University of British Columbia

Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

The Impact of Food Labels on Consumers' Sustainable Food Choices

Prepared by: Mengshan Li, Yumi Lingjie Ma, Haruka Masuda, Jack Wang, Hanxiang Xu, Kelly Yeung

Prepared for:

Course Code: PSYC 421

University of British Columbia

Date: 14 April 2022

The Impact of Food Labels on Consumers' Sustainable Food Choices

Group 17 Beleaf

Mengshan Li, Yumi Lingjie Ma, Haruka Masuda,

Jack Wang, Hanxiang Xu, Kelly Yeung

April 14th, 2022

PSYC 421 001

University of British Columbia

Executive Summary

In recent years, food sustainability has become a larger issue in the discussion surrounding climate change. In our research, we examine the effectiveness of different food labels on consumers' sustainable food choices: we compare text-based labels measuring carbon output, and labels measuring climate-friendliness using the recognizable 5-star rating scale. We expect to find that labels using the 5-star scale are easier for consumers to understand as opposed to carbon emission labels. We therefore also expect to see that consumers more frequently choose more sustainable food options when observing the 5-star scale labels than when they observe the text-based labels. Conducting an one-way ANOVA and a post-hoc Tukey test, we find a significant difference between our two experimental conditions and control condition ($p<0.01$); the difference between the experiment conditions is not significant ($p = 0.08$). These results indicate that both experimental conditions had more participants choosing more sustainable food options than the control condition, but that text-based labels are as effective as the 5-star scale labels at getting participants to choose more sustainable food options. This finding indicates that it is important to measure specific concepts when designing food labels, to enable these labels to communicate their meanings effectively.

Introduction

The food system is a major contributor to greenhouse gas (GHG) emission levels, accounting for 19% to 29% of global GHG emissions (Camilleri et al., 2018). It has been shown that using greenhouse gas emissions labels affects consumer behavior (Brunner et al., 2018). Labels increase transparency, reduce negative external effects, and illustrate the negative effects of consumption behaviors (Emberger-Klein & Menrad, 2018). Using carbon emission food labels as reference, consumers can compare the values between food products, and be encouraged to make sustainable food choices. Food labels have shown to produce cognitive dissonance and feelings of responsibility, and affect consumers' purchasing behaviors (Edenbrandt et al., 2021). Edenbrandt et al. explored the moderator variables of food label information, and found that the effectiveness of carbon emission labels is stronger for 'info-takers,' who are willing to access information, compared with 'info-decliners,' who decline information. Research has been conducted on how different carbon emission label designs affect consumers' purchasing behaviors when making sustainable food choices (Feucht & Zander, 2018). Feucht and Zander (2018) found that participants preferred a label with a horizontal scale, specific amounts of carbon emissions, and traffic-light-like colors to indicate how good for the environment a food product is. It seemed easier for participants to understand the environmental impact of a food when referencing the horizontal scale's traffic light color scheme, rather than when referencing a vertical scale with letter grades (A, B, C, and beyond) to indicate carbon emissions. In addition, Emberger-Klein and Menrad (2018) found that a scale label with letter grades of A+, A, B, and C in a traffic-light color scheme (but no specific carbon emission amount) to indicate environmental impact, was preferred by and motivated consumers to choose low carbon emission foods over certification labels established by environmentally concerned organizations. Camilleri et al. speculates that consumers' lack of knowledge regarding emission labels may render food labels with a lot of information unhelpful and confusing, and that the effectiveness of the traffic-light color scheme is a simple heuristic for choosing a green (good) product over a red (bad) product (2018). Overall, the current literature has focused on the effect of food labels utilizing a traffic-light color ranking; few if any studies have examined the effectiveness of

alternatives to the traffic-light ranking system — alternatives including recognizable, frequently-used icons, such as the 5-star rating scale. Our study examines these alternatives, comparing three different carbon emission label designs: text-based carbon emissions labels, labels using the 5-star rating scale, and a control condition with no label. Our research question is "How do different food labels affect people's decisions to choose sustainable food?" We hypothesize that people are more likely to choose sustainable food with labels using the 5-star rating scale, than with text-based carbon emissions labels or without labels altogether.

Social responsibility is a driving force for consumers to purchase sustainable products. Buying sustainable food may bolster consumers' self-esteem, as those who care about their self-value may believe they are fulfilling their social responsibilities when they feel they are contributing to helping the environment. There are several forces restraining people from making sustainable food choices. People may perceive sustainable foods as tasting bad or less flavorful. The cost of sustainable foods may be higher than less climate-friendly foods, which could be a powerful deterrent. People may also have health concerns about reducing the amount of meat (a commonly less climate-friendly product) in their diet, as they may think consuming meat is the only way to include protein in their diet. There may be a lack of information about the environmental impact of food production; most people are not food science experts, and will not understand how their choices will impact their environment.

Method

***Participants*:** After a power analysis (assuming Cohen's d =0.25, alpha=0.05, power=0.95), we decided that we needed a minimum of 252 participants in our study; we expected the majority of our participant sample to be UBC students. We designed a survey on UBC Qualtrics and received a total of 230 valued responses, which were all randomly assigned to three conditions: 80 to experimental condition 1, 71 to experimental condition 2, and 79 to the control condition.

We asked 11 demographic questions, of which 8 (Appendix C) were mandatory and 3 were follow-up questions. In our demographics section we asked: whether the participants were students, what their gender and racial identity were, if they had dietary restrictions, and their views about climate change and their political values. Responses indicated that 76.28% of participants were UBC students and the majority were made up of women (70.20%). The remaining 30.00% were made up of men (27.76%) and non-binary, transgender, or other genders (3.00%). Nearly 90.00% of our participants were Asian and the majority of our participants were aged 18 to their early 20s, while the oldest was 52 years old.

***Conditions*:** We used a between-group design with three conditions: experimental conditions 1 and 2, and a control condition. Our independent variables were the presentation of text-based labels (Condition 1), 5-star scale labels (Condition 2), and the absence of labels (control condition). For each question in Condition 1, or the condition with text-based carbon emission labels, there were two identical pictures of food. Each picture had a label that specified the number of grams of carbon produced per dish, and both pictures were labeled with different amounts (more or less grams than the other) of carbon output. For each question in Condition 2 or the condition with the five-star scale labels, there were two identical pictures of food with labels. On each label there was a rating of one to five stars, which indicated how climate-friendly a dish was (with more stars meaning that the dish was more climate-friendly) and each picture had a rating different (more or less stars) from the other. The pictures in the control condition did not have labels. All the conditions used the same 10 pairs of pictures of food; each pair was the

same dish, and above each picture there was a different set of ingredients, with one picture having more sustainable ingredients than the other.

***Measures*:** Our dependent variable was the frequency of our participants' choosing the more sustainable food option over the less environmentally friendly option. We designed our survey on Qualtrics, which had four sections of questions: condition 1, condition 2, control condition, and demographics. Through random assignment, the participants were assigned to condition 1, condition 2, or the control condition. After they answered the questions in their condition, all participants answered the demographic questions section. We designed each condition to have ten questions, and used the same 10 pairs of pictures for each condition; each pair of pictures were identical. In condition 1, for each question the participants were asked to choose between a pair of pictures, which were identical but with different amounts of carbon output on their respective label. In condition 2, participants made a similar choice for each question: choose between two pictures, which were identical but with a different 5-star rating. One star indicated that the dish was not climate-friendly, and five stars indicated that the dish was very climate-friendly. In the control condition, for each question participants chose between two pictures, neither of which had any text-based labels or 5-star scale labels. We felt that our survey questions were relevant to our study because we could use a participant's average number of sustainable food choices to calculate the percentage of the green choice the participant makes. With the data, we can figure out the participant's sustainable choice based on the average green choice they have in one condition.

***Procedure*:** We launched our survey via UBC Qualtrics on March 6th, 2022, and officially stopped collecting responses on March 31st, 2022. During our data collection, we struggled to collect the calculated minimum of 252 responses; ultimately, although we collected 324 responses, we were only able to use 230 valued responses in our survey report.

In our study, we provided an introduction to our research project and an informed consent form for the participants to sign. If the participants chose "No, I don't" when asked if they would consent, the survey would end. After consenting, the participants were randomly assigned to condition 1, 2, or the control condition, where they would be shown 10 different meals, and asked to pick between two pictures of the same meal. After participants finished the survey questions for their respective condition, they were directed into the debrief form to end the study.

Results

After finishing our data collection, we conducted an one-way ANOVA test, and found out that between all of the three conditions, there was a significant difference with a large effect size (see Table 1, $F(2,227)=19.15$, $p = .001$, $\eta^2_p = .014$). Condition 1(text-label, $M_1=65.25\%$, $SD_1=29.55\%$), and Condition 2 (5 star-scale, $M_2=55.49\%$, $SD_2=31.88\%$) had significantly higher means than our control condition (no labels, $M_3= 38.23\%$, $SD_3 = 21.41\%$). Based on our post-hoc Tukey test (see Table 2 & 3), when comparing both experimental conditions with the control condition, there were significant mean differences between the experimental conditions and the control condition ($M_{D\ 1\ VS\ 3} = 27.20\%$, $M_{D\ 2\ VS\ 3} = 17.27\%$, $p < .001$). These results imply that participants are more inclined to choose sustainable foods when presented with text-based or 5 star-scale labels than when presented with no labels at all.

We also determined whether labels using the 5-star scale were more effective at getting participants to choose more climate-friendly food than text-based labels were. Looking at our descriptive statistics, Condition 1 ($M_1=65.25\%$, $SD_1=29.55\%$) was visually higher than Condition

2 (M_2=55.49%, SD_2=31.88%). However, the post-hoc Tukey test showed that the difference between the two conditions was not significant (M_D=9.67%, p=.08), which means these two conditions are neither more or less effective in influencing participants' food choices; these results therefore do not support our hypothesis.

Discussion

Our results show that when environmentally-related labels are presented alongside food, consumers are more likely to choose more sustainable dishes. We hypothesized that labels using the 5-star scale would be more effective than text-based labels in affecting people to choose sustainable foods. However, our results suggest that there is no difference in effect between labels using the 5-star scale and text-based labels. While we were surprised that text-based labels were just as, if not more effective than labels using the 5-star scale, we surmise that our results were affected by the design of our first and second experimental conditions. While the text-based labels clearly stated that they were measuring carbon output in grams, we used the broad term 'climate-friendly' for the labels using the 5-star rating system, as opposed to measuring specific concepts like "carbon emission levels' or ' low water consumption levels.' This speculation is consistent with a past study, which also noted that sustainability labels should be as self-explanatory as possible for them to be effective (Grunert et al., 2014). In addition, we could not compare text-based labels measuring carbon output with 5-star scale labels measuring carbon output, because the 5-star scale inherently implies that a rating of five stars is better than a rating of one star, and making a five-star rating the equivalent of less carbon output, and a one star rating the equivalent of higher carbon emissions, would have potentially confused participants. Therefore, it is hard to determine whether a text-based label and an icon-based label like the 5-star scale that measured the same concept would have resulted in the same results we obtained.

A limitation of our study is its external validity. Due to the current pandemic, in-person research was not allowed; instead, we conducted an online study, which may make it difficult to generalize our results in a real-life UBC cafeteria situation. Students may not even read labels when choosing food, and food choice decisions made in real-life are affected by more than food labels. People in a hurry for a quick meal may have less patience to stop, read, and understand labels, and instead might choose based on their preferences. Nearly 90% of our responses were Asians, which means our results cannot be generalized to the whole population of UBC. Another limitation is that we do not know how food prices affect people's decisions. The price of current plant-based protein substitutes for meat products is significantly higher; we controlled for different prices in our study, so an experiment that takes into account the effect of price differences could produce different results from what we produced in our own study. Further research could take the influence of prices as a predictor. People's food preferences are another limitation. For all of our conditions, we presented sets of ingredients; people may perceive sustainable food substitutions as not being able to replicate the original flavor, deterring customers from choosing sustainable alternatives, such as substitutes for meats. People's preference for 'organic' or 'free-range' foods may also influence results (Annunziata et al., 2019; Feucht & Zander, 2018); it would be worth conducting research into whether people confuse organic or free-range pork or other meats as being significantly better for the environment than plant-based proteins or meat alternatives.

Recommendations

We believe that our research is important to UBC because it adds to the current literature on the impact that different designs of environmentally concerned food labels have on consumers' sustainable food choices. While much research has been conducted on labels that utilize a recognizable color scheme like the traffic-light color system, not much research seems to have been conducted on labels that utilize recognizable icons or imagery, like the 5-star rating scale.

In accordance with our findings, we recommend that our clients use in UBC cafeterias, food labels that include text-based information on the carbon emissions produced by individual dishes, to indicate to their consumers what impact their meals have on the environment, and to use specific concepts and measures in their food labels. In addition, many studies highlight the importance of awareness and understanding when making sustainable food choices, and indicate that food labels alone do not have a large impact on people's motivations to make sustainable food choices (Feucht & Zander, 2018; Lin & Nayga, 2022; Annunziata et al., 2019). Therefore, we would also recommend that in coordination with utilizing environmentally related food labels, that informative posters on how food production affects climate change be distributed on campus, and that the UBC dormitories frequently hold educational sessions to promote sustainability, climate change, and environmental concerns among its students; the dormitories could require first-year students at the beginning of the school year or during orientation to attend these sessions.

Regarding the academic implications of our research, it may also be worth examining what impact increasing the amount of knowledge regarding sustainability would have on people's decisions. In this experiment, we chose carbon emissions as an indicator of sustainability, but of course, carbon emissions are not the only indicators; other indicators include land and water consumption and nitrogen emissions. We recommend that future research be conducted on how different measurements of sustainability affect people's food choices.

References

Annunziata, A., Mariani, A., & Vecchio, R. (2019). Effectiveness of sustainability labels in guiding food choices: Analysis of visibility and understanding among young adults. Sustainable Production and Consumption, 17, 108-115. https://doi.org/10.1016/j.spc.2018.09.005

Brunner, F., Kurz, V., Bryngelsson, D., & Hedenus, F. (2018). Carbon Label at a University Restaurant – Label Implementation and Evaluation. *Ecological Economics*, *146*, 658–667. https://doi.org/10.1016/j.ecolecon.2017.12.012

Camilleri, A. R., Larrick, R. P., Hossain, S., & Patino-Echeverri, D. (2018). Consumers underestimate the emissions associated with food but are aided by labels. *Nature Climate Change*, *9*(1), 53–58. https://doi.org/10.1038/s41558-018-0354-z

Emberger-Klein, A., & Menrad, K. (2018). The effect of information provision on supermarket consumers' use of and preferences for carbon labels in Germany. *Journal of Cleaner Production*, *172*, 253–263. https://doi.org/10.1016/j.jclepro.2017.10.105

Edenbrandt, A. K., Lagerkvist, C. J., & Nordström, J. (2021). Interested, indifferent or active information avoiders of carbon labels: Cognitive dissonance and ascription of responsibility as motivating factors. *Food Policy*, *101*, 102036. https://doi.org/10.1016/j.foodpol.2021.102036

Feucht, Y., & Zander, K. (2018). Consumers' preferences for carbon labels and the underlying reasoning. A mixed methods approach in 6 European countries. *Journal of Cleaner Production*, *178*, 740–748. https://doi.org/10.1016/j.jclepro.2017.12.236

Grunert, K. G., Hieke, S., & Wills, J. (2014). Sustainability labels on food products: Consumer motivation, understanding and use. Food Policy, 44, 177-189. https://doi.org/10.1016/j.foodpol.2013.12.001

Lin, W., & Nayga, R. M. (2022). Green identity labeling, environmental information, and pro-environmental food choices. Food Policy, 106, 102187. https://doi.org/10.1016/j.foodpol.2021.102187

Appendix A

Survey on UBC Qualtrics

Part 1: Experiment condition question:
For each of the following, please imagine this scenario:
You are in a UBC cafeteria thinking about what to eat. You are choosing from two dishes, which are identical in appearance and cost. Please choose from the two options of the meal you would rather have.

Condition 1

Q1 ✶

For each of the following, please imagine this scenario:

You are in a UBC cafeteria thinking about what to eat. You are choosing from two dishes, which are identical in appearance and cost. Please choose from the two options the meal you would rather have.

○ ***Beyond Meat patty, Swiss cheese, special sauce, iceberg lettuce, pickle, tomato***

Burger
350 grams of CO_2 produced per dish

○ ***Beef patty, cheddar cheese, special sauce, iceberg lettuce, pickle, tomato***

Burger
800 grams of CO_2 produced per dish

Q2

Please choose from the two options the meal you would rather have:

- ***House greens, tempeh, teriyaki tofu, smashed edamame, cherry tomatoes, signature dressing, garlic croutons***

Salad

225 grams of CO_2 produced per dish

- ***House greens, crispy bacon, chicken thigh, avocado, cherry tomatoes, signature dressing, garlic croutons***

Salad

310 grams of CO_2 produced per dish

Q3

Please choose from the two options the meal you would rather have:

○ *Bread, non-dairy cheese*

Grilled Cheese Sandwich

230 grams of CO_2 produced per dish

○ *Bread, cheddar cheese*

Grilled Cheese Sandwich

500 grams of CO_2 produced per dish

Q4

Please choose from the two options the meal you would rather have:

○ *Beyond Meat chicken*

Chicken Strips

392 grams of CO_2 produced per dish

○ *Chicken*

Chicken Strips

630 grams of CO_2 produced per dish

Q5

Please choose from the two options the meal you would rather have:

○ *Fair Trade chocolate, zucchini, maple sugar, oat flour*

Brownies

373 grams of CO_2 produced per dish

○ *Chocolate, white sugar, white flour*

Brownies

468 grams of CO_2 produced per dish

Q6

Please choose from the two options the meal you would rather have:

○ *Non-dairy ice cream*

Ice Cream

392 grams of CO_2 produced per dish

○ *Dairy ice cream*

Ice Cream

755 grams of CO_2 produced per dish

Q7

Please choose from the two options the meal you would rather have:

○ *Wild salmon, brown rice, red cabbage, corn, avocado, non-dairy yogurt alternative*

Salmon Bowl

230 grams of CO_2 produced per dish

○ *Farmed salmon, white rice, red cabbage, corn, avocado, yogurt*

Salmon Bowl

600 grams of CO_2 produced per dish

Q8

Please choose from the two options the meal you would rather have:

○ *Grilled tofu, lettuce, tomato, black beans, quinoa, mayonnaise, whole-wheat burrito wrap*

Burrito

175 grams of CO_2 produced per dish

○ *Chicken breast, lettuce, tomato, black beans, brown rice, mayonnaise, burrito wrap*

Burrito

426 grams of CO_2 produced per dish

Q9

Please choose from the two options the meal you would rather have:

○ *Beyond Meat meatballs, Fior di Latte cheese, tomato, basil, Grana Padano cheese*

Spaghetti with Meatballs
211 grams of CO_2 produced per dish

○ *Meatballs, Fior di Latte cheese, tomato, basil, Grana Padano cheese*

Spaghetti with Meatballs
567 grams of CO_2 produced per dish

Q10

Please choose from the two options the meal you would rather have:

○ *Non-dairy yogurt alternative, various fruits*

Yogurt with Fruit

187 grams of CO_2 produced per dish

○ *Yogurt, various fruits*

Yogurt with Fruit

794 grams of CO_2 produced per dish

Condition 2: Experiment condition question:

For each of the following, please imagine this scenario:

You are in a UBC cafeteria thinking about what to eat. You are choosing from two dishes, which are identical in appearance and cost. Please choose from the two options of the meal you would rather have.

Q13

Please choose from the two options the meal you would rather have:

○ *Bread, cheddar cheese*

Grilled Cheese Sandwich

Climate-friendly: ★★☆☆☆

○ *Bread, non-dairy cheese*

Grilled Cheese Sandwich

Climate-friendly: ★★★★☆

Q14

Please choose from the two options the meal you would rather have:

○ *Chicken*

Chicken Strips

Climate-friendly: ★★☆☆☆

○ *Beyond Meat chicken*

Chicken Strips

Climate-friendly: ★★★★☆

Q15

Please choose from the two options the meal you would rather have:

○ *Chocolate, white sugar, white flour*

○ *Fair Trade chocolate, zucchini, maple sugar, oat flour*

Q16

Please choose from the two options the meal you would rather have:

○ *Dairy ice cream*

Ice Cream

Climate-friendly: ★½☆☆☆

○ *Non-dairy ice cream*

Ice Cream

Climate-friendly: ★★★★★

☐ Q17

Please choose from the two options the meal you would rather have:

○ *Farmed salmon, white rice, red cabbage, corn, avocado, yogurt*

Salmon Bowl

Climate-friendly: ★★★☆☆

○ *Wild salmon, brown rice, red cabbage, corn, avocado, non-dairy yogurt alternative*

Salmon Bowl

Climate-friendly: ★★★★★

Q18

Please choose from the two options the meal you would rather have:

○ *Chicken breast, lettuce, tomato, black beans, brown rice, mayonnaise, burrito wrap*

Burrito

Climate-friendly:

○ *Grilled tofu, lettuce, tomato, black beans, quinoa, mayonnaise, whole-wheat burrito wrap*

Burrito

Climate-friendly:

Q19

Please choose from the two options the meal you would rather have:

Meatballs, Fior di Latte cheese, tomato, basil, Grana Padano cheese

Spaghetti with Meatballs

Climate-friendly: ★★½☆☆

Beyond Meat meatballs, Fior di Latte cheese, tomato, basil, Grana Padano cheese

Spaghetti with Meatballs

Climate-friendly: ★★★★☆

Q20

Please choose from the two options the meal you would rather have:

Yogurt, various fruits

Yogurt with Fruit

Climate-friendly: ★☆☆☆☆

Non-dairy yogurt alternative, various fruits

Yogurt with Fruit

Climate-friendly: ★★★★☆

Control Condition:

For each of the following, please imagine this scenario:

You are in a UBC cafeteria thinking about what to eat. You are choosing from two dishes, which are identical in appearance and cost. Please choose from the two options of the meal you would rather have.

Q21 *

For each of the following, please imagine this scenario:

You are in a UBC cafeteria thinking about what to eat. You are choosing from two dishes, which are identical in appearance and cost. Please choose from the two options the meal you would rather have.

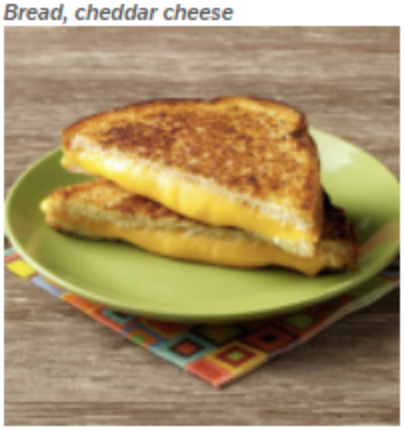
○ *Beef patty, cheddar cheese, special sauce, iceberg lettuce, pickle, tomato*

○ *Beyond Meat patty, Swiss cheese, special sauce, iceberg lettuce, pickle, tomato*

☐ Q22

Please choose from the two options the meal you would rather have:

○ *Bread, cheddar cheese*



○ *Bread, non-dairy cheese*

Q23

Please choose from the two options the meal you would rather have:

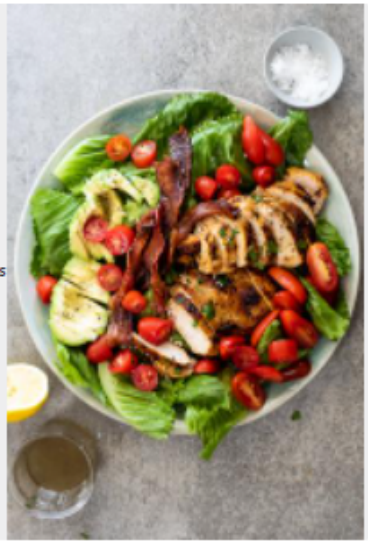
Chicken

Beyond Meat chicken

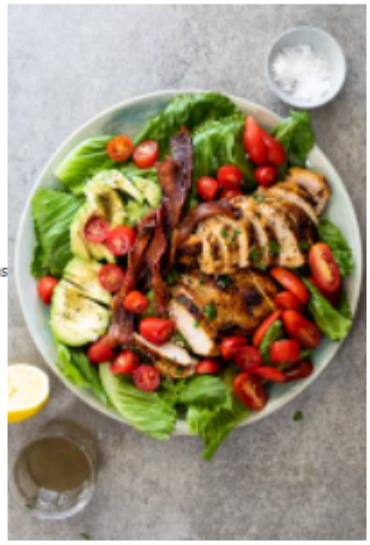
Q24

Please choose from the two options the meal you would rather have:

House greens, tempeh, teriyaki tofu, smashed edamame, cherry tomatoes, signature dressing, garlic croutons



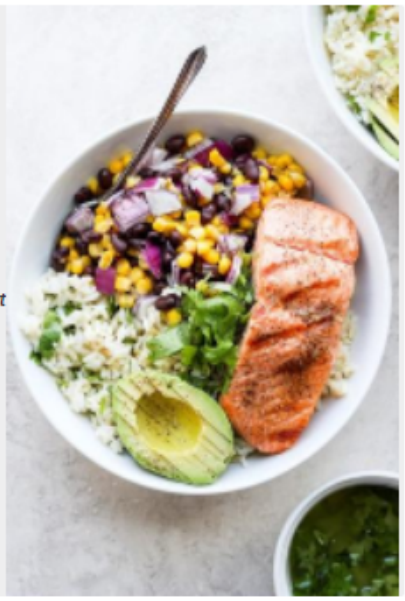
House greens, crispy bacon, chicken thigh, avocado, cherry tomatoes, signature dressing, garlic croutons



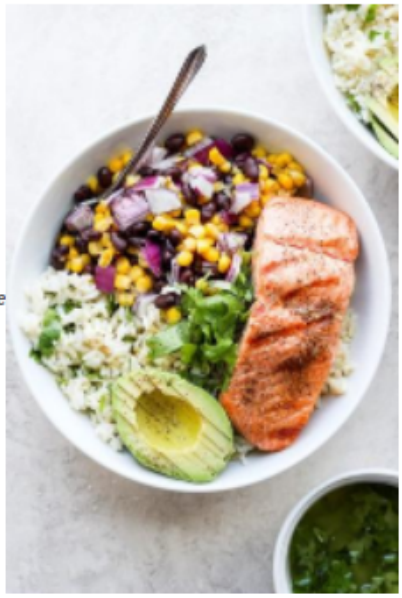
Q25

Please choose from the two options the meal you would rather have:

Farmed salmon, white rice, red cabbage, corn, avocado, yogurt



Wild salmon, brown rice, red cabbage, corn, avocado, non-dairy yogurt alternative



Q26

Please choose from the two options the meal you would rather have:

Fair Trade chocolate, zucchini, maple sugar, oat flour

Chocolate, white sugar, white flour

Q27

Please choose from the two options the meal you would rather have:

○ *Non-dairy ice cream*

○ *Dairy ice cream*

Q28

Please choose from the two options the meal you would rather have:

- *Chicken breast, lettuce, tomato, black beans, brown rice, mayonnaise, burrito wrap*

- *Grilled tofu, lettuce, tomato, black beans, quinoa, mayonnaise, whole-wheat burrito wrap*

Q29

Please choose from the two options the meal you would rather have:

Beyond Meat meatballs, Fior di Latte cheese, tomato, basil, Grana Padano cheese

Meatballs, Fior di Latte cheese, tomato, basil, Grana Padano cheese

Q30

Please choose from the two options the meal you would rather have:

○ *Yogurt, various fruits*

○ *Non-dairy yogurt alternative, various fruits*

Appendix B: Figure and Tables

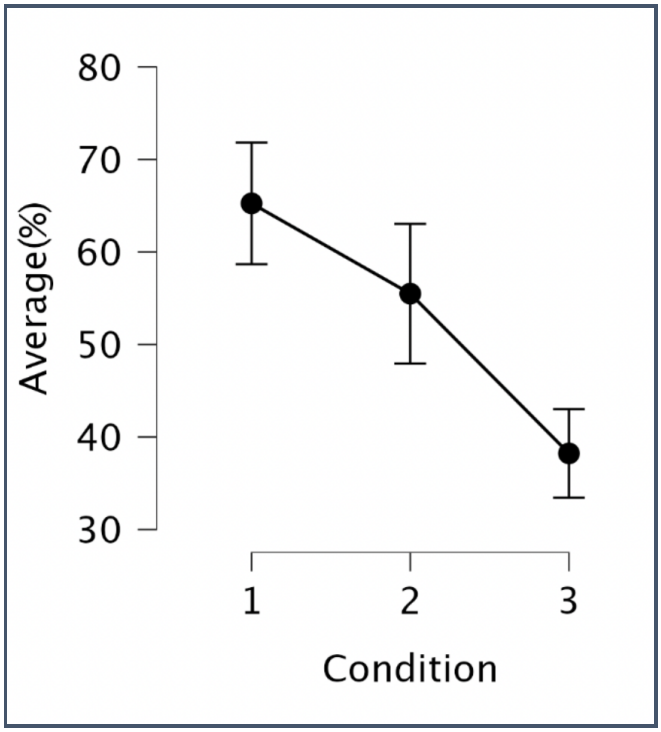


Figure 1. Average percentage of choosing more climate-friendly dishes in each conditions

Table 1

One-way ANOVA Test

Cases	Sum of Squares	df	Mean Square	F	p	η^2
Condition	29684.920	2	14842.460	19.154	< .001	0.144
Residuals	175904.645	227	774.910			

Table 2

Descriptive Statistics

Condition	Mean	SD	N
1	65.250	29.553	80
2	55.493	31.883	71
3	38.228	21.409	79

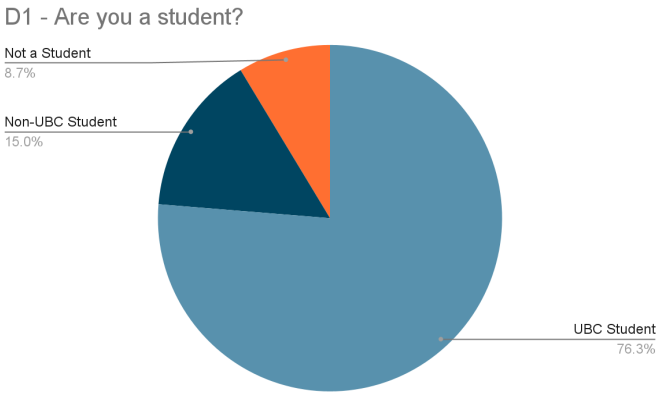
Table 3

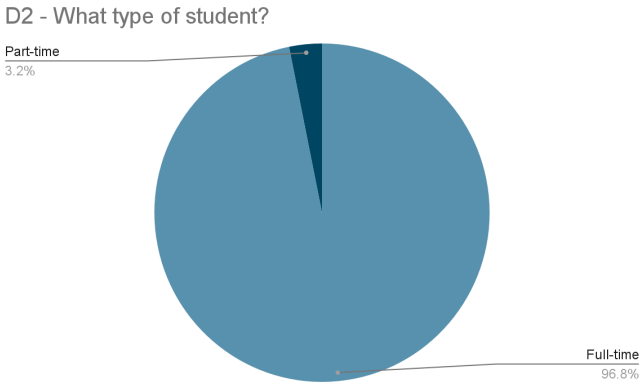
Post Hoc Tukey Test

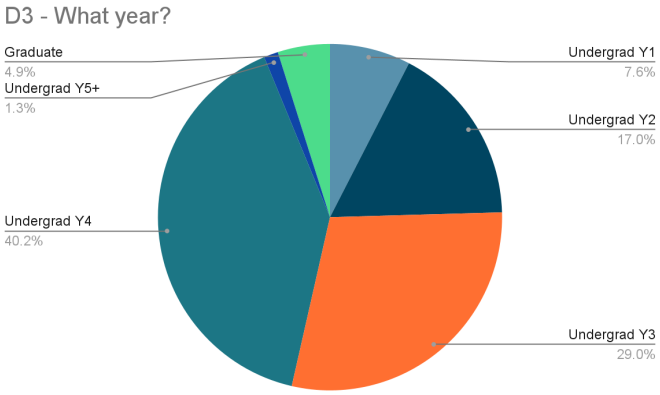
		Mean Difference	SE	t	p_{tukey}
1	2	9.757	4.539	2.150	0.082
	3	27.022	4.415	6.120	< .001
2	3	17.265	4.552	3.793	< .001

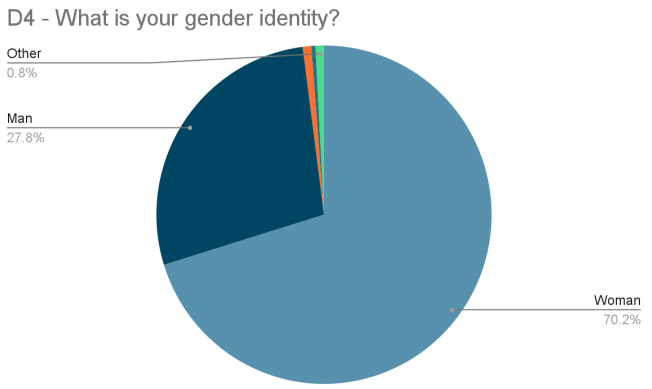
Appendix C

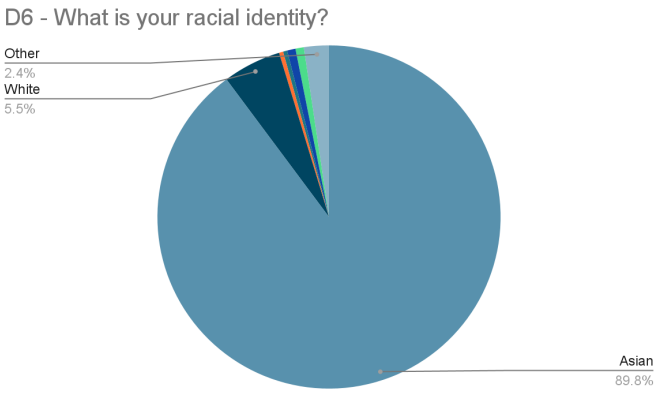
Demographics Graphs

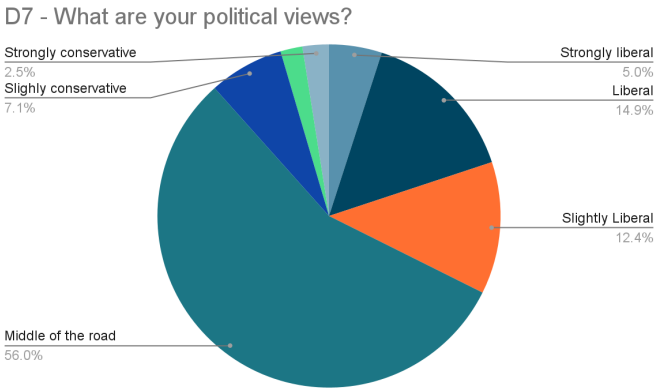


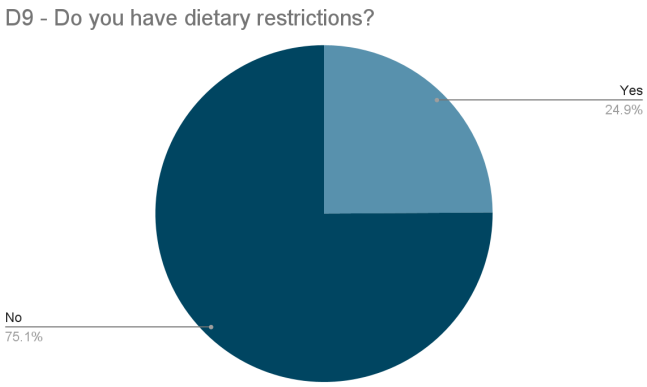


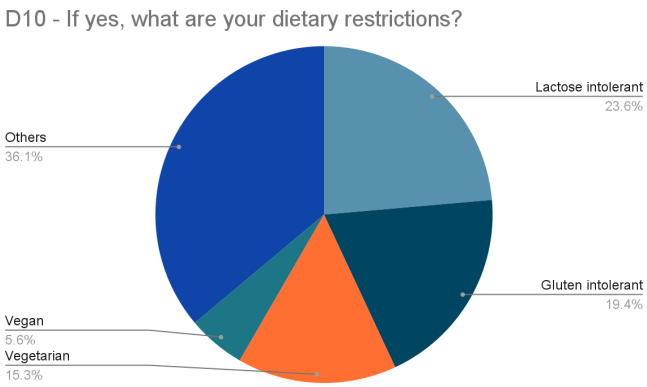



D4 - What is your gender identity?
Other
0.8%
Man
27.8%
Woman
70.2%


D6 - What is your racial identity?
Other
2.4%
White
5.5%
Asian
89.8%


D7 - What are your political views?
Strongly conservative
2.5%
Slighly conservative
7.1%
Strongly liberal
5.0%
Liberal
14.9%
Slightly Liberal
12.4%
Middle of the road
56.0%


D9 - Do you have dietary restrictions?
Yes
24.9%
No
75.1%


D10 - If yes, what are your dietary restrictions?
Lactose intolerant
23.6%
Others
36.1%
Gluten intolerant
19.4%
Vegan
5.6%
Vegetarian
15.3%

Appendix D

Group Contribution

Mengshan Li: Contribute to generate ideas of research questions and hypotheses, help design the survey and collect the data from participants. Regularly set up the group meeting and attended the group meeting and discussion. Regularly contacted the TA or professor to make the appointment for our group. For the presentation part, I presented the method and condition part to the clients. For the report part, I contributed to the introduction, reference part, and double checked the whole groups' work.

Yumi Lingjie Ma: Yumi carried out this project when it just began, such as actively finding group members, organizing group chats, participating in the brain storming section and the draft of the design of the study with her group members. She also found her previous professor and let her professor's students participate in the study, which contributed to the group about data collection. She also helped to make the powerpoint for the project presentation. She conceived of the study and performed the presentation with the research question, hypothesis section. Finally, she coordinated and helped to write the final paper about the introduction and research question, and research hypothesis.

Haruka Masuda: Designed the text-based labels and labels using the 5-star rating scale for the two experimental conditions. Designed and put up posters with the Qualtrics survey QR code in public places on the UBC campus to recruit participants to answer our survey. Presented the indications of our findings and recommendations to our clients. Wrote the Recommendations section in the final report, contributed to the Discussions section, and edited the final report for clarity and cohesion. Found peer-reviewed, scientific papers relevant to our research proposal and final report, and referenced them in the appropriate APA style.

Jack Wang: Contributed to generating ideas of research questions and hypotheses, creating and formatting the survey on qualtrics. Regularly set up, lead and check-in group meetings, discussions and progresses. Recruited numbers of participants to participate in the survey and regularly updated the status of the survey. Organized and analyzed the data. For the presentation part, I led practices, formatted the slides and presented the result part and responded to clients comments and questions. For the final report, I contributed to the result, discussion and appendix sections, formatting the paper using course and APA guidelines.

Hanxiang Xu: Contributed to developing research ideas, practicing presentations with group members, presenting our research results to clients. Frequently attend meetings and group members for better interpretation and goals of our major goal in this project. For the research report, I contributed to the results section to reveal our findings, and make reasonable analysis. Understanding and stating limitations on content in the Discussion section, checking executive

summary for our study and formatting the paper and writing the references using APA guidelines.

Kelly Yeung: Contributed to creating and formatting the survey on qualtrics. Researched pictures for the survey and chose how to layout the format. For the collection, I shared the survey QR code to two different courses for my peers to answer. Launched and closed the qualtrics with the rest of the members. For the presentation, handled the demographics portion and created the pie charts. To contribute to the report, I made the layout for the paper report and shared it with the rest of my team members. For my report paper part, I wrote out the Methods section which included participants, procedures, conditions, and measures. As a group member of Beleaf, I contributed to the group by being punctual to our meetings and was there to support their ideas and provide suggestions of my own.