the HSR + tail format (Figure 7). The proportion of respondents who selected the incorrect label was higher as the label increased in amount of information presented. That is, 30.1% were incorrect for the label with the most information (HSR + tail), 9.2% incorrect for the label with medium amount of information (HSR + energy icon) and only 3.6% incorrect for the label with the least information (HSR only). The proportion who were unsure also increased as the amount of information on the label increased.

A Cochrane's Q[19] test determined that there was a statistically significant difference in the proportion of respondents who selected the correct answer by HSR formats[20] ($p < .01$). The proportion of participants who selected the correct label for the HSR only label was higher than the proportion for the HSR + energy label ($p < .01$) and the HSR + tail label ($p < .01$). The proportion of participants who selected the correct label was also higher for the HSR + energy label compared the HSR + tail label ($p < .01$).

[19] Sample size was adequate to use the χ^2-distribution approximation (Tate & Brown, 1970). $x^2(2) = 968.36$

[20] With unsure coded as incorrect.

Table 10. Percentage of participants selecting healthier HSR label by HSR format and country

	Australia			New Zealand			Total		
	Correct *n* **(%)**	**Incorrect** *n* **(%)**	**Unsure** *n* **(%)**	**Correct** *n* **(%)**	**Incorrect** *n* **(%)**	**Unsure** *n* **(%)**	**Correct** *n* **(%)**	**Incorrect** *n* **(%)**	**Unsure** *n* **(%)**
HSR only	1407 (90.5)	50 (3.2)	97 (6.2)	624 (89.7)	30 (4.3)	42 (6.0)	2031 (90.3)	80 (3.6)	139 (6.2)
HSR + energy icon	1247 (80.2)	131 (8.4)	176 (11.3)	524 (75.3)	76 (10.9)	96 (13.8)	1771 (78.7)	207 (9.2)	272 (12.1)
HSR + tail	859 (55.3)	454 (29.2)	241 (15.5)	358 (51.4)	224 (32.2)	114 (16.4)	1217 (54.1)	678 (30.1)	355 (15.8)

Q: Please select which label would indicate an overall healthier food product. Correct classified as selecting the label with a greater number of stars

The median time participants took to select the healthier label increased as the HSR format increased in amount of information provided, with the median time being 9.0s (interquartile range (IQR) 6.0) for the HSR only, 12.6s (9.0) for the HSR + energy, and 18.6s (18.0) for the HSR + tail (Table 11). The large interquartile range (IQR) indicates substantial variation in how much time participants took to respond.

Table 11. Average response time to select healthier HSR label by HSR format.

	HSR only *n* **= 2,102**	**HSR + energy** *n* **= 2,095**	**HSR + tail** *n* **= 2,126**
Mean time to respond in seconds (SD)	10.2 (4.8)	13.8 (6.6)	21.6 (13.8)
Median + IQR	9.0 (6.0)	12.6 (9.0)	18.6 (18.0)

Factors predicting choosing the healthier label

A multi-level logistic regression was undertaken to investigate what factors predicted selecting the healthier HSR label across the three formats. See Appendix D for full results.

Choosing the healthier HSR label across all HSR formats was associated with the following characteristics (higher odds ratios, all *p* values < .05):

- Having greater trust in the HSR (trust index);
- Having a medical related dietary influence;
- Spending less time selecting the healthier label;
- Having greater self-rated knowledge of the HSR (I know a fair amount vs I have not seen it);
- Having a lower level of health consciousness.

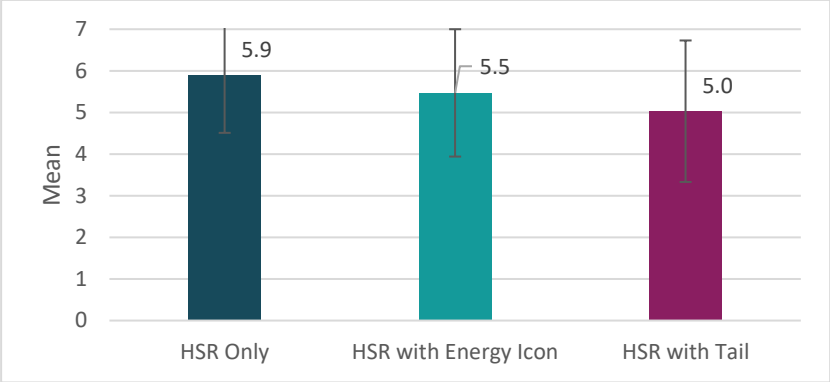
Comparison to past monitoring

This is the first HSR monitoring survey investigating how different formats of the HSR impact consumer understanding and trust.

Ease of selecting the healthier label – HSR formats

Respondents were then asked how easy/hard it was to choose the healthier HSR label for each format[21]. Across all HSR formats, on average consumers tended to agree that it was easy to select the healthier product, with mean scores above the midpoint of 4 (Figure 8). A repeated measures ANOVA identified that the ease of identifying the healthier label significantly differed across the HSR formats[22] ($p < .001$). Post-hoc analysis with a Bonferroni adjustment showed that all pairwise comparisons were significantly different (all $p < .001$). The HSR only (M = 5.9, SD = ± 1.4) was rated as significantly easier to choose the healthier label compared to the HSR + energy (5.5, ± 1.5) and HSR + tail (5.0, ± 1.7). While HSR + energy was significantly easier to choose the healthier label than the HSR + tail (Table 12).

Figure 8. Perceived ease of identifying the healthier option of a pair of labels, by HSR format, mean and standard deviation (error bars)



Q: How easy or hard was it to answer this question? 1-7 scale, where 1 = "Very hard", 4 = "Neutral", and 7 = "Very easy".

Table 12. Perceived ease of identifying the healthier option of a product pair by HSR label format and country.

	HSR format	Australia Mean (±SD)	New Zealand Mean (±SD)	Total Mean (±SD)
Ease of identifying healthier option	HSR only	5.9 (1.4)	5.8 (1.4)	5.9 (1.4)
	HSR + energy	5.5 (1.5)	5.4 (1.6)	5.5 (1.5)
	HSR + tail	5.1 (1.7)	4.9 (1.7)	5.0 (1.7)

Q: How easy or hard was it to answer this question? 1-7 scale, where 1 = "Very hard", 4 = "Neutral", and 7 = "Very easy".

[21] Q: How easy or hard was it to answer this question? 1-7 scale, where 1 = "Very hard", 4 = "Neutral", and 7 = "Very easy".

[22] F (1.856, 4174.63) = 375.311

Participant insights into identifying healthier labels – Qualitative findings

After selecting which label would indicate an overall healthier food product and reporting the ease of use, participants were asked an open-ended question on why they selected that label as the healthier label/why they were unsure[23]. Participant explanations for why they choose the 'healthier' label are summarised below. Responses are grouped based on whether participants selected the label with the greater number of stars (correct response), lower number of stars (incorrect), or answered unsure for each HSR format. Appendix B details the HSR labels that were compared.

HSR Only format

Of the 90.3% (n = 2,031) of participants that correctly chose the healthier HSR only label, the majority reported they did so because it had more stars. Although 3.6% (n = 80) of participants chose the wrong answer using the HSR only label, few of these participants demonstrated an incorrect understanding of interpreting the HSR, with only 12 responses indicating they believed the label with the lower stars is healthier. Of note, a handful of participants (n = 22) who chose the wrong answer seemed to have the appropriate understanding of the HSR, indicated by responses such as *"Higher health star rating*" and *"It had more stars".*

A small proportion (6.2%, n = 139) of participants were unsure which HSR only label was healthier. The most common theme for why participants were unsure was that they wanted more information (n = 58). This theme was consistent across all HSR formats and three main types of information were desired: information on how the HSR is calculated, nutrition content information (e.g. ingredients list), and contextual information (e.g. product HSR displayed on) (Table 13). The next most prevalent theme for the HSR only was that participants were unsure as they don't trust the HSR (n = 24). Of note, 7 responses indicated an order effect where participants were unsure based on seeing the other formats with more information first.

HSR + Energy format

Of the 78.7% (n = 1,771) of participants that correctly chose the healthier HSR + energy label, the majority reported primarily using the stars to make their decision, with a higher number of stars indicating a healthier label (68%). Responses indicated another 20% of participants equally weighted the stars and energy amount in their decision. Of these participants, 74% gave a response indicating more stars and less energy is healthier, while 21% indicated more stars and more energy reflect the healthier choice. A smaller proportion of participants who got it correct stated they primarily used the amount of energy to choose the healthier label (9%). Of these, 68% gave a response indicating that less energy is healthier, 22% gave a response indicating more energy is healthier, while the remainder did not indicate what level of energy is healthier.

[23] Q: Why did you select this as the healthier label? If answered unsure to Q17: Why were you uncertain which label was healthier?

Of the 9.2% (n = 207) of participants who answered incorrectly when choosing the healthier HSR + energy label, the majority (57%) gave a reason for their choice relating to energy content displayed. For example, incorrect labels were selected if they displayed 'more energy' or 'less energy'. Of these, 63% indicated less energy is the healthier choice, while 31% indicated more energy is the healthier choice, while the remainder did not indicate if more or less energy is healthier. This demonstrates the use of the energy icon as a determinant of healthiness, but also an inconsistency in whether more or less energy is considered healthy by participants.

12.1% (n = 272) of participants were unsure which HSR + energy label was healthier. The most common reasons why participants selected 'unsure' when asked to choose the healthier of two HSR + energy labels were (1) need more information and (2) the information displayed was confusing. Other infrequent themes of reasons participants were unsure included that they didn't understand it, healthiness is subjective, they didn't trust it, and there wasn't much difference between labels.

HSR + Tail Format

54.1% (n = 1,217) of people correctly chose the healthier HSR + tail label. For those who selected the healthier HSR + tail label, responses were coded to reflect which part of the label they used to make this decision. Out of the relevant responses (n = 1,072), 64% mainly used the stars, 20% used the stars and tail together, and 16% mainly used the tail to choose the healthier label.

30.1% (n = 678) of people were incorrect when choosing the healthier HSR + tail label. The majority of participants who incorrectly chose the overall healthier HSR + tail label reported using elements of the tail to make their choice (84%). Of note, many people reported making their decision based on the lower amount of sugar indicated by the label, despite its higher HSR.

15.8% (n = 355) of participants were unsure which of the HSR + tail labels were healthier. The main theme for why participants were unsure was that the information presented was confusing/conflicting (54%). Smaller but related themes included that participants didn't understand the HSR, more information was needed, and that healthiness is subjective.

Table 13. Quotes supporting key themes identified from participants correct, incorrect or unsure when selecting the healthier HSR Only label.

Participant Objective Response[1]	Theme	HSR Format that the theme applies to	Example Quotes
Correct	More stars means healthier label	***HSR only*** ***HSR + Energy*** ***HSR + Tail***	*"It had a higher star rating"* *"More stars"*
	I used the stars and energy to make my decision	***HSR + Energy***	*"Because it had a higher Star rating and Less calories"* *"Higher rating and higher kilojoules"*

Participant Objective Response[1]	Theme	HSR Format that the theme applies to	Example Quotes
Incorrect and correct[2]	I used the amount of energy to make my decision	***HSR + Energy***	*"more kilojoules would mean more likely to put on weight so I chose the lower amount"* *"It gives you more energy per 100 grams as per picture"*
Incorrect	I used the tail to make my decision	***HSR + tail***	*"I looked at the fat and sugar amount"* *"Lower sugars (by a lot), lower saturated fat, and very mildly lower kJ. The star rating didn't affect my thinking."*
Unsure	Need more information to make a decision	***HSR Only*** ***HSR + Energy*** ***HSR + Tail***	***Information on how the HSR is calculated*** *"No idea what the rating is based on - what aspects of the food were used to come up with rating"* ***Nutrition content information*** *"health star is a quick identifier but you need more info about ingredients to finalize decision"* ***Contextual information*** *"Because I don't know whether they relate to the same food product or different food products*"
	I don't trust the HSR *(minor theme)*	***HSR Only***	*"I don't believe that health star show how healthy a product is."*
	The information displayed is confusing/conflicting	***HSR + Energy*** ***HSR + Tail***	*"The information is conflicting, it doesn't make sense that an item would be healthier if it contains more - eg fat, sodium, kj etc"* *"One had more sugar than the other, but one had more saturated fat, so it was hard to see which was healthier"*

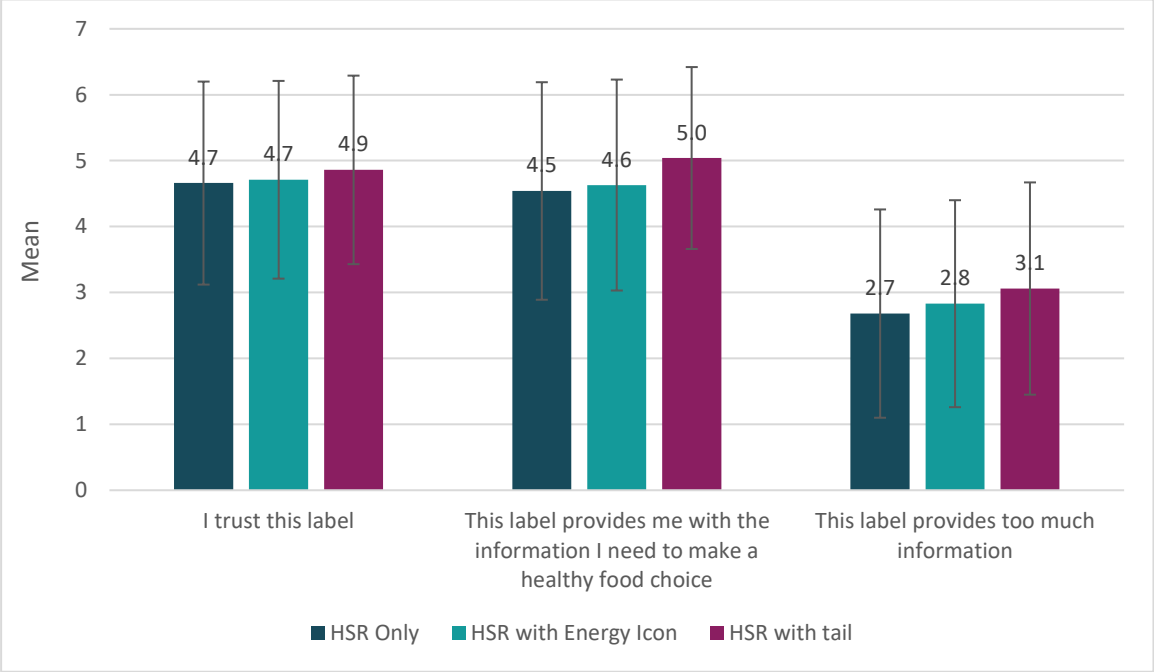
[1] The label with the higher HSR rating was considered the correct choice for selecting the overall healthier label, while the label with the lower HSR was considered the incorrect choice.

[2] Participants who chose the correct and incorrect answer both expressed this theme.

Attitudes – HSR Formats

Participants were then asked to rate their level of agreement with several statements regarding their trust in the labels presented and the amount of information on that label. These questions were asked for each HSR format.

Figure 9. Mean agreement with attitude statements about the HSR system



Q: Below are a series of statements about the Health Star Rating system. How strongly do you agree or disagree with the following statements? 1-7 scale, where 1 = "Strongly disagree", and 7 = "Strongly agree".

Table 14. Mean level of agreement in attitudes statements about the HSR system.

	HSR format	Australia Mean (±SD)	New Zealand Mean (±SD)	Total Mean (±SD)
I trust this label	HSR only	4.8 (1.5)	4.7 (1.5)	4.7 (1.5)
	HSR + energy	4.8 (1.5)	4.5 (1.5)	4.7 (1.5)
	HSR + tail	5.0 (1.4)	4.5 (1.5)	4.9 (1.4)
This label provides me with the information I need to make a healthy food choice	HSR only	4.6 (1.6)	4.4 (1.7)	4.5 (1.7)
	HSR + energy	4.7 (1.6)	4.4 (1.6)	4.6 (1.6)
	HSR + tail	5.1 (1.4)	4.9 (1.4)	5.0 (1.4)
This label provides too much information	HSR only	2.7 (1.6)	2.7 (1.5)	2.7 (1.6)
	HSR + energy	2.9 (1.6)	2.8 (1.5)	2.8 (1.6)
	HSR + tail	3.0 (1.6)	3.1 (1.6)	3.1 (1.6)

Q Please indicate how much you agree or disagree with the following statements: 1-7 scale, where 1 = "Strongly disagree", and 7 = "Strongly agree".

Participants on average trusted the three different HSR formats, with scores all above the midpoint of 4 on a seven-point scale (Figure 9). A repeated measures ANOVA identified that level of trust significantly differed across the HSR formats ($p < .001$)[24]. Post-hoc analysis with a Bonferroni adjustment showed that all pairwise comparisons were significantly different. Respondents trusted the HSR + tail (M= 4.9, SD = ±1.4) significantly more than the HSR + energy (4.7, ±1.5) (, $p < .001$) and HSR only (4.7, ±1.5) $p < .001$). The HSR + energy was trusted significantly more than the HSR only ($p = .040$) (Table 14).

Participants on average felt that all HSR formats provided them with enough information to make a healthy food choice, with average scores all above the midpoint of four on seven-point scale in terms of agreement with the statement "This label provides me with the information I need to make a healthy food choice" (Table 14). A repeated measures ANOVA identified that the adequacy of information to make a healthy food choice significantly differed across the HSR formats ($p < .001$)[25]. Post-hoc analysis with a Bonferroni adjustment showed that all pairwise comparisons were statistically significantly different (all $p <.001$). Respondents rated HSR + tail (5.0 ±1.4) significantly higher compared to HSR + energy (M = 4.6, SD = ±1.6) ($p < 0.001$) and the HSR only (4.5, ±1.7) ($p < .001$). The HSR + energy was rated significantly higher than HSR only ($p < .001$).

Participants on average disagreed that the three HSR formats provided too much information, with average scores all well below the midpoint of 4 on a seven-point scale in agreement with the statement "This label provides too much information" (Table 14). A repeated measures ANOVA identified that the perception that the label provides too much information significantly differed across the HSR formats ($p < .001$)[26]. Post-hoc analysis with a Bonferroni adjustment showed that all pairwise comparisons were statistically significantly different (all $p < .001$). Respondents rated HSR + tail (M = 3.1, SD = ±1.6) significantly higher compared to HSR + energy (2.83 ±1.57) ($p < .001$) and HSR only (2.7, ±1.6) ($p < .001$), while HSR + energy was rated significantly higher than HSR only ($p < .001$).

Trust of the HSR

Participants were presented with each of the three HSR format images at the same time, all displaying 3.5 stars (see images in Appendix B). They were then asked to respond to a series of statements related to their level of trust in the HSR system overall[27] (Table 15). On average, perceptions of the HSR system were generally positive, being above the midpoint of 4 for positive traits (trust, accuracy/honesty, increasing trust in food product/company) and below the midpoint for negative traits (poor reputation). A factor analyses confirmed that all four statements measured one underlying construct (see Appendix C for full results). The

[24] F (1.944, 4372.61) = 46.72

[25] F (1.87, 4198.05) = 195.71

[26] F (1.94, 4354.51) = 97.91

[27] Below are a series of statements about the Health Star Rating system. How strongly do you agree or disagree with the following statements? I trust the Health Star Rating system; The Health Star Rating system has a poor reputation; The Health Star Rating system is accurate and honest; Having a Health Sar Rating on a product's label increases my trust in the food product/company.1-7 scale, where 1 = "Strongly disagree", and 7 = "Strongly agree".

implied index[28] from the factor analysis was used in regression analysis as an overall measure of participants trust in the HSR.

Table 15. Level of trust in the HSR, by country

	Australia Mean (±SD)	New Zealand Mean (±SD)	*P* value (Mean difference between AU and NZ)	Total Mean (±SD)
I trust the Health Star Rating system	4.7 (1.6)	4.5 (1.6)	<.001	4.7 (1.6)
The Health Star Rating system has a good reputation^	4.3 (1.7)	4.4 (1.6)	.286	4.3 (1.6)
The Health Star Rating system is accurate and honest	4.6 (1.5)	4.4 (1.5)	.004	4.6 (1.5)
Having a Health Sar Rating on a product's label increases my trust in the food product/ company	4.8 (1.6)	4.6 (1.6)	.005	4.7 (1.6)
Trust factor	4.6 (1.3)	4.5 (1.3)	.020	4.6 (1.3)

Q: Below are a series of statements about the Health Star Rating system. How strongly do you agree or disagree with the following statements? 1-7 scale, where 1 = "Strongly disagree", and 7 = "Strongly agree".
^This item was reverse coded. Original question wording: "The HSR has a poor reputation".

Independent t-tests were run to identify if there were any differences between the means for Australia and New Zealand on these measures. Australians were significantly more likely to agree that they "trust the Health Star Rating system" compared to New Zealanders (4.7 vs 4.5, p <.001) (Table 15, Figure 10). Agreement that the HSR system is accurate and honest, and that presence of the HSR increases trust in a food product/company was also significantly higher for Australians compared to New Zealanders (p = .004 and p = .005, respectively). There was no significant difference in perceptions of the HSR's reputation between countries. Reflecting these results, Australian's reported significantly higher levels of overall trust in the HSR system as measured by the trust index (mean trust index score = .037) compared to New Zealanders (-.082, p = .009).

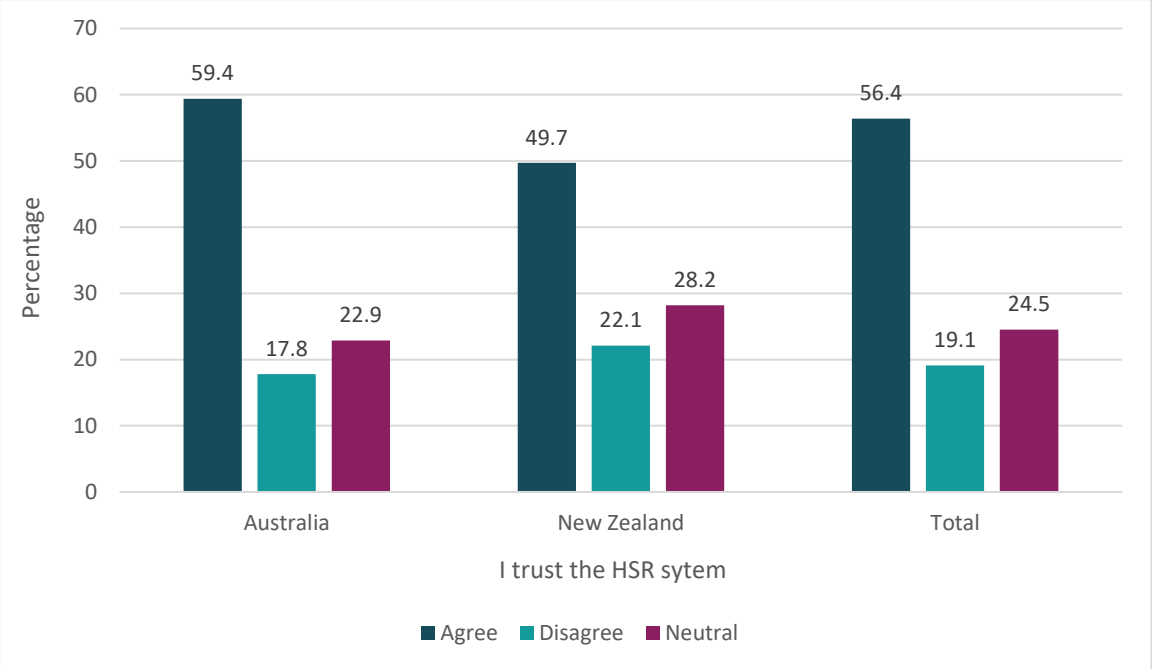
[28] The implied index is a weighted sum of based on the factor scores for each item.

Table 16. Proportion of participants who agree with HSR belief statements.

	Agree *n* (%)	Disagree *n* (%)	*Neutral* *n (%)*
I trust the Health Star Rating system	1269 (56.4)	429 (19.0)	552 (24.5)
The Health Star Rating system has a good reputation^	929 (41.3)	624 (27.8)	697 (31.0)
The Health Star Rating system is accurate and honest	1177 (52.3)	451 (20.0)	622 (27.6)
Having a Health Star Rating on a product's label increases my trust in the food product/company	1340 (59.6)	404 (18.0)	506 (22.5)

^This item was reverse coded. Original question wording: "The HSR has a poor reputation".

Figure 10. Proportion of participants who trusted, distrusted or were neutral towards the HSR.



Q: Below are a series of statements about the Health Star Rating system. How strongly do you agree or disagree with the following statements? I trust the HSR system: 1-7 scale, where 1 = "Strongly disagree", and 7 = "Strongly agree".

Comparison to past monitoring

Although not directly comparable due to differences in wording[29] these findings are similar to results in the 2024 CIT. In that study 54.1% of respondents (both Australian and New Zealand consumers) generally trusted the HSR (compared to 56.4% in this survey), 19.6%

[29] CIT: How much do you feel you can trust the following information on packaged foods and drink? Health Star Rating (1 = "Cannot trust at all" and 7 = " Can trust completely").

distrusted it (19.1% in this survey), and 26.3% were neutral (24.5% were neutral). Additionally, the mean level of trust in the HSR in this survey (M = 4.7, SD= 1.6) was similar to the mean level of trust recorded in the 2024 CIT (M = 4.6, SD = 1.5) and in 2023 (M = 4.5, SD = 1.5) (FSANZ 2024). The results from this study are also comparable to those found for Australia in the Year 4 HSR Tracker. In the HSR tracker, 58.4% of Australians agreed that the HSR is a system they trust (Heart Foundation of Australia 2018)[30]. The most recent New Zealand-based survey indicated that 22% of New Zealanders surveyed completely trust the HSR, 58% somewhat trust the HSR, while 14% don't trust the HSR (The Navigators 2024)[31]. This survey found a greater number of New Zealanders distrust the HSR (22.1%) compared to the Navigators research. This may have been due to differences in sampling approaches, question framing or potentially order effects within this study (see limitations).

Trust in the Health Star Rating – Qualitative findings

Participants were asked an open-ended question about why they trust, distrust or what influences their trust towards the HSR, depending how they rated their trust in question 29a[32]. The themes emerging for each question and illustrative quotes are provided in Table 17 below. In contrast to the qualitative findings around different HSR formats above, specific frequency counts for each theme are not provided. Instead, major and minor themes are identified. This is because participant responses to these questions were more challenging to accurately code. The open textbox method sometimes elicited quick responses where the intended meaning was not fully clear, and/or could be interpreted to reflect several different themes. Thus any specific percentages may be misleading. Quantitative research asking about the identified themes would be more suitable to gain an accurate picture of how common these themes are across the populations.

Reasons why people trust the HSR

Major themes that were mentioned by the 56.4% of respondents who trusted the HSR included finding the HSR helpful, that it is a regulated system, and that it is accurate and credible, due to being informed by science or other relevant expertise. Minor themes (mentioned less frequently) included it being simple, easy and/or quick to use, being familiar with the HSR, and having implicit trust in the system, including limited reasons to distrust it.

Reasons why people do not trust the HSR

Of the 19% of participants who did not trust the HSR system[33], the major theme for distrust was a perception that the HSR is not accurate. Under this theme, participants often mentioned examples where a product's star rating conflicted with their perception of what was healthy. This was either through direct product comparisons, or noting that foods with certain characteristics (such as being high in sugar, sodium or fat, highly processed or including additives) could achieve what they perceived to be an inaccurate rating. Additional

[30] AU HSR Tracker: How strongly do you agree or disagree that the Health Star Rating system…? a. Is a system I trust (Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Unsure).

[31] NZFS Consumer Insights survey: And how much do you trust each of the following types of information on packaged food and drink? Please answer this question, even if you don't currently use the information. Health Star Rating (Completely trust, Somewhat trust, Don't trust, Don't know).

[32] Those who rated 5 or above on the seven-point scale were asked "Why do you trust the Health Star Rating system?". Those who rated 3 or below were asked "Why do you not trust the Health Star Rating system?". Those who rated 4 were asked "What influences your trust in the Health Star Rating system?".

[33] Rating it 3 or below on the seven-point scale.

major themes for distrust included (i) a belief the HSR is not comprehensive (i.e., that it does not capture all elements of healthiness), (ii) a belief that the system is not independent and/or that the system is funded or manipulated by industry; and (iii) not knowing enough about the HSR, particularly how it is calculated. A small number of participants noted that they prefer to use other parts of the label when choosing food products instead of the HSR.

Reasons why people are unsure if they trust the HSR

No new themes arose from participants who neither trusted nor distrusted the HSR. The key themes that re-presented for people with a neutral level of trust were 'I don't know enough about it', 'I need/use other parts of the label', 'It's not accurate', and 'It's not independent'.

Table 17. Themes identified for reasons participants trust and distrust the HSR.

TRUST REASONS		
Theme	**Description**	**Quote**
It's helpful	Participants trust the HSR system as it helps them to choose healthier products or understand a food's healthiness	*"Provides me with information to make an informed decision"* *"It is an easy way to tell if a product is healthy or unhealthy."* *"It gives you a general indication of what stuff is good or what stuff is bad"*
It's a regulated system	Participants trust the HSR system as they believe it is approved or run by Government, that it is independent, or trust that industry are held accountable	*"Because it is backed by the government regulations for health ratings on food"* *"I assume it has to be certified by an independent body"* *"I would assume that the manufacturers could not lie about information"*
It's accurate and credible	Participants trust the HSR system as they believe it to be accurate, supported by or developed using research and/or credible sources (e.g. experts, nutritionists), reinforced by a good reputation	*"Because I would assume it has been formulated by experts and is accurate"* *"It is logical and objectively sound and evidence based"* *"I trust the Health Star Rating because of the research performed to obtain the rating"* *"It had a good reputation and is honest based on scientific facts"*
Minor themes		
It's easy, simple and quick to use	Participants trust the HSR system as it is quick and easy to use and understand	*"Easy to use and provides a quick and simple way to compare"* *"It's quick and easy and saves reading the label"* *"There is no other way to compare products easily"*

It's familiar	Participants trust the HSR system as they see it on many products, it has been around a long time and is well known	*"It's been around for a long time so I assume it would have been banned by now if it was not trustworthy"* *"It's on basically everything and everyone knows about it"*
Implicit trust	Participants implicitly trust the HSR system, either without justification, because it is better than nothing, or because they have limited reasons to distrust it.	*"I just do"* *"there is no other option so i place my faith in them"* *"because to date, there has not been any reports of misrepresentation of a product's star rating (ie. false or incorrect star ratings made by manufacturers)"'*
DISTRUST REASONS		
Theme	**Description**	**Quote**
It's not accurate	Participants distrust the HSR system as the rating and other nutritional information can conflict with each other, or the overall rating conflicts with their own understanding of a healthy product, and/or they don't believe its accurate	*"It can show something that is high in sugar or highly processed is healthy but then something that is less processed as unhealthy."* *"Both water and mozzarella cheese have 5 stars. Mozzarella it's not as healthy as water"* *"Doesn't provide accurate comparisons in regard to sugar contents and items containing many artificial colours and flavours and rated highly which aren't healthy at all, particularly for young children."* *"I feel like it's not accurate and kind of random"*
It's not comprehensive	Participants distrust the HSR system as other factors influence the healthiness of a food/ it does not encompass all factors relevant to healthiness	*"It does not consider ingredients I have seen it on foods that look like a science experiment with numbers and un pronounceable ingredients"* *"Because of some of the other benefits the food has gets over shadowed sometimes it doesn't mean that it's not healthy"* *"What is considered 'healthy' is debatable and highly individualised."*
It's not independent	Participants distrust the HSR system as they believe that it is not regulated, and/or able to be bought or biased by industry	*"Hard to know if this is honest or if the brands have just put on there to sell more"* *"Because some companies pay for better health ratings"* *"Lack of information as to who authorises it."*

I don't know enough about it	Participants distrust the HSR system as they don't understand elements of the HSR, in particular how it is calculated	*"Because I don't know how it's classifying healthy. Low cal? High protein? Fibre? Healthy fats?"* *"It's too confusing & misleading with only 4 factors"* *"Don't know enough about it"*
Minor Themes		
I need/use other parts of the label	Some participants prefer to use other parts of the label instead of the HSR, as the HSR system doesn't provide them the information they need/want	*"I'd prefer to focus on the ingredients or the sugars for example instead of the health star rating"* *"I find it confusing sometimes, it doesn't give you information on exactly what all the nutritional values are and just seeing more stars doesn't mean it's good for you. I need a lot more information that is found on the label than just the stars."* *"I know what to look for when picking foods I want to eat by the ingredients and nutritional facts"*

Comparison to past monitoring

The qualitative responses from this survey indicate that the consumers trust the HSR system because they find it helpful, believe it is regulated, and find it accurate and credible. Some of the key reasons for distrust directly contrast with the factors underpinning trust, i.e., a belief that the HSR is not regulated or independent, or that it's not accurate. Findings from a 2018 focus groups of Australian consumers echo many of these key themes (National Heart Foundation 2018). Participants in the 2018 qualitative study trusted the HSR as it provides a quick easy reference on the healthiness (or otherwise) when buying a product, or distrust it as the rating conflicted with the participants own understanding of healthy/unhealthy which undermined the credibility of the system (Heart Foundation of Australia 2018).

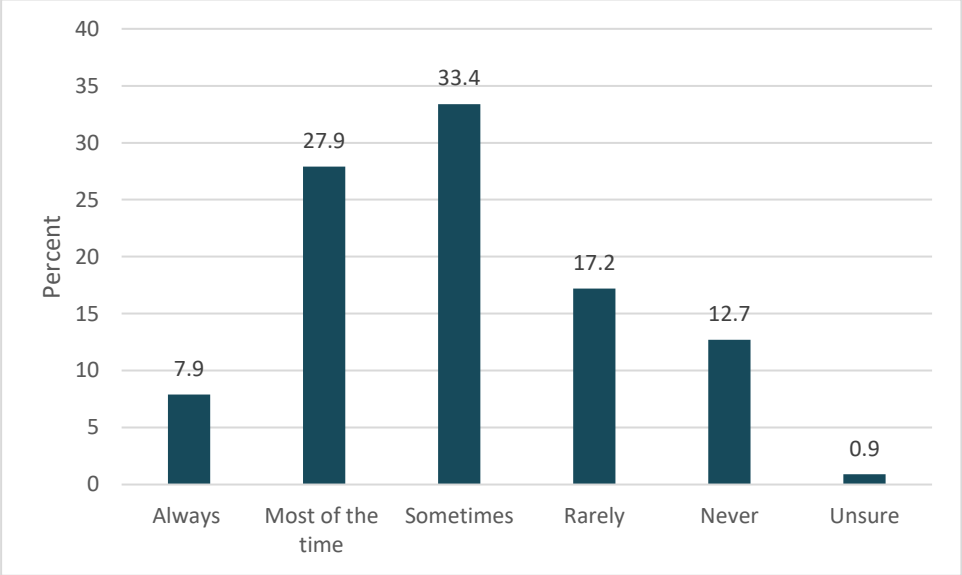
The qualitative results from this survey also indicated that trusting industry impacted trust in the HSR. That is a distrust of industry contributed to distrust of the HSR, and a trust of industry contributed to trust in the HSR. Similarly, in the CIT 2023, regression analysis indicated trust in food manufacturers/producers and food retailers significantly predicted trust in the HSR (CIT 2023).

Use of the HSR

Frequency of Use

All participants were asked how often they look for the HSR when shopping for food in the supermarket. The most frequent response was 'Sometimes' at 33.4%, followed by most of the time at 27.9% (Figure 11). Never using the HSR (12.7%) was more common than people always using the HSR (7.9%). Overall, 69.2% of participants reported using the HSR at least some of the time.

Figure 11. Frequency of using the HSR when shopping



Q: How often do you look for the Health Star Rating when shopping for food in the supermarket?

Table 18. Frequency of using the HSR when shopping by country.

	Australia ***n*** **(%)**	**New Zealand** ***n*** **(%)**	**Total** ***n*** **(%)**
Always	139 (8.9)	39 (5.6)	178 (7.9)
Most of the time	472 (30.4)	156 (22.4)	628 (27.9)
Sometimes	509 (32.8)	242 (34.8)	751 (33.4)
Rarely	257 (16.5)	130 (18.7)	387 (17.2)
Never	166 (10.7)	120 (17.2)	286 (12.7)
Unsure	11 (0.7)	9 (1.3)	20 (0.9)

Question: How often do you look for the Health Star Rating when shopping for food in the supermarket?

Factors predicting frequency of using the HSR

A multinomial logistic regression was undertaken to investigate what factors predicted whether someone used the HSR always vs rarely/never; most of the time vs rarely/never; and sometimes vs rarely/never. 'Unsure' was excluded from the analysis. See Appendix F for full results.

Using the HSR 'always' (compared to 'rarely/never') was associated with the following characteristics (higher odds ratio, all *p* values < .05):

- Having greater self-rated knowledge of the HSR (know a lot vs know a little/know nothing/haven't seen it; and know a fair amount vs little/know nothing/haven't seen it);
- Having greater trust in the HSR (trust index);
- Being from Australia (compared to New Zealand);

- Having a greater level of health consciousness;
- Having a medical-related dietary influence;
- Speaking another language at home (compared to speaking only English).

Using the HSR 'most of the time' (compared to 'rarely/never') was associated with the following characteristics (highest odds ratio, all *p* values < .05):

- Having greater trust in the HSR (trust index);
- Having greater self-rated knowledge of the HSR (know a lot vs know a little/know nothing/haven't seen it; and know a fair amount vs know a little/know nothing/haven't seen it);
- Being from Australia (compared to New Zealand);
- Having a medical-related dietary influence;
- Having a greater level of health consciousness.

Using the HSR 'sometimes' (compared to 'rarely/never') was associated with the following characteristics (highest odds ratio, all *p* values < .05):

- Having greater trust in the HSR (trust index);
- Having greater self-rated knowledge of the HSR (know a fair amount vs know a little/know nothing/haven't seen it);
- Being from Australia (compared to New Zealand);
- Having a greater level of health consciousness;
- Being younger.

Comparison to past monitoring

In this survey, the majority of participants reported looking for the HSR at least sometimes (69.2%), while 29.9% rarely or never look for it. These results are similar to that of the 2024 CIT results[34] where 66% of respondents report looking for the HSR at least sometimes, and 33% report rarely or never looking for it (FSANZ 2024). Among those aware of the HSR in the general population in the 2018 New Zealand HSR Monitoring survey, 37% said they have used it to help them choose a packaged food (Colmar Brunton 2018)[35].

Regression analysis in the 2024 CIT also found similar predictors of using the HSR, with those more likely to use: having a greater self-reported understanding of the HSR, having greater trust in front-of-pack labelling elements, being from Australia (compared to New Zealand), being younger, and having a higher level of health consciousness. It also identified several factors not measured in this survey as being associated with greater use, including not selecting nutrition as a key food value, not having food industry experience. The 2024 CIT found that having a tertiary education, having a low EHHI (compared to high and middle) were also a predictor of whether someone would use the HSR compared to rarely/never using the HSR. These were not identified as predictors in this survey.

[34] 2024 CIT: Question wording and response options were the same as this survey.

[35] NZ HSR Monitoring: Have you ever **personally** used the Health Star Rating system to help you choose a packaged food product? Yes, No, Don't know.

How the HSR is Used

Participants who reported that they at least rarely use the HSR when shopping (n = 1,944) were asked to identify which of several scenarios best described how they use the HSR. Participants could also select other, and provide their own description if desired. Across both Australia and New Zealand, there was a relatively even split of those reporting that they either frequently looked at the HSR, or that they only looked for the HSR when buying a product for the first time.

Table 19. How consumers use the HSR.

	Australia (n = 1,377) n (%)	**New Zealand (n = 567) n (%)**	**Total (n = 1,944) n (%)**
I frequently look out for the Health Star Rating on food products I buy	643 (46.7)	231 (40.7)	874 (45.0)
I only look out for the Health Star Rating when I am buying a new food product or brand for the first time	610 (44.3)	257 (45.3)	867 (44.6)
I only look out for the Health Star Rating on certain types of food products - please specify	45 (3.3)	18 (3.2)	63 (3.2)
Other – please specify	79 (5.7)	61 (10.8)	140 (7.2)

Question: Which of the following scenarios best describes how you use the Health Star Rating?

Only looking for the HSR on certain food types was relatively uncommon, at 3.2%. Those who chose this option (n = 63) were asked to specify in an open text box which types of foods they used the HSR on. A broad range of food types were specified. The most common responses are summarised in Table 20. Some examples of 'other' responses included products that do not typically carry HSRs, such as 'meat' (n = 2) or 'fresh products' (n = 1).

Table 20. Main products noted by those reporting that they only look for the HSR on certain food products (n = 63).*

Theme	**Theme frequency *n***
Cereal	8
Snacks	6
Compare similar products	6
Children's food	5
Processed food	5
Other	47

** Note: Frequencies do not add to the total number of respondents answering this question, as several responses noted multiple products.*

The alternative descriptions provided by those selecting 'Other' to the question about how they use the HSR are summarised in Table 21. The vast majority of these open-ended

responses referred to rarely using or noticing the HSR. This may suggest that many people who selected rarely using the HSR in the frequency of use question selected the 'other' option for this question. The next most common theme was that people preferred to use either the ingredients list and/or the NIP. The most common descriptions of how people used the HSR (rather than why they did not) was to compare foods, or when it is noticed.

Table 21. 'Other' participant descriptions for how they use the HSR (n = 140)

Theme	Theme frequency *n*
Rarely use/notice	61
Preference for NIP and/or Ingredients List	15
Comparing foods	10
When I notice it	7
Other factors more important	5
Rarely use but now want to use in future	5
Other	36

Influence of the HSR on Purchasing Decisions

All participants were asked if they had purchased a product that had a HSR in the past 3 months. The majority (62%) of participants reported that they had purchased a product that displayed the HSR over the past 3 months, while 8.9% reported they had not and 29.1% were unsure (Table 22). 53.4% of New Zealanders and 65.8% of Australians reported purchasing a product displaying the HSR (Table 22).

Table 22. Percentage of participants self-reporting purchasing a product that had a HSR in the last 3 months, by country.

	Australia *n* (%)	New Zealand *n* (%)	Total *n* (%)
Yes	1023 (65.8)	372 (53.4)	1395 (62.0)
No	138 (8.9)	62 (8.9)	200 (8.9)
Unsure	393 (25.3)	262 (37.6)	655 (29.1)

Q: In the past three months, have you purchased a product that had a Health Star Rating on the label?

Of those participants who had purchased a product displaying the HSR in the past 3 months, 63.9% said it influenced their choice (Table 23).

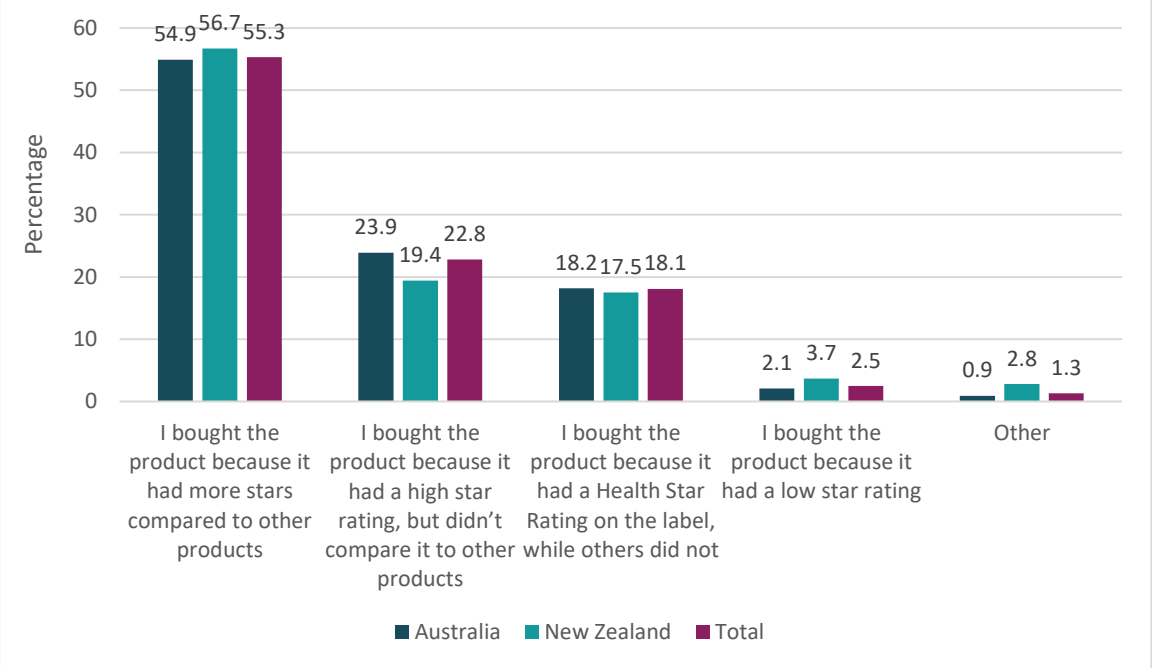
Table 23. Percentage of participants who's purchasing decision was influenced by the HSR, by country (n = 1,395).

	Australia (n = 1,023) n (%)	New Zealand (n = 372) n (%)	Total (n = 1,395) n (%)
Yes	674 (65.9)	217 (58.3)	891 (63.9)
No	349 (34.1)	155 (41.7)	504 (36.1)

Q: Did the Health Star Rating system on the label influence your choice?

Participants that said the HSR influenced their product choice were then asked how it influenced their choice from a set of 5 options (Figure 12). The most common response was "I bought the product because it had more stars compared to other products" (55.3%), followed by "I bought the product because it had a high star rating, but didn't compare it to other products" (22.8%) (Table 24). The most common theme of 'other' responses was 'I considered the HSR in the context of other nutrition information on the label'.

Figure 12. How the HSR influenced participant purchasing decisions, by country.



Q: How did it influence your choice? (Single response option)

Table 24. How the HSR influenced purchasing decision, by country.

	Australia (n = 674) *n* (%)	**New Zealand (n = 217) *n* (%)**	**Total (n = 891) *n* (%)**
I bought the product because it had more stars compared to other products	370 (54.9)	123 (56.7)	493 (55.3)
I bought the product because it had a high star rating, but didn't compare it to other products	161 (23.9)	42 (19.4)	203 (22.8)
I bought the product because it had a Health Star Rating on the label, while others did not	123 (18.2)	38 (17.5)	161 (18.1)
I bought the product because it had a low star rating	14 (2.1)	8 (3.7)	22 (2.5)
Other – please specify	6 (0.9)	6 (2.8)	12 (1.3)

Q: How did it influence your choice?

All participants were asked how likely or unlikely the HSR is to influence future decisions when buying food (Figure 13). The majority of participants would be at least likely (score of 5 or more on the seven point scale) to use the HSR in the future (58.1%) while 18.1% said they would be unlikely to use the HSR (score of 3 or below) (Table 25).

Figure 13. Participants likelihood of using the HSR in future decisions when buying food.

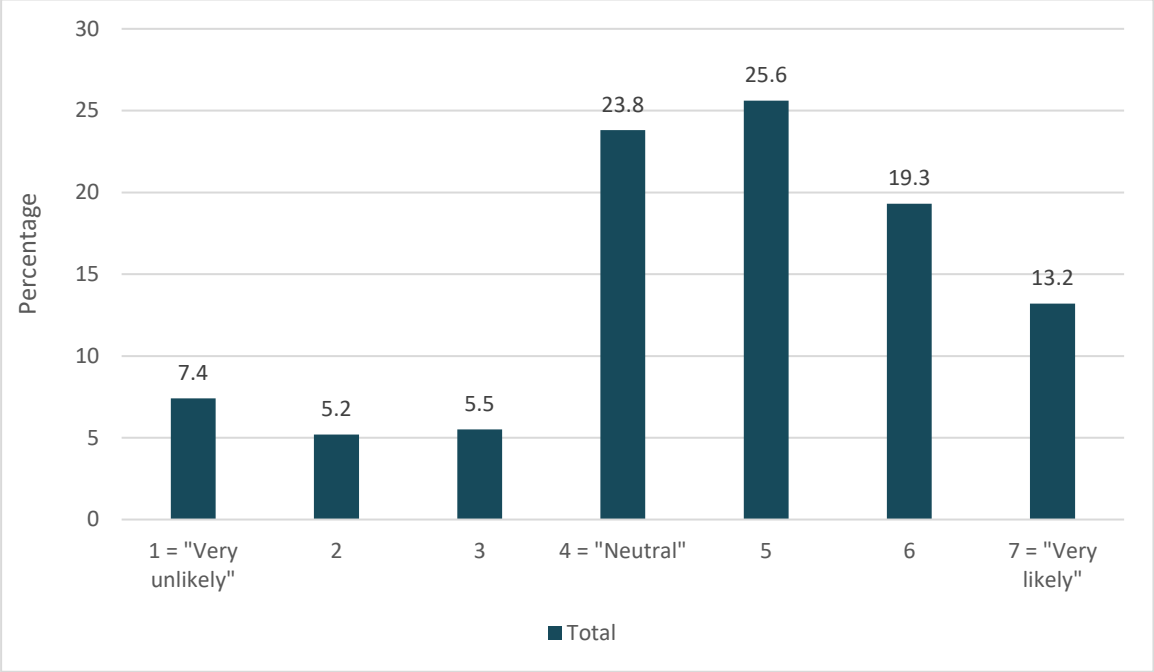


Table 25. Participants likelihood of using the HSR in future decisions when buying food, by country.

	Australia ***n* (%)**	**New Zealand** ***n* (%)**	**Total** ***n* (%)**
1 = “Very unlikely”	107 (6.9)	60 (8.6)	167 (7.4)
2	79 (5.1)	39 (5.6)	118 (5.2)
3	79 (5.1)	44 (6.3)	123 (5.5)
4 = “Neutral”	337 (21.7)	198 (28.4)	535 (23.8)
5	414 (26.6)	163 (23.4)	577 (25.6)
6	320 (20.6)	114 (16.4)	434 (19.3)
7 = “Very likely”	218 (14.0)	78 (11.2)	296 (13.2)

Q: How likely or unlikely is the Health Star Rating to influence choices you make in the future when buying food?

The 18.1% of participants that answered they would be unlikely to use the HSR in the future (n = 408) were asked for reasons why. The most commonly selected reason was “Other nutrition information is more important than the Health Star Rating” (57.6%), followed by “I don’t think the Health Star Rating is accurate” (46.6%) and “I think the Health Star Rating is a marketing tool” (43.1%) (Table 26). The main ‘Other reason’ participants highlighted in the open response option revolved around the HSR not being relevant to them. All of these responses align with major reasons why participants distrust the HSR. Between country differences were not possible to compare statistically due to the small proportion of the sample who reported being unlikely to use the HSR.

Table 26. Reasons participants would be unlikely to use the HSR when making future decisions (n = 408).

	Australia (n = 265) *n* (%)	**New Zealand (n = 143) *n* (%)**	**Total (n = 408) *n* (%)**
Other nutrition information is more important than the Health Star Rating	161 (60.8)	74 (51.7)	235 (57.6)
I don't think the Health Star Rating is accurate	131 (49.4)	59 (41.3)	190 (46.6)
I think the Health Star Rating is a marketing tool	116 (43.8)	60 (42.0)	176 (43.1)
I'm the best judge of what's healthy for me and my family	78 (29.4)	42 (29.4)	120 (29.4)
I usually buy products based on price	69 (26.0)	51 (35.7)	120 (29.4)
I buy the same food products each time regardless of what's on the label	63 (23.8)	45 (31.5)	108 (26.5)
I buy what tastes the best	67 (25.3)	38 (26.6)	105 (25.7)
I buy what I know my family will eat	54 (20.4)	40 (28.0)	94 (23.0)
I have specific dietary requirements, and I buy based on those	34 (12.8)	22 (15.4)	56 (13.7)
There are not enough products with Health Stars on them, so I cannot compare ratings	24 (9.1)	16 (11.2)	40 (9.8)
I'm not sure how to use the Health Star Rating	26 (9.8)	13 (9.1)	39 (9.6)
Another reason (please tell us)	12 (4.5)	3 (2.1)	15 (3.7)

Q: For what reasons would you be unlikely to use the Health Star Rating? Tick all options that apply.
** As respondents were able to select multiple responses, percentages may not add up to 100.*

Comparison to past monitoring

Of the 62.0% of participants in this study that said they had purchased a product that displayed the HSR, the majority (63.9%) said it influenced their choice. In 2018, a similar percentage (64.4%) of Australian consumers stated that the HSR influenced their purchasing decision (Heart Foundation of Australia 2018)[36].

In this study, the majority of participants said they would be at least likely to use the HSR in the future (58.1%), including 61.2% of Australians and 51.0% of New Zealanders. In the Year

[36]AU HSR Monitoring: Did the Health Star Rating system on the product influence your choice? Yes, No, Unsure.

4 HSR Tracker where the same question was asked[37], 53% of Australian participants said they were either likely or very likely to be influenced by the HSR in the future, suggesting intention to use may have increased (Heart Foundation of Australia 2018). In contrast in New Zealand, 50% of the general population in the Year 4 monitoring survey were quite or very likely to use the HSR in the future. Noting that this question was asked differently (Colmar Brunton 2018)[38], it appears that future intention to use may not be increasing in New Zealand.

Similar reasons for shoppers being unlikely to use the HSR were identified in the Year 4 New Zealand monitoring survey, with the most prevalent being "other nutrition information is more important than the HSR" and "I don't believe the HSR" (Colmar Brunton 2018)[39].

New Zealand Education Campaign

The New Zealand Government ran the first phase of a HSR education campaign between the 14th October to 14th November 2024. The campaign aimed to encourage shoppers to correctly use the HSR by comparing the stars on similar products. The campaign involved a combination of supermarket in-store channels such as advertisements on digital screens, in aisles and public address system announcements, as well as radio advertisements during school pick up and drop off times. To assess the reach of the campaign, the survey asked New Zealand participants who reported that they had heard of the HSR (n = 601 or 86.4% of total New Zealand sample), if they had seen or heard any messages about the HSR recently. Only, 8.2% (n = 49) of these participants reported that they had seen messages, 84.9% had not, and 7.0% were unsure (Table 27). The 49 participants who reported seeing messages about the HSR were then asked to indicate where they had seen or heard these messages from a list of options. The most commonly selected option was signs in store (46.9%), followed closely by digital display boards (42.9%). The participants who selected that they had seen the campaign via 'other' channels were asked to specify where they had seen HSR messages. The majority of these qualitative responses referred to television. No television advertisements were a part of this education campaign.

[37] AU HSR Monitoring: How likely or unlikely is the Health Star Rating to influence choices you make in the future when buying food?

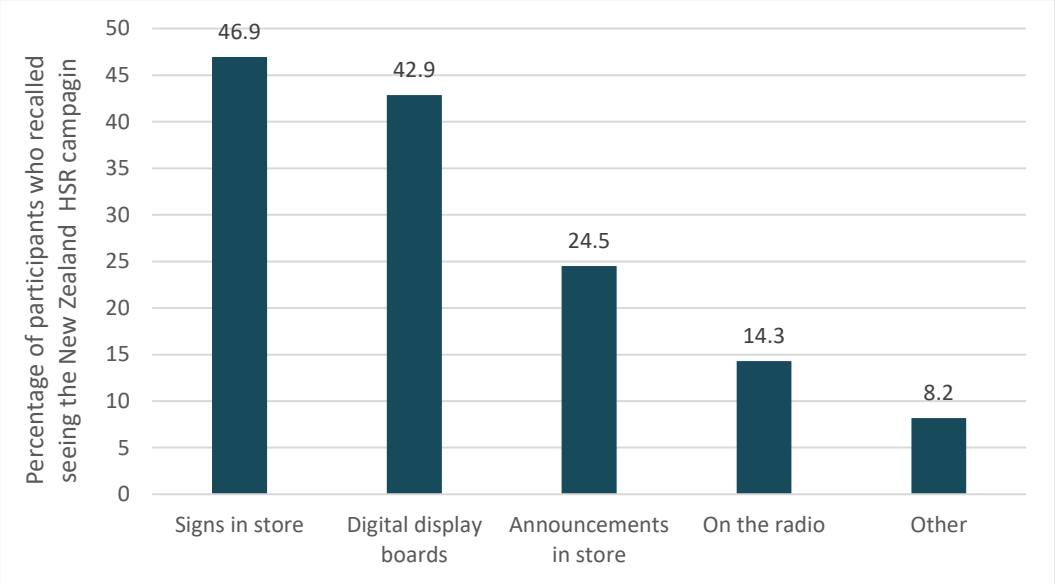
[38] NZ HSR Monitoring: How likely or unlikely are you to use the Health Star Rating the next time you see it on a product you're thinking of buying? Very likely, quite likely, neither likely or unlikely, quite unlikely, very unlikely, don't know.

[39] NZ HSR Monitoring: For what reasons would you be unlikely to use the Health Star Rating? (I buy what tastes the best; I don't believe the Health Star Rating; I usually buy products based on price; I buy what I know my family will eat; There are not enough products with Health Stars on them, so I cannot compare ratings; I'm not sure how to use the Health Star Rating; I have specific dietary requirements, and I buy based on those; Other nutrition information is more important than the Health Star Rating; I'm the best judge of what's healthy for me and my family; Another reason (please tell us); Don't know).

Table 27. Reach of the 2024 HSR education campaign in New Zealand (n = 601)

	Yes n (%)	No n (%)	Unsure n (%)
Have you seen or heard any messages about the Health Star Rating recently?	49 (8.2)	510 (84.9)	42 (7.0)

Figure 14 - Where New Zealand respondents report seeing or hearing about HSR messaging (n = 49)



Question: Where have you seen or heard these messages? Please tick all that apply.

Strengths and Limitations

This large, nationally representative survey provides valuable insights to inform monitoring of the HSR across Australia and New Zealand, including enabling consistent comparisons across nations. The sample achieved a good representation of the general population in both countries via interlocked quotas for age, gender, and location, as well as separate quotas for Aboriginal and Torres Strait Islander Australians, and Māori and Pasifika in New Zealand. However despite quotas, Pasifika participants in New Zealand were difficult to reach and thus were slightly underrepresented. The sample also had a slight skew towards those who had a higher level of education relative to census data in each country, which should be considered in interpreting the results. The non-response rate of potential survey respondents is also unknown. The sample size did not allow for analysis of sub-populations, as the intention of this research was to obtain an understanding of the HSR across the general population. A specific focus on sub-populations of interest will be explored in future research.

The combination of quantitative and qualitative data extends previous monitoring research in the areas of consumer use trust, and how information in the HSR system guides people's food choices. The survey is also one of the first studies to explicitly explore how different HSR formats may impact consumer use, understanding and trust. Reflecting this, an exploratory design with qualitative questions was used, rather than an experimental design, such as a randomised controlled trial, as many factors that could impact the outcome measures could not be accounted for. As such, the study cannot determine cause and effect

related to HSR formats, but provides in depth insights on which to base future research, education or policy design.

In relation to HSR formats, the generalisability of the study is limited by the limited number of HSR formats tested. For example, the study focused on the three most commonly applied variations of the HSR format, and thus information is not available on other format elements including HIGH/LOW text, the presence of a positive nutrient or %DI. To increase the generalisability of the survey both a 0.5 and 1 star difference was used in the study design. However, the study could not capture all possible star differences/variations, nor could it account for all possible variations within a label format. Questions investigating different HSR formats were also not presented on food packages. Not showing additional label elements allowed the effect of these to be controlled for, but it is recognised that this does not reflect a realistic context in which the HSR is utilised by consumers. This design was chosen to understand consumer's objective ability to use the HSR itself, including the impact of format, rather than their ability to use the HSR in the context of other on-pack information. This could be explored in future research.

The nutritional profiles underpinning the HSR labels reflected those of well-known products on the market. Some of these presentations displayed information that could be described as 'conflicting'. That is, for the HSR + tail format, the higher star rated product sometimes had values for sugar, saturated fat and/or sodium that were higher than the lower star rated product. Conflicts like this are common when attempting to give an overall rating to food products and become highlighted when displayed in the tail format. In addition, the positive nutrients the HSR algorithm considers are not displayed on the tail, potentially exacerbating this perceived conflict. As participants were shown these HSR labels early on in the survey, it is possible that responses to following questions may have been affected by seeing conflicting information. In particular, general trust in the HSR was explored after the labels with conflicting information, which may have increased the proportion that distrusted it. This was seen in a small number of the qualitative responses.

The 'correct' response to questions exploring consumers objective understanding of HSR formats was coded as the higher star rating, as that is the intention of the HSR system. However, it is acknowledged that the higher star rating may not necessarily align with the health goals of all consumers.

Due to differences in question wording and an inability to access raw data, findings from previous HSR Monitoring surveys could not be statistically compared to the current survey. As such, although potential trends have been highlighted, definitive conclusions on how consumer awareness, understanding and trust in the HSR have changed over time are unable to be made. Future surveys would benefit from consistency in question wording, to enable tracking of trends over time.

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Appendices

Appendix A. HSR Monitoring 2024 Survey Instrument

Introduction

Thank you for agreeing to participate in this survey. It will take about 15 minutes to complete.

We are conducting research on behalf of a well-known organisation to understand how Australians and New Zealanders go about their grocery shopping.

Your answers will be anonymous and held in confidence, and the responses of everyone who participates in this survey will be combined for analysis. All information provided will only be used for research purposes.

Thank you again for your time.

Section 1- Demographics

Firstly, we have a few questions to ensure we're surveying a wide range of people.
[These questions are to be asked to all participants]

#	Variable [Variable Name]	Question	Response Options [Code]
1	Age [Age]	What is your age?	[Up to three-digit numeric input] [Terminate if < 18 years]
2	Gender [Gender]	How do you describe your gender?	[Single response option] A man or male [1] A woman or female [2] Non-binary [3] A different term (please specify) [4] [Free text field] Prefer not to say [98]
3	Postcode [Postcode and Postcode_NZ]	What is the postcode of your main place of residence?	[Four-digit numeric input] [Autocode to States and Metro/Rural region for AUS and region for NZ]
4a	Cultural background (Australia ONLY) [Background_AU]	How would you describe your **cultural background**? (Please select all that apply)	[Multiple response options] Aboriginal and/or Torres Strait Islander [1] English [2] Irish [3] Scottish [4] Chinese [5] Italian [6] German [7] Indian [8] Greek [9] Dutch [10] Australian [11] Other (please specify): [FREE TEXT] [12] Prefer not to say [EXCLUSIVE] [98] Examples of 'Other (please specify)' are: Spanish, Vietnamese, Hmong, Welsh, Kurdish, Lebanese.
4b	Cultural background (New Zealand ONLY) [Background_NZ]	How would you describe your **cultural background**? (Please select all that apply)	[Multiple response options] New Zealand European [1] Māori [2] Pacific Islander [3] Chinese [4] Indian [5] Other (please specify): [FREE TEXT] [6] Prefer not to say [EXCLUSIVE] [98]

			Examples of 'Other (please specify)' are: Filipino, Korean, Dutch, Australian, and Middle Eastern.
5	Shopper [Shopper]	How much of the **food shopping** do you do for your household?	[Single response option] Someone else does all or the majority of food shopping for my household. [1] I share the food shopping with someone else. [2] I do all or the majority of the food shopping for my household. [3] [Terminate if answers [1]]
6	Number and Ages of People in Household [HHPeople]	How many people live in your household, including you? If you have a shared care arrangement, please include the maximum number of people who live in your household, including yourself.	Adults (18+) [Enter number] [HHPeople_1] Children aged 0 to 4 years [Enter number] [HHPeople_2] Children aged 5 to 14 years [Enter number] [HHPeople_3] Adolescents aged 15 to 17 years [HHPeople_4]
7	Education [Education]	What is the highest level of education you have **completed**?	[Single response option] High school or below [1] Vocational/trade qualification [2] Undergraduate degree [3] Postgraduate degree [4]
8	Language [Language]	Do you speak a language **other than English** at home?	[Single response option] No – English only [0] Yes – Other [1]
9	Household income [HHincome]	Which one of the following categories best describes your **household's total annual income (before tax)**? Please include the income of everyone in your household. If you don't know the exact amount, then please take your best guess.	[Single response option] · Under $25,000 [1] · $25,000 - $35,000 [2] · $35,001 - $45,000 [3] · $45,001 - $55,000 [4] · $55,001 - $65,000 [5] · $65,001 - $75,000 [6] · $75,001 - $85,000 [7] · $85,001 - $105,000 [8] · $105,001 - $115,000 [9] · $115,001 - $125,000 [10] · $125,001 - $145,000 [11] · $145,001 - $165,000 [12] · $165,001 - $185,000 [13] · $185,001 - $205,000 [14] · $205,001 - $225,000 [15] · $225,001 - $245,000 [16] · $245,001 - $265,000 [17] · $265,001 - $285,000 [18] · Above $285,000 [19] · Prefer not to say [98]
10	Self-rated nutrition knowledge [Nutrition_Knowledge]	How much do you know about nutrition?	[Scale: 1 = "I know very little about nutrition", 7 = "I know a lot about nutrition"]
11	Health consciousness [HealthConsc]	How much **effort** do you generally put into maintaining a **healthy diet** for you and/or your household?	[Scale: 1 = "No effort", 7 = "A lot of effort"]
12	Dietary influences [DietFactors]	Do any of the following **currently affect the food choices** you make **for you or your household**? Please select all that apply.	[Multiple responses possible, randomise response order except for 'Other' and 'None of the above'.] Food allergy [DIETFACTORS_1] Coeliac disease [DIETFACTORS_1A] Digestive concerns such as food intolerance, irritable bowel syndrome, etc. [DIETFACTORS_2] Other diet-related health concerns such as diabetes, heart disease, high blood pressure, etc. [DIETFACTORS_3] Pregnancy or breast feeding [DIETFACTORS_4] Looking to lose weight and/or maintain a healthy weight [DIETFACTORS_5] Vegetarian or vegan [DIETFACTORS_6]

			Religious beliefs that affect food choices [DIETFACTORS_7] Training or sports that affects food choices [DIETFACTORS_8] Cost of living pressures [DIETFACTORS_9] None of the above. [EXCLUSIVE] [DF0]

Section 2 - Awareness

The next set of questions is about labelling on food products.

13	Unprompted awareness of HSR [UnpromptedAwareness]	Other than brand names, can you think of anything shown on food packages that can help you choose a healthier food?	[Open verbatim]
14	Prompted consumer awareness [Prompted_Awareness]	Are you aware of any of the following labels on food packages? Health Star Rating Nutrition Information Panel Ingredients list [randomise order displayed. Display photo of each label next to the relevant text.]	[Single response option for each label] Yes [1] No [2] Unsure [3]
15	Self-rated HSR knowledge [Selfrated_Knowledge]	How much, if anything, do you believe you know about the Health Star Rating? Display HSR only format	[Single response option] I know a lot about it. [1] I know a fair amount about it. [2] I know a little bit about it. [3] I have seen or heard of it, but don't know anything about it. [4] I have never seen or heard of it before today. [5]

Section 3 – Exploring HSR formats

[Display to those who are aware of HSR (Yes in Q14)] The next questions are about what you think of the Health Star Rating.

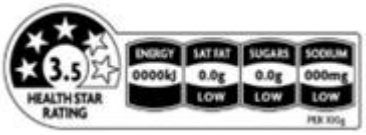
[Display to those who are not aware of HSR (No or Unsure in Q14)] The rest of the survey asks questions about the Health Star Rating which can appear on the front of food packages. We understand you may not have seen it before, but we would like to show you some examples to find out what you think of it.

16	Objective understanding (how to use/compare like products) [Comparison_ Understanding]	Can the Health Star Rating be used to decide which of these foods is healthier? If you are not sure please select 'Don't know'. Images of pairs of products to be shown. 50% of respondents to be shown product combinations 1 and 2 50% of respondents to be shown product combinations 3 and 4 randomise order in which combinations are shown. Only the products differ between pairs; HSR format and value remain consistent.	[Single response option per pair] Yes, the Health Star Rating can be used to decide which of these food products is the healthier option [1] No, the Health Star Rating cannot be used to decide which of these food products is the healthier option [2] Don't know [3]

Participants will be asked Questions 17-20 three times (once for each HSR Format). Order of HSR formats will be randomized. And Label A and Label B will be randomized to appear on the left or right of the screen.
Three formats to be tested (order to be randomized)







Example question 17 (order of labels (left to right)) will be randomized.



Label A



Label B

Participants will also be randomised to see 0.5 or 1 star difference for each of the HSR formats. They will see the same difference for all 3 formats; participants randomised to 0.5 star difference will see HSR values of 3.5 and 4.0, while participants randomised to see 1 star difference will see HSR values of 3.0 and 4.0. See appendix X for images.

17	Objective understanding HSR only [Ob_Understanding_HSRonly]	Please select which label would indicate an overall healthier food product A pair of HSR only labels displayed. The side of the screen (left or right) labels are presented will be randomised. Labels will also be randomised so that 50% of participants see labels that differ by half a star and 50% will see labels that differ by 1 star; responses will be analysed together.	[Single response] Label A [1] Label B [2] Unsure [3] Record time spent answering this question.
18	Ease of understanding	How easy or hard was it to answer this question?	[1-7 scale, where 1 = “Very hard”, 4 = “Neutral”, and 7 = “Very easy”]
19	Reasons for healthiness	Why did you select this as the healthier label? If answered unsure to Q17: Why were you uncertain which label was healthier?	[Open verbatim]
20	Attitudes towards label	Please indicate how much you agree or disagree with the following statements:	[Matrix – Order of statements will be randomised] I trust this label; [Attitude_Trust] This label provides me with the information I need to make a healthy food choice; [Attitude_Information]

			This label provides too much information; [Attitude_too_much_info] [1-7 scale, where 1 = "strongly disagree", 4= "Neutral", and 7 = "strongly agree"]

Section 4 – Trust

29	HSR Beliefs	Below are a series of statements about the Health Star Rating system. How strongly do you agree or disagree with the following statements? Display images of three HSR formats: (i) Stars only, (ii) stars and energy declaration, and (iii) stars, energy and nutrient content declarations	[Matrix - Order of statements will be randomised] I trust the Health Star Rating system [HSR_Trust] The Health Star Rating system has a poor reputation [Reputation] The Health Star Rating system is accurate and honest [Transparency] Having a Health Sar Rating on a product's label increases my trust in the food product/company [Product_Trust] [1-7 scale, where 1 = "Strongly disagree", and 7 = "Strongly agree"]
30	Trust Reasons [Trust_reasons]	Answers 1-3 to [HSR_Trust]: Why do you not trust the Health Star Rating system? Answers 4 to [HSR_Trust]: What influences your trust in the Health Star Rating system? Answers 5-7 to [HSR_Trust]: Why do you trust the Health Star Rating system?	[Open verbatim]

Section 5 – Use

31	Frequency of use [Use_Frequency]	How often do you look for the Health Star Rating when shopping for food in the supermarket?	[Single response option] Always [1] Most of the time [2] Sometimes [3] Rarely [4] Never [5] Unsure [6]
32	How consumers use the HSR [Use_purpose]	Those who report using the HSR at least rarely (aka excluding never or unsure [5] or [6] for [Use_Frequency] Which of the following scenarios best describes how you use the Health Star Rating? Exclude those who answer [5] to [Use_Frequency]	[Single response option] I frequently look out for the Health Star Rating on food products I buy [1] I only look out for the Health Star Rating when I am buying a new food product or brand for the first time [2] I only look out for the Health Star Rating on certain types of food products - please specify [open text box] [3] Other – please specify [open text box]

			[4] Order of statements will be randomised except for other which will appear at the end
33	Self-reported use [Selfreported_Use]	In the past three months, have you purchased a product that had a Health Star Rating on the label?	[Single response option] Yes [1] No [2] Unsure [3]
34	HSR Influence [HSR_Influence]	If participants answer [1] to [Selfreported_Use], ask: Did the Health Star Rating system on the label influence your choice?	[Single response option] Yes [1] No [2]
35	HSR Influence on product choice [Influence_choice]	If participants answer [1] to [HSR_influence], ask: How did it influence your choice?	[Single response option] I bought the product because it had more stars compared to other products [1] I bought the product because it had a high star rating, but didn't compare it to other products [2] I bought the product because it had a Health Star Rating on the label, while others did not [3] I bought the product because it had a low star rating [4] Other [open text box]] [5] Order of statements will be randomised except for other which will appear at the end
36	Future influence of HSR [Future_Influence]	How likely or unlikely is the Health Star Rating to influence choices you make in the future when buying food?	[1-7 scale, where 1 = "Very unlikely", 4 = "Neutral", and 7 = "Very Likely"]
37	Reasons for lack of influence [No_Influence]	Ask participants who answer [Future_Influence] with [1], [2] or [3]: For what reasons would you be unlikely to use the Health Star Rating? Tick all options that apply.	[Multiple choice] I buy what tastes the best [1] I don't think the Health Star Rating is accurate [2] I usually buy products based on price [3] I buy what I know my family will eat [4] There are not enough products with Health Stars on them, so I cannot compare ratings [5] I'm not sure how to use the Health Star Rating [6] I have specific dietary requirements, and I buy based on those [7] Other nutrition information is more important than the Health Star Rating [8] I'm the best judge of what's healthy for me and my family [9] I buy the same food products each time regardless of what's on the label [10] I think the Health Star Rating is a marketing tool [11] Another reason (please tell us) [open text box] [12] Order of statements will be randomised except for Another Reason which will appear at the end

Section 6 – NZ Education Campaign

38a	Exposure to NZ HSR campaign [Campaign_exposure]	Ask participants in NZ only who answer [1] to [Prompted_Awareness]: Have you seen or heard any messages about the Health Star Rating recently? Display photos of HSR campaign	[Single response option] Yes [1] No [2] Unsure [3]
38b	Exposure to NZ HSR campaign [Campaign_location]	Ask participants in NZ only who answer [1] to [Campaign_exposure]: Where have you seen or heard these messages? Please tick all that apply.	[Multiple response options:] Signs in store [1] Digital display boards [2] Announcements instore [3] On the radio [4] Other [open text box] [5] Order of statements will be randomised except for Other which will appear at the end

Thank you page

Thank you for taking the time to complete this survey!
The Health Star Rating system is a front-of-pack labelling system developed for use in Australia and New Zealand. It was developed by the Government, in collaboration with industry, public health and consumer groups. It is designed to help people choose healthier packaged foods when shopping. The system provides a rating from 0.5 to 5 stars – on similar products, the more stars, the healthier the choice. When looking for the stars, remember to only compare similar products. For example, the system helps choose between one breakfast cereal and another, not between yoghurt and pasta sauce.
Watch this short video to find out more or visit the Health Star Rating website.
[Health Star Rating animation]

Appendix B. Images from survey

50% of participants saw pairs of HSR that differed by 0.5 stars for all three formats (i.e., HSR values of 3.5 and 4.0), while the other 50% saw pairs that differed by 1 star for all three formats (i.e., HSR values of 3.0 and 4.0).

Figure 15. HSR Only formats



Figure 16. HSR + Energy formats

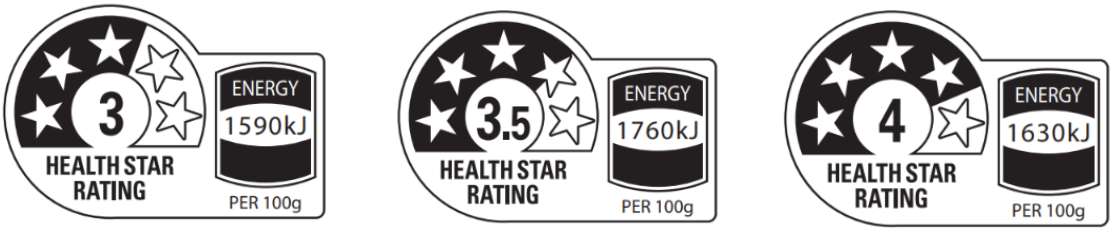
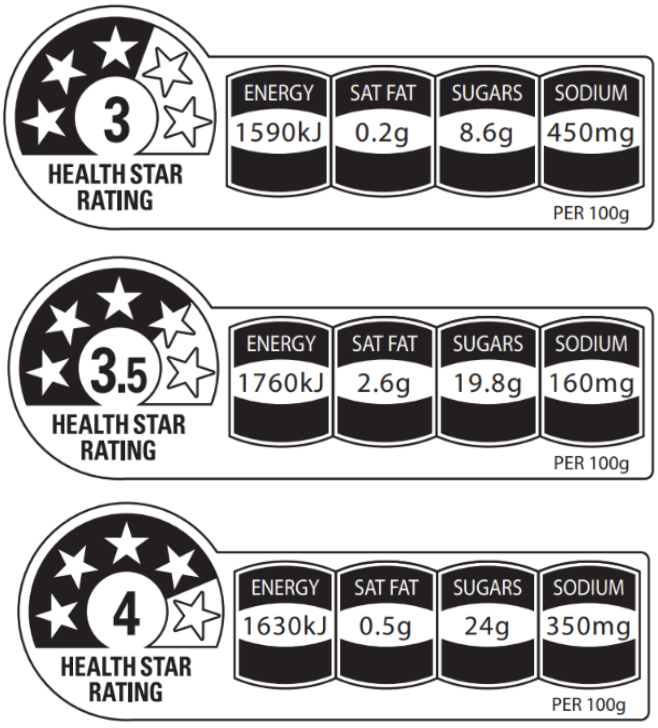


Figure 17. HSR + tail formats



Appendix C. Factor analyses – Trust

An unrotated principle components analysis found that the four trust items (question 29) loaded onto one factor, suggesting that these four questions measured a single construct. This is demonstrated by the fact that only one factor had eigenvalues over Kaiser's criterion of 1 (Field, 2018; all other eigen values ranged from 0.119 to 0.702). All trust items loaded strongly onto this one factor. The factor loading matrix, eigen value and % of variance explained for this one factor are presented in Table 28. The Kaiser-Meyer-Olkin measure of sampling adequacy was .804 (above the minimum criterion of 0.5; Field, 2018), and Bartlett's test of sphericity was significant (all $p < .001$), suggesting reasonable factorability.

The implied index from the factor analysis was used in regression analysis as one measure of participants trust in the HSR.

Table 28: Summary of Factor Analysis results for HSR trust index

Trust item	**Factor Loadings for one factor**
Trust 1: 'I trust the HSR system'	0.95
Trust 2: 'The HSR system has a poor reputation'^	0.63
Trust 3: 'The HSR is accurate and honest'	0.93
Trust 4: 'Having a HSR on a products label increased my trust in the food product/company'	0.92
Eigenvalue	**2.98**
% of variance	**74.70%**

^*This item was reverse coded for analysis*

Appendix D. Multinomial regression – Understanding of the HSR

As the proportional odds for ordinal regression assumption was violated, a multinomial logistic regression was used to determine whether various factors (trust in the HSR (trust index), health consciousness, self-rated nutrition knowledge, EHHI, medical related dietary factor, lifestyle related dietary factor, age, education[40], cultural background[41], gender, language spoken at home, and country) significantly predicted understanding of the HSR.

The model was statistically significant ($\chi^2(56) = 789.248$, $p < .001$). The model explained 32.2% of the variance in consumer behaviour (Nagelkerke $R^2 = .322$).

The full statistical results of the multinomial logistic regression analysis are available in Table 29 - Table 32 below.

[40] For analysis education was recategorised into 'Tertiary educated' and 'Non-Tertiary educated'

[41] For analysis cultural background was recategorised into 'European background', 'Non-European background' and 'prefer not to say'.

Table 29: Multinomial logistic regression testing various predictors of Understanding of the HSR

					95% CI for Exp(β)	
	β	Wald	*p*	OR	Lower	Upper
I know a lot ($\chi^2(56) = 789.248$, $p < .001$)						
Trust in HSR	0.856	33.699	0.000	2.355	1.763	3.144
Age	-0.091	81.566	0.000	0.913	0.895	0.931
Health consciousness	0.542	13.286	0.000	1.719	1.284	2.300
Self-rated nutrition knowledge	1.391	75.830	0.000	4.019	2.939	5.497
Gender (female vs male)	-0.282	0.896	0.344	0.754	0.421	1.352
EHHI (prefer not to say vs low income)	-0.416	0.518	0.472	0.660	0.213	2.046
EHHI (high income vs low income)	-0.148	0.142	0.706	0.862	0.399	1.864
EHHI (middle income vs low income)	0.304	0.720	0.396	1.355	0.672	2.731
Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.482	2.221	0.136	1.620	0.859	3.056
Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.096	0.097	0.755	1.101	0.601	2.017
Cultural background (European background vs non-European background	0.432	0.999	0.318	1.540	0.660	3.594
Country (Australia vs New Zealand)	0.671	4.904	0.027	1.955	1.080	3.539
Education (non-tertiary vs tertiary)	0.088	0.078	0.780	1.092	0.589	2.023
Language spoken at home (Other language vs English only)	-0.202	0.194	0.659	0.817	0.332	2.009

Reference category: 'I have never seen or heard of it before today'

Table 30: Multinomial logistic regression testing various predictors of Understanding of the HSR

	β	Wald	*p*	OR	95% CI for Exp(β) Lower	Upper
I know a fair amount ($\chi^2(56) = 789.248$, $p < .001$)						
Trust in HSR	0.519	17.656	0.000	1.680	1.319	2.140
Age	-0.066	56.544	0.000	0.936	0.920	0.952
Health consciousness	0.283	5.636	0.018	1.327	1.051	1.676
Self-rated nutrition knowledge	0.808	39.774	0.000	2.243	1.745	2.883
Gender (female vs male)	-0.265	1.047	0.306	0.767	0.462	1.275
EHHI (prefer not to say vs low income)	-0.389	0.725	0.395	0.678	0.277	1.659
EHHI (high income vs low income)	-0.120	0.125	0.723	0.887	0.456	1.725
EHHI (middle income vs low income)	0.047	0.024	0.878	1.048	0.573	1.920
Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.571	4.015	0.045	1.770	1.013	3.095
Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.330	1.482	0.223	1.391	0.818	2.366
Cultural background (European background vs non-European background	0.201	0.293	0.588	1.222	0.591	2.529
Country (Australia vs New Zealand)	0.606	5.870	0.015	1.834	1.123	2.994
Education (non-tertiary vs tertiary)	0.190	0.482	0.488	1.209	0.707	2.067
Language spoken at home (Other language vs English only)	0.085	0.043	0.836	1.088	0.488	2.425

Reference category: 'I have never seen or heard of it before today'

Table 31: Multinomial logistic regression testing various predictors of Understanding of the HSR

					95% CI for Exp(β)	
	β	Wald	*p*	OR	Lower	Upper
I know a little ($\chi^2(56) = 789.248$, $p < .001$)						
Trust in HSR	0.183	2.421	0.120	1.201	0.953	1.514
Age	-0.049	32.150	0.000	0.953	0.937	0.969
Health consciousness	0.185	2.675	0.102	1.203	0.964	1.502
Self-rated nutrition knowledge	0.264	4.799	0.028	1.302	1.028	1.649
Gender (female vs male)	-0.364	2.101	0.147	0.695	0.424	1.137
EHHI (prefer not to say vs low income)	-0.282	0.425	0.514	0.754	0.323	1.762
EHHI (high income vs low income)	-0.034	0.010	0.919	0.967	0.507	1.844
EHHI (middle income vs low income)	0.124	0.174	0.676	1.132	0.632	2.029
Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.510	3.376	0.066	1.666	0.967	2.871
Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.355	1.807	0.179	1.426	0.850	2.393
Cultural background (European background vs non-European background	0.406	1.265	0.261	1.500	0.740	3.043
Country (Australia vs New Zealand)	0.539	5.052	0.025	1.715	1.071	2.745
Education (non-tertiary vs tertiary)	0.223	0.709	0.400	1.250	0.743	2.103
Language spoken at home (Other language vs English only)	0.287	0.516	0.472	1.333	0.609	2.920

Reference category: 'I have never seen or heard of it before today'

Table 32: Multinomial logistic regression testing various predictors of Understanding of the HSR

	β	Wald	*p*	OR	95% CI for Exp(β) Lower	Upper
I have seen it but don't know anything ($\chi^2(56) = 789.248$, $p < .001$)						
Trust in HSR	-0.056	0.185	0.667	0.946	0.734	1.219
Age	-0.023	6.187	0.013	0.977	0.959	0.995
Health consciousness	0.123	0.954	0.329	1.131	0.884	1.446
Self-rated nutrition knowledge	-0.136	1.026	0.311	0.873	0.672	1.135
Gender (female vs male)	-0.211	0.568	0.451	0.809	0.467	1.403
EHHI (prefer not to say vs low income)	0.655	1.994	0.158	1.925	0.776	4.775
EHHI (high income vs low income)	0.377	1.045	0.307	1.459	0.707	3.007
EHHI (middle income vs low income)	0.494	2.208	0.137	1.638	0.854	3.141
Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.415	1.840	0.175	1.514	0.831	2.758
Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.108	0.135	0.713	1.115	0.625	1.987
Cultural background (European background vs non-European background	0.139	0.118	0.731	1.150	0.519	2.546
Country (Australia vs New Zealand)	0.619	5.268	0.022	1.858	1.095	3.153
Education (non-tertiary vs tertiary)	0.391	1.734	0.188	1.479	0.826	2.648
Language spoken at home (Other language vs English only)	0.534	1.299	0.254	1.706	0.681	4.272

Reference category: 'I have never seen or heard of it before today'

Appendix E. Multilevel logistic regression – Objective understanding of the HSR

A multilevel logistic regression was used to identify factors that are associated with selecting the correct HSR label whilst accounting for the clustering effects of HSR format and multiple responses per participant. A base intercept model that only included random intercepts was used to test whether it was necessary to include the cluster in the model. Intraclass correlation coefficients (ICC) were investigated to explain the proportion of variance that exists between clusters (i.e. within subject and within cluster variation (HSR format)), in each model. A larger ICC indicates that a larger proportion of variance is explained between units within the cluster. The HSR format had an ICC of 0.1775. That is the variability between HSR formats was 17.8%. Within subject ICC was 0.2217. That is the variability between participants was 22.2%. The clustering effect of the order in which participants saw the HSR format was also explored. This only explained 1.3% of variance between groups, as such it was not included in the final model. All variables in the final model did not violate the assumption of multicollinearity. The Akaike information criterion (AIC) (which can be considered a measure of deviance) was also used to explore if the model was a better fit by adding each variable into the equation (with a lower AIC indicating a better fitting model). The AIC was lower when the within subject and HSR format were added as clustering variables.

Fixed effects included the following factors: trust in the HSR (trust index), health consciousness, EHHI, medical related dietary factor, lifestyle related dietary factor, use of the HSR, HSR understanding, age, education[42], cultural background[43], gender, language spoken at home, and country. Those who selected unsure (n = 20) for use frequency were, those who selected gender other than female or male (n = 5), selected prefer not to say for cultural background (n = 15) were removed from the analysis due to small samples. Variance of the random effect of HSR format (SD = 1.164) and user response (SD = 1.176) clustering variables were highly significant in the final model. The full statistical results of the multilevel logistic regression analysis are available in Table 33.

Table 33: Multilevel logistic regression testing various predictors of objective understanding of the HSR

	p	OR	Lower	Upper
Intercept: Log likelihood = -2746.8, EST = 4.768, *P = .0466*				
Age	0.124	1.0044973	0.9987734	1.0102539
Trust in HSR	<.01	2.1966473	1.9700790	2.4492719
Gender (female vs male)	0.564	1.0536985	0.8822829	1.2584179
Language spoken at home (Other language vs English only)	0.986	1.0024652	0.7548436	1.3313175
Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.279	1.1059183	0.9216782	1.3269875

[42] For analysis education was recategorised into 'Tertiary educated' and 'Non-Tertiary educated'

[43] For analysis cultural background was recategorised into 'European background', 'Non-European background' and 'prefer not to say'.

Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.327	1.0941181	0.9139001	1.3098745
Time taken to choose the healthier label	<.01	0.1754381	0.1150075	0.2676217
Use of the HSR (always vs never)	0.959	1.0081109	0.7395333	1.3742282
Use of the HSR (most of the time vs never)	0.928	0.9858675	0.7230292	1.3442537
Use of the HSR (sometimes vs never)	0.307	1.2024389	0.8444921	1.7121052
Use of the HSR (rarely vs never)	0.988	0.9962267	0.6171615	1.6081165
Education (non-tertiary vs tertiary)	0.311	0.9071775	0.7514614	1.0951607
Self-rated HSR knowledge (I have seen or heard of it, but don't know anything vs haven't seen it)	0.367	1.2712724	0.7543683	2.1423667
Self-rated HSR knowledge (I know a little vs haven't seen it)	0.066	1.5776828	0.9705154	2.5647022
Self-rated HSR knowledge (I know a fair amount vs haven't seen it)	0.048	1.6706150	1.0049265	2.7772724
Self-rated HSR knowledge (I know a lot vs haven't seen it)	0.25	1.4135429	0.7842751	2.5477073
Health consciousness	0.02	0.8925815	0.8111999	0.9821274
EHHI (high income vs prefer not to say)	0.274	1.0573558	0.9568386	1.1684325
EHHI (middle income vs prefer not to say)	0.779	1.0548390	0.7259657	1.5326968
EHHI (low income vs prefer not to say)	0.899	0.9765742	0.6764076	1.4099445
Country (New Zealand vs Australia)	0.521	0.8875117	0.6162172	1.2782458
Cultural background (European background vs non-European background	0.292	0.9032797	0.7476986	1.0912342

Appendix F. Multinomial regression – Use of the HSR

Use of the HSR

As the proportional odds for ordinal regression assumption was violated, a multinomial logistic regression was used to determine whether various factors (trust in the HSR (trust index), self-reported nutrition knowledge, health consciousness, EHHI, understanding of the HSR[44], medical related dietary factor, lifestyle related dietary factor, age, education[45], cultural background[46], gender, language spoken at home, and country) significantly predicted frequency of HSR use.

Due to small numbers in some of the outcome categories for the frequency of use in the HSR, categories were recategorised into the following: always, most of the time, sometimes and rarely/never. Unsure (n = 20) was excluded from the analysis. Due to small numbers in some responses of self-reported understanding of the HSR and HSR frequency of use identified in cross-tabs, self-reported understanding was recategorised into the following categories: 'I know a lot about it', 'I know a fair amount about it' and 'I know a little bit about it/I have seen or heard of it before/I have never seen it before'.

The model was statistically significant ($\chi^2(45) = 1063.830$, $p < .001$). The model explained 43.6% of the variance in consumer behaviour (Nagelkerke $R^2 = .436$).

The full statistical results of the multinomial logistic regression analysis are available in Table 34 - 37 below.

Table 34: Multinomial logistic regression testing various predictors of frequency of use of the HSR

					95% CI for Exp(β)	
	β	Wald	*p*	OR	Lower	Upper
Always use the HSR ($\chi^2(45) = 1063.830$, $p < .001$)						
Trust in HSR	2.091	208.994	0.000	8.095	6.097	10.749
Age	-0.007	0.940	0.332	0.993	0.980	1.007
Health consciousness	0.666	28.294	0.000	1.945	1.522	2.486
Self-rated nutrition knowledge	-0.118	0.931	0.335	0.889	0.699	1.130
Gender (female vs male)	0.026	0.014	0.905	1.026	0.669	1.574
EHHI (high income vs low income)	-0.170	0.368	0.544	0.844	0.487	1.461
EHHI (middle income vs low income)	-0.356	1.876	0.171	0.701	0.421	1.166

[45] For analysis education was recategorised into 'Tertiary educated' and 'Non-Tertiary educated'

[46] For analysis cultural background was recategorised into 'European background', 'Non-European background' and 'prefer not to say'.

Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.584	6.739	0.009	1.793	1.154	2.787
Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.350	2.480	0.115	1.418	0.918	2.192
Cultural background (European background vs non-European background	-0.362	1.267	0.260	0.696	0.371	1.308
Country (Australia vs New Zealand)	0.733	8.562	0.003	2.082	1.274	3.402
Education (non-tertiary vs tertiary)	0.157	0.439	0.507	1.170	0.735	1.862
Language spoken at home (English only vs other language)	-0.873	7.440	0.006	0.418	0.223	0.782
Self-rated HSR knowledge (know a lot vs know a little/have seen it but know nothing/haven't seen it)	3.113	62.957	0.000	22.498	10.426	48.544
Self-rated HSR knowledge (know a fair amount vs know a little/have seen it but know nothing/haven't seen it)	1.738	41.252	0.000	5.686	3.346	9.665

Reference category: Rarely/Never use the HSR

Table 35: Multinomial logistic regression testing various predictors of frequency of use of the HSR

					95% CI for Exp(β)	
	β	Wald	*p*	OR	Lower	Upper
Most of the time use the HSR ($\chi^2(45) = 1063.830$, $p < .001$)						
Trust in HSR	1.700	325.238	0.000	5.473	4.550	6.583
Age	-0.010	4.796	0.029	0.990	0.982	0.999
Health consciousness	0.343	18.444	0.000	1.410	1.205	1.649
Self-rated nutrition knowledge	-0.090	1.210	0.271	0.914	0.778	1.073
Gender (female vs male)	0.013	0.008	0.931	1.013	0.763	1.345
EHHI (high income vs low income)	0.040	0.048	0.827	1.041	0.724	1.497
EHHI (middle income vs low income)	-0.059	0.118	0.731	0.943	0.673	1.321

Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.412	7.618	0.006	1.511	1.127	2.025
Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.209	2.036	0.154	1.232	0.925	1.641
Cultural background (European background vs non-European background	-0.375	2.859	0.091	0.687	0.445	1.062
Country (Australia vs New Zealand)	0.618	15.530	0.000	1.855	1.364	2.522
Education (non-tertiary vs tertiary)	-0.125	0.650	0.420	0.883	0.652	1.195
Language spoken at home (English only vs other language)	-0.188	0.624	0.430	0.828	0.519	1.322
Self-rated HSR knowledge (know a lot vs know a little/have seen it but know nothing/haven't seen it)	1.357	17.176	0.000	3.886	2.045	7.384
Self-rated HSR knowledge (know a fair amount vs know a little/have seen it but no nothing/haven't seen it)	1.407	72.330	0.000	4.083	2.952	5.646

Reference category: Rarely/Never use the HSR

Table 36: Multinomial logistic regression testing various predictors of frequency of use of the HSR

					95% CI for Exp(β)	
	β	Wald	*p*	OR	Lower	Upper
Sometimes use the HSR ($\chi^2(45) = 1063.830$, $p < .001$)						
Trust in HSR	1.114	201.021	0.000	3.046	2.611	3.553
Age	-0.009	4.950	0.026	0.991	0.984	0.999
Health consciousness	0.161	5.545	0.019	1.175	1.027	1.344
Self-rated nutrition knowledge	-0.094	1.706	0.192	0.910	0.790	1.048
Gender (female vs male)	-0.073	0.323	0.570	0.929	0.722	1.196
EHHI (high income vs low income)	0.067	0.166	0.683	1.069	0.776	1.474
EHHI (middle income vs low income)	-0.035	0.052	0.820	0.966	0.718	1.300

Medical-related dietary factors affecting food choices (has at least one vs do not have any)	0.178	1.778	0.182	1.195	0.920	1.552
Lifestyle-related dietary factors affecting food choices (has at least one vs. do not have any)	0.102	0.617	0.432	1.107	0.859	1.429
Cultural background (European background vs non-European background	-0.191	0.915	0.339	0.826	0.559	1.221
Country (Australia vs New Zealand)	0.264	3.913	0.048	1.302	1.002	1.691
Education (non-tertiary vs tertiary)	-0.153	1.248	0.264	0.858	0.656	1.122
Language spoken at home (English only vs other language)	-0.165	0.592	0.442	0.848	0.556	1.292
Self-rated HSR knowledge (know a lot vs know a little/have seen it but know nothing/haven't seen it)	0.344	1.100	0.294	1.411	0.741	2.686
Self-rated HSR knowledge (know a fair amount vs know a little/have seen it but know nothing/haven't seen it)	0.827	29.717	0.000	2.287	1.698	3.079

Reference category: Rarely/Never use the HSR