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Student Research Report

# Position Matters? Changing Positions on Menus Influences People's Food Preferences

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## **Position Matters? Changing Positions on Menus Influences People's Food Preferences**

**Chunkit Hong (Max), Man Hon Szeto, Shengqi Cui, WeiJie Chen, Yoshihiro Toyama**

Group 7: Food Ambulance

### **Executive Summary**

The positioning of food items on a menu impacts the desirability of food items, and this effect may be powerful enough to encourage healthy eating habits. This experiment examines how a food item's position on the menu influences food choices. In two experiments (N=374), participants were given one of three pizza menus consisting of the same items, with the vegan option located at the top, middle, or bottom of the menu. Although not statistically significant, we found an increasing trend for participants to prefer the vegan option when it is positioned at the top of the menu (study1:  $p = .14$ , study2:  $p = .25$ ). Additionally, we also found that making the vegan option more appetizing and a descriptive name may lead to a marginally significant increase ( $p = .089$ ) in participant's preference for it. To the extent that designs of menus can influence food ordering habits, our findings suggest that placing an unpopular food item at the top of the menu and having a more descriptive and appetizing could lead to an increase in preference for that item. This study provides insights for food service providers looking to promote healthy-eating or plant-based choices in their restaurants through menu designs.

### **Keywords:**

Decision-making, Food, healthy eating, nudges, restaurant menus, vegan food options

## Introduction

Healthy eating habits have been a great way to reduce overweight, and obesity, and promote great health at the same time (Ulijaszek, 2003). However, university students that live away from their homes are shown to have increasingly unhealthy eating habits (Papadaki et al., 2007). Many interventions that encourage healthy eating for university students exist, and one of which could be a change in restaurant menu designs.

In recent years, an increasing number of studies focus on multi-dimensional constructs of menu design such as item positionings, item descriptions, and item labels (Ozdmir & Caliskan, 2015). Previous studies have shown that the placement of a specific item at the top or bottom of a menu increases the desirability of that specific item (Dayan & Bar-Hillel, 2011). Recent research started focusing on how the placement of items on menus could be used in the context of encouraging healthy eating behaviors (Gynell et al., 2021; Schimidtke et al., 2019). More specifically, one experiment changed a restaurant's menu design by moving Coca-Cola to the last item on the menu and moving Coke Zero (a healthy alternative) to the top of the menu (Schimidtke et al., 2019). Its results showed that the sales of Coca-Cola decreased and sales of Coke Zero increased as a result of this manipulation. Another experiment was done with a snack menu involving 8 unhealthy items and 4 healthy items placed at various places on the menu. Its results indicated that participants are more likely to show a preference for healthy snack items when it is located on the top of the menu, as opposed to the middle and bottom of the menu (Gynell et al., 2021). However, those studies did not account for factors such as prices of food items, or previously existing preferences individuals may have, and most importantly, those experiments were not done in the context of university living. With these factors into consideration, our studies aim to understand how would placing a specific food item on different parts of a menu affect one's ordering decisions. We hypothesize that placing a specific food item at the beginning or end of the menu, as opposed to the middle, would have a higher likelihood of being chosen. To test our hypothesis, we performed two studies both with a between-subject design.

## Study 1

**Participants.** Our power analysis (effect size = 0.2, alpha level = 0.05, power = 0.8, and 3 groups), shows that our study required a minimum of 246 participants. Our participants consist of 126 University of British Columbia community members who are aged from 18 to 34 ( $M = 21.22$ ,  $SD = 6.55$ ). 64 participants identified as male (50.79%), 60 identified as female (47.62%), and 2 identified as non-binary (1.59%) (see Appendix A1). Our sample population consists of first-year ( $n = 14$ ), second-year ( $n = 19$ ), third-year ( $n = 61$ ), fourth-year ( $n = 19$ ), fifth-year or above ( $n = 5$ ), and graduate students ( $n = 2$ ). Participants who are alumni or staff are also included ( $n = 4$ ) (see Appendix A2). Most participants reported that they have a normal diet ( $N = 109$ ) and few reported that they are Vegan ( $n = 2$ ), Vegetarian ( $n = 3$ ) or have "other food preferences" ( $n = 12$ ) (see Appendix A3). 60% of participants reported that they have been to Mercante before and 37% reported that they have never been (see Appendix A4).

**Condition.** This study's target food item is the "Vegan Feature" Pizza which came from Mercante UBC, a pizza restaurant located on the University of British Columbia Vancouver campus. According to Mercante's 2020 sales, Vegan Pizza takes up 2% of the location's total

sales of pizzas. As the vegan option is unpopular, we decided “Vegan Feature” pizza will be the targeted food item to observe whether this effect works with unpopular items. In this study, the independent variable is the position of a food item on a menu, and this is operationalized through the positioning of the “Vegan Feature” pizza on the menu, at the top, middle, or bottom of the menu. Additionally, as the “Vegan Feature” pizza does not have a description on the menu, we included “Basil, eggplant, breadcrumbs onto the base” as the item’s description. This was the Vegan Pizza of the day in Mercante.

This study consists of three conditions: Top condition, Middle condition, and Bottom condition which has “Vegan Feature” pizza positioned at the top ( $n = 43$ ), middle ( $n = 41$ ), or bottom ( $n = 42$ ) of the menu accordingly. The Bottom condition is also the control condition as it is identical to the menu currently used in Mercante UBC. Everything else on the menu (e.g. price, description of other items) remains identical (see Appendix A5, A6, A7).

**Measures.** The dependent variable in this study is the order they make after seeing the menu. This is measured through a multiple-choice questionnaire located at the bottom of the online survey. The questionnaire’s pizza options are sequenced identically to the menu each condition had. Additionally, we included an extra question in the demographic section of our survey asking “Have you been to Mercante Before?” to observe whether previously existing preferences influence our results.

**Procedure.** Participants were recruited from various online social media platforms (e.g. WeChat, WhatsApp, Discord) and in-person recruitment on the UBC campus. As our study has a between-subject design, after participants give consent to participate, they are randomly assigned to one of three conditions. Participants are then shown a menu that has the target pizza item positioned at the top, middle, or bottom depending on their condition. Participants are then asked to “Select the pizza would you like to order from this menu” in a multiple-choice questionnaire to report their desired item (See Appendix A8). Unfortunately, we only recruited 126 participants, far from the 246 participants that power analysis shows are needed.

**Results.** In the Top condition, 2 out of 43 participants chose “Vegan Feature” Pizza, 4.65% of participants in this condition. In both the Middle condition ( $n = 41$ ) and the Bottom ( $n = 42$ ) condition, 0 participants chose “Vegan Feature” Pizza. The total ratio of participants who chose “Vegan Feature” over other pizzas is 1.59% across all conditions ( $n = 126$ ). Through Chi-square analysis,  $X^2(2)=3.92$ ,  $p = .141$ , we did not reach statistical significance for our tested effect (see Appendix A9).

**Small discussion for Study 1.** Although 2 participants did choose “Vegan Feature” Pizza when it is placed at the top of the menu (versus 0 participants in both middle and bottom conditions), we did not reach statistical significance ( $p = .141$ ), therefore we retain the null hypothesis. Additionally, 2 out of 126 participants chose “Vegan Feature” which does not make our study a good experiment, and we suspect some issues exist in Study 1. After some discussion with our leading professor on this study, we identified a few potential issues with Study 1.

First, we suspect that the option “Vegan Feature” and its description may not sound appetizing to most. The combination of basil, eggplant, and breadcrumbs may not be the most attractive. Secondly, the name “Vegan Feature” is somewhat ambiguous which may impact the

participant's attitude towards it (Hou et al., 2017). With these potential issues in mind, we launched a second study with similar designs but changed our main food item to best control those issues.

## Study 2

**Participants.** As the general design of Study 2 is similar to Study 1, power analysis still shows a total of 246 participants are needed. Our participants consist of 248 University of British Columbia community members who are aged from 16 to 37 ( $M = 20.77$ ,  $SD = 2.25$ ). 87 participants identified as male (35%), 149 identified as female (60%), and 12 identified as non-binary (5%) (see Appendix B1). Our sample population consists of first-year ( $n = 42$ ), second-year ( $n = 55$ ), third-year ( $n = 68$ ), fourth-year ( $n = 44$ ), fifth-year or above ( $n = 22$ ), and graduate students ( $n = 9$ ). Participants who are alumni or staff are also included ( $n = 7$ ) (see Appendix B2). Most participants reported that they have a normal diet ( $n = 198$ ) and few reported that they are Vegan ( $n = 2$ ), Vegetarian ( $n = 17$ ), or have "other food preferences" ( $N = 31$ ) (see Appendix B3). 67.74% of participants reported that they have been to Mercante before and 31.45% reported that they have never been (see Appendix B4).

**Condition.** As Study 1 did not yield meaningful results, the operationalization of the same independent variable changes from "Vegan Feature" to "PLANT-BASED MAC + CHEEZA PIZZA". This pizza is taken from Virtuous Pie which is a different pizza restaurant in Vancouver that designs all its items to be plant-based. To best observe the impact changing an item gives, the name of the item is changed to "Plant Based Mac + Cheeza Pizza", and the description of the item is changed to "Cashew Mac Sauce, Cashew Mozza, Tofu Feta, nuts", while everything else is kept the same (see Appendix B5, B6, B7).

**Measures.** Identical to Study 1, reference from Study 1 measures section.

**Procedure.** Identical to Study 1, reference from Study 1 procedure section. (see Appendix B8).

**Results.** In the Top condition ( $n = 81$ ), 7 out of 81 participants chose "PLANT-BASED MAC + CHEEZA PIZZA", 8.64% of participants in the condition. In both the Middle condition ( $n = 84$ ) and Bottom condition ( $n = 83$ ), 3 participants chose "PLANT-BASED MAC + CHEEZA PIZZA", 3.57% and 3.16% of participants in the according conditions. The total ratio of participants who chose "PLANT-BASED MAC + CHEEZA PIZZA" over other pizzas is 5.24% across all conditions ( $N = 248$ ). Through Chi-square analysis,  $X^2(2)=2.80$ ,  $p=.247$ , we did not reach statistical significance for our tested effect (see Appendix B9).

## Combined and Compared Results of Study 1 and Study 2

Comparing study 1 and study 2 ( $N = 374$  across studies), the percentage of participants who chose the specific food item increased from 1.59% to 5.24%, a whole 200% increase in preferences. After combining both studies and using the naming of items as the independent variable, although not statistically significant, our Chi-square analysis,  $X^2(1)=2.90$ ,  $p = .089$ , did show a marginally significant increase (see Appendix D1).

## General Discussion

The results of the two studies did not yield a statistically significant result to support our predictions. However, in both Study 1 and Study 2, more participants chose the Vegan option when it is placed on the top of the menu. Our results still show a trend that aligns with our hypothesis and previous literature that placing food items at the top of the menu could lead to an increase in preference (Dayan & Bar-Hillel, 2011). This trend could be due to several mechanisms. Participants may prefer the food item at the top of the menu as a result of the primacy effect, the increase in the tendency to remember the first piece of information they receive. Participants might also make the association that the first item on the menu is the “signature item” as this is commonly the menu design of many restaurants such as McDonald’s, Subway, and A&W (see Appendix E1, E2, E3).

By conducting Study 2, we noticed that the combined results of both studies did show a marginally significant increase in preferences for the specific food items (both Vegan options) when Study 2 undergoes item change from “Vegan feature” to “Plant-Based Mac+ Cheeza Pizza”. With a total 200% increase in reported preference, it confirmed the issues with the “Vegan feature” pizza we suggested in the Study 1 discussion. As the name of the item became more representative, fewer people is likely going to pick it as the name of the food item did not catch their attention (Hou et al., 2017). Additionally, Mac and Cheese is a relatively common food item that is more liked by people, which also led to the increase in preference for the item although it was labeled plant base.

While this study provides valuable insights, there are several limitations to be acknowledged. The first major limitation of our study is that participants may have previously existing preferences for food items that may overpower our menu design manipulation. 60% and 67.74% of participants from Study 1 and Study 2 accordingly reported that they have been to Mercante UBC before, meaning that they may already have a preferred order, which will not be impacted by the order in which the items are shown. The second limitation of our study is the external validity of reading menus on a device versus physically in person at a restaurant. On a phone, one has to scroll up and down to look through food items, meaning the order effect can take place. But when one goes to a restaurant that places their menus at an elevated position (see Appendix E4), one might start reading the menu from the bottom up because the first item one sees when looking up is the bottom item. Using Study 1’s top condition menu as an example, the first item one sees looking top-down versus bottom-up is different, making the primacy effect play an effect for the bottom item instead of the top item. A third limitation of our study is that our food of choice (pizza) does not have the best vegan substitution. Cheese is a significant part of pizza and people with a normal diet may be reluctant to order pizza knowing the cheese is a plant-based substitute. In future studies, the same experiment could be done with a different food type that does not have cheese or any non-plant-based items that are core. Sandwiches would be a good food type for future studies. We also urge future studies to examine the effect of descriptive or ambiguous food names on the desirability of certain food items.

In conclusion, if this menu item positioning effect is true, it could be applied to the menus of various eateries to promote healthy eating. This low-cost, simple, and potentially effective intervention can be used as a powerful tool to promote healthy eating for university students. In a broader context, this intervention can be applied beyond the university setting and promote

healthy eating habits in every individual who orders from restaurants, potentially creating a healthy eating social norm, and improving the overall well-being of society.

### **Recommendations To Our Clients**

With the results of our two studies, we recommend our clients of various UBC eatery locations the following:

**Place healthy food options on the top of the menu.** As suggested by the results of our studies and multiple studies on food ordering behavior and menus, the food item placed at the top of a menu is more likely to be chosen. So by placing healthy food options at the top of the menu, it could act as an intervention to promote healthy eating in all UBC members, a subtle, simple, and effective way to enhance one's well-being.

**Give food item names that are more descriptive and less ambiguous.** The original name of the vegan option served in Mercante UBC is "Vegan feature", which is very ambiguous as one cannot guess what is in the pizza. In contrast, names of items in the restaurant Virtuous Pie such as "Plant Base Mac + Cheeza Pizza" can be easily understood as a mac and cheese alternative pizza. Additionally, the same vegan option also says "Ask our servers about today's feature", which creates an extra step for individuals to consider the "Vegan feature" as an option. Only those who have a Vegan diet would specifically ask. By giving food items a more descriptive and less ambiguous name, the item becomes more clear for consideration and comparison, which leads to an increase in the likelihood of individuals picking that option.

We hope our study can contribute to the UBC community and promote healthy eating in a meaningful way. As once said by a Qi Master in Hong Kong "With a healthy body, one can achieve anything!"

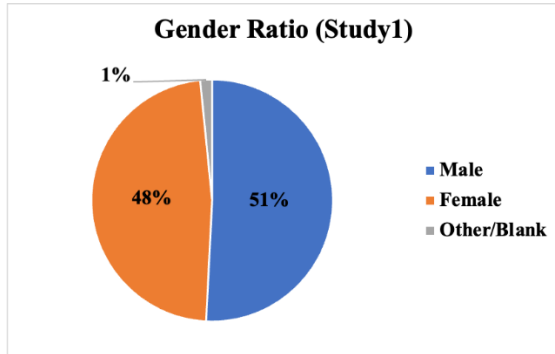
## References

- Dayan, E., & Bar-Hillel, M. (2011). Nudge to nobesity II: Menu positions influence food orders. *Judgment and Decision Making*, 6(4), 333–342.  
<https://doi.org/10.1017/s1930297500001947> Schmidtke et al., 2019
- Gynell, I., Kemps, E., Prichard, I., & Tiggemann, M. (2021). The effect of item placement on snack food choices from physical and online menus. *Appetite*, 169(0195-6663), 105792.  
<https://doi.org/10.1016/j.appet.2021.105792>
- Hou, Y., Yang, W., & Sun, Y. (2017). Do pictures help? the effects of pictures and food names on menu evaluations. *International Journal of Hospitality Management*, 60, 94–103.  
<https://doi.org/10.1016/j.ijhm.2016.10.008>
- Ozdemir, B., & Caliskan, O. (2015). Menu Design: A Review of Literature. *Journal of Foodservice Business Research*, 18(3), 189–206.  
<https://doi.org/10.1080/15378020.2015.1051428>
- Papadaki, A., Hondros, G., A. Scott, J., & Kapsokefalou, M. (2007). Eating habits of university students living at, or away from home in Greece. *Appetite*, 49(1), 169–176.  
<https://doi.org/10.1016/j.appet.2007.01.008>
- Schmidtke, K. A., Watson, D. G., Roberts, P., & Vlaev, I. (2019). Menu positions influence soft drink selection at touchscreen kiosks. *Psychology & Marketing*, 36(10), 964–970.  
<https://doi.org/10.1002/mar.21248>
- Ulijaszek, S. J. (2003). Obesity: Preventing and managing the global epidemic. report of a who consultation. who technical report series 894. pp. 252. (World Health Organization, Geneva, 2000.) SFR 56.00, ISBN 92-4-120894-5, paperback. *Journal of Biosocial Science*, 35(4), 624–625. <https://doi.org/10.1017/s0021932003245508>
- Virtuous pie vancouver: Pizza + Ice Cream made from plants*. Virtuous Pie. (2023, April 3). Retrieved April 15, 2023, from <https://virtuouspie.com/locations/canada/chinatown/>

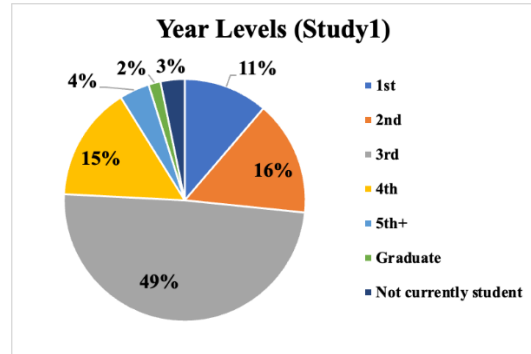


## Appendix A (Study 1)

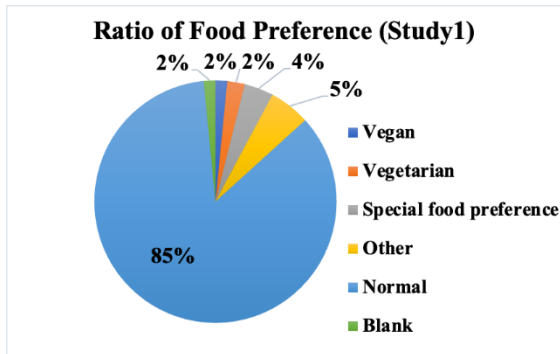
Appendix A1: Gender distribution graphic



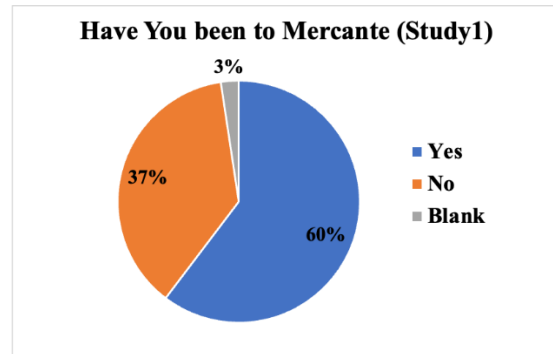
Appendix A2: Year level distribution graphic



Appendix A3: Diet distribution graphic



Appendix A4: Previous Mercante distribution graphic



Appendix A5: Top Condition Menu Sample

<b>VEGAN FEATURE</b> <small>VEGAN</small>	16.00
Basil, eggplant, breadcrumbs onto the base	
<b>PIZZA BIANCA</b>	17.00
Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese	
<b>ORTOLANA</b>	16.00
Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato	
<b>ALLA SALSICCIA</b>	17.00
Chorizo, tomato, basil, oregano and mozzarella	
<b>AL PESTO</b>	18.00
Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato	
<b>PESTO POLLO</b>	19.00
Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom	
<b>MARGHERITA</b>	16.00
Classic tomato, basil and bocconcini	
<b>PROSCIUTTO E RUCOLA</b>	17.00
Tomato, prosciutto, arugula, bocconcini and basil	

Appendix A6: Middle Condition Menu Sample

<b>ALLA SALSICCIA</b>	17.00
Chorizo, tomato, basil, oregano and mozzarella	
<b>PIZZA BIANCA</b>	17.00
Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese	
<b>ORTOLANA</b>	16.00
Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato	
<b>VEGAN FEATURE</b> <small>VEGAN</small>	16.00
Basil, eggplant, breadcrumbs onto the base	
<b>AL PESTO</b>	18.00
Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato	
<b>PESTO POLLO</b>	19.00
Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom	
<b>MARGHERITA</b>	16.00
Classic tomato, basil and bocconcini	
<b>PROSCIUTTO E RUCOLA</b>	17.00
Tomato, prosciutto, arugula, bocconcini and basil	

### Appendix A7: Bottom (Control) Condition Menu Sample

<b>PROSCIUTTO E RUCOLA</b>	17.00
Tomato, prosciutto, arugula, bocconcini and basil	
<b>PIZZA BIANCA</b>	17.00
Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese	
<b>ORTOLANA</b>	16.00
Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato	
<b>ALLA SALSICCIA</b>	17.00
Chorizo, tomato, basil, oregano and mozzarella	
<b>AL PESTO</b>	18.00
Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato	
<b>PESTO POLLO</b>	19.00
Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom	
<b>MARGHERITA</b>	16.00
Classic tomato, basil and bocconcini	
<b>VEGAN FEATURE</b>  VEGAN	16.00
Basil, eggplant, breadcrumbs onto the base	

### Appendix A8: Questionnaire Sample

Displayed below is a menu from a pizza restaurant, please read through the menu and pick a pizza you would like to get.

<b>VEGAN FEATURE</b>  VEGAN	16.00
Basil, eggplant, breadcrumbs onto the base	
<b>PIZZA BIANCA</b>	17.00
Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese	
<b>ORTOLANA</b>	16.00
Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato	
<b>ALLA SALSICCIA</b>	17.00
Chorizo, tomato, basil, oregano and mozzarella	
<b>AL PESTO</b>	18.00
Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato	
<b>PESTO POLLO</b>	19.00
Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom	
<b>MARGHERITA</b>	16.00
Classic tomato, basil and bocconcini	
<b>PROSCIUTTO E RUCOLA</b>	17.00
Tomato, prosciutto, arugula, bocconcini and basil	

Please select the pizza you would like to order from this menu, do this one, and make sure it is in the same order as the menu in that condition.

VEGAN FEATURE  
 PIZZA BIANCA  
 ORTOLANA  
 ALLA SALSICCIA  
 AL PESTO  
 PESTO POLLO  
 MARGHERITA  
 PROSCIUTTO E RUCOLA

### Appendix A9: Study 1 Chi-Square analysis contingency table (results)

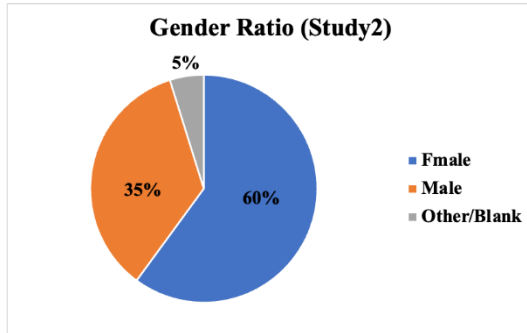
Vegan or Non-Vegan (Study1)		Condition (Study1)			Total
		Bottom (Control)	Middle	Top	
Non-Vegan	Count	42.000	41.000	41.000	124.000
	% within column	100.000 %	100.000 %	95.349 %	98.413 %
Vegan	Count	0.000	0.000	2.000	2.000
	% within column	0.000 %	0.000 %	4.651 %	1.587 %
Total	Count	42.000	41.000	43.000	126.000
	% within column	100.000 %	100.000 %	100.000 %	100.000 %

### Chi-Squared Tests

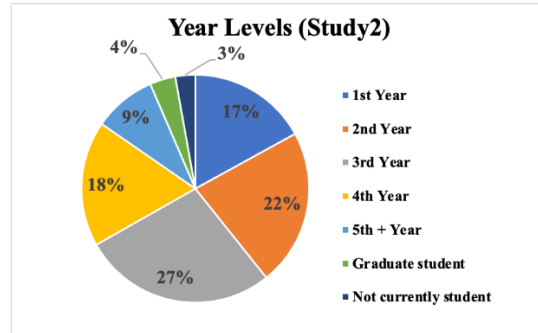
	Value	df	p
$\chi^2$	3.923	2	0.141
N	126		

## Appendix B (Study 2)

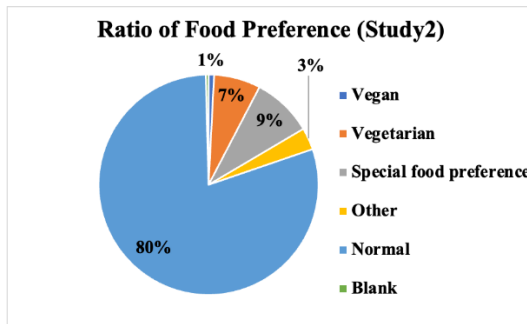
Appendix B1: Gender distribution graphic



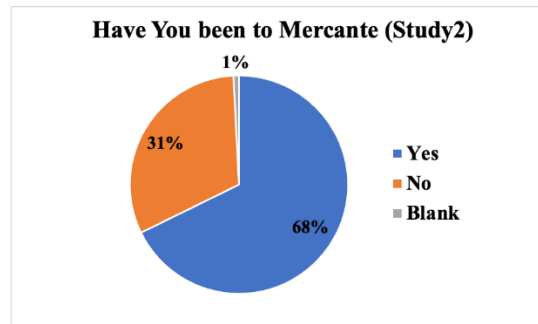
Appendix B2: Year level distribution graphic



Appendix B3: Diet distribution graphic



Appendix B4: Previous Mercante distribution graphic



Appendix B5: Top Condition Menu Sample

<b>PLANT BASED MAC + CHEZZA PIZZA</b> <small>VEGAN</small>	16.00
<i>Cashew Mac Sauce, Cashew Mozza, Tofu Feta, nuts</i>	
<b>PIZZA BIANCA</b>	17.00
<i>Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese</i>	
<b>ORTOLANA</b>	16.00
<i>Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato</i>	
<b>ALLA SALSICCIA</b>	17.00
<i>Chorizo, tomato, basil, oregano and mozzarella</i>	
<b>AL PESTO</b>	18.00
<i>Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato</i>	
<b>PESTO POLLO</b>	19.00
<i>Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom</i>	
<b>MARGHERITA</b>	16.00
<i>Classic tomato, basil and bocconcini</i>	
<b>PROSCIUTTO E RUCOLA</b>	17.00
<i>Tomato, prosciutto, arugula, bocconcini and basil</i>	

Appendix B6: Middle Condition Menu Sample

<b>ALLA SALSICCIA</b>	17.00
<i>Chorizo, tomato, basil, oregano and mozzarella</i>	
<b>PIZZA BIANCA</b>	17.00
<i>Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese</i>	
<b>ORTOLANA</b>	16.00
<i>Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato</i>	
<b>PLANT BASED MAC + CHEZZA PIZZA</b> <small>VEGAN</small>	16.00
<i>Cashew Mac Sauce, Cashew Mozza, Tofu Feta, nuts</i>	
<b>AL PESTO</b>	18.00
<i>Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato</i>	
<b>PESTO POLLO</b>	19.00
<i>Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom</i>	
<b>MARGHERITA</b>	16.00
<i>Classic tomato, basil and bocconcini</i>	
<b>PROSCIUTTO E RUCOLA</b>	17.00
<i>Tomato, prosciutto, arugula, bocconcini and basil</i>	

Appendix B7: Bottom (Control) Condition Menu Sample

<b>PROSCIUTTO E RUCOLA</b>	17.00
Tomato, prosciutto, arugula, bocconcini and basil	
<b>PIZZA BIANCA</b>	17.00
Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese	
<b>ORTOLANA</b>	16.00
Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato	
<b>ALLA SALSICCIA</b>	17.00
Chorizo, tomato, basil, oregano and mozzarella	
<b>AL PESTO</b>	18.00
Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato	
<b>PESTO POLLO</b>	19.00
Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom	
<b>MARGHERITA</b>	16.00
Classic tomato, basil and bocconcini	
<b>PLANT BASED MAC + CHEZZA PIZZA</b>  VEGAN	16.00
Cashew Mac Sauce, Cashew Mozza, Tofu Feta, nuts	

Appendix B8: Questionnaire Sample

Displayed below is a menu from a pizza restaurant, please read through the menu and pick a pizza you would like to get.

<b>ALLA SALSICCIA</b>	17.00
Chorizo, tomato, basil, oregano and mozzarella	
<b>PIZZA BIANCA</b>	17.00
Bocconcini, mozzarella, gorgonzola, parmesan and chevre cheese	
<b>ORTOLANA</b>	16.00
Basil, mozzarella, bocconcini, arugula, artichokes and pickled tomato	
<b>PLANT BASED MAC + CHEZZA PIZZA</b>  VEGAN	16.00
Cashew Mac Sauce, Cashew Mozza, Tofu Feta, nuts	
<b>AL PESTO</b>	18.00
Pesto, prosciutto cotto, mozzarella, gorgonzola, artichokes and pickled tomato	
<b>PESTO POLLO</b>	19.00
Pesto, roasted chicken, mozzarella, artichokes and pickled mushroom	
<b>MARGHERITA</b>	16.00
Classic tomato, basil and bocconcini	
<b>PROSCIUTTO E RUCOLA</b>	17.00
Tomato, prosciutto, arugula, bocconcini and basil	

Please select the pizza would you like to order from this menu.

ALLA SALSICCIA  
 PIZZA BIANCA  
 ORTOLANA  
 PLANT BASED MAC + CHEZZA PIZZA  
 AL PESTO  
 PESTO POLLO  
 MARGHERITA  
 PROSCIUTTO E RUCOLA

Appendix B9: Study 2 Chi-Square analysis contingency table (results)

Vegan or Non-Vegan (Study2)		Condition (Study2)			Total
		Bottom (Control)	Middle	Top	
Non-Vegan	Count	80.000	81.000	74.000	235.000
	% within column	96.386%	96.429%	91.358%	94.758%
Vegan	Count	3.000	3.000	7.000	13.000
	% within column	3.614%	3.571%	8.642%	5.242%
Total	Count	83.000	84.000	81.000	248.000
	% within column	100.000%	100.000%	100.000%	100.000%

Chi-Squared Tests

	Value	df	p
$\chi^2$	2.800	2	0.247
N	248		

## Appendix C (Demographic Questionnaire for Study 1 and Study 2)

### Appendix C1: Demographic Questionnaire of both Study 1 and Study 2 (both studies used the same questionnaire)

How old are you? (If you are not comfortable to answer, please type "NA" in the blank)

What is your gender?

Male

Female

Non-binary / third gender

Prefer not to say

Others (Please enter below)

Are you a UBC community member?

UBC student

UBC staff

UBC alumni

Not UBC community

What is your year level?

1st year

2nd year

3rd year

4th year

5th + year

Graduate student

Currently not a university student

Have you been to Mercante before? (Mercante is pizza restaurant on UBC Vancouver campus)

Yes

No

What is your dietary preference?

Normal diet

Vegan

Vegetarian

Pescatarian (only fish instead of meats)

Flexitarian (mainly plant-based foods and a little meats)

Macrobiotic diets (strict diet to reduce toxins)

other

## Appendix D (Combined result of Study 1 and Study 2)

Appendix D1: Combined Study 1 and Study 2 Chi-square analysis contingency table (results)

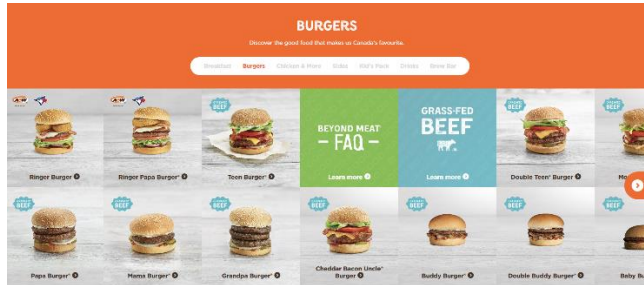
Vegan or Non-Vegan (Name Change)		Study		Total
		Study1	Study2	
Vegan	Count	2.000	13.000	15.000
	% within column	1.587%	5.242%	4.011%
Non-Vegan	Count	124.000	235.000	359.000
	% within column	98.413%	94.758%	95.989%
Total	Count	126.000	248.000	374.000
	% within column	100.000%	100.000%	100.000%

### Chi-Squared Tests

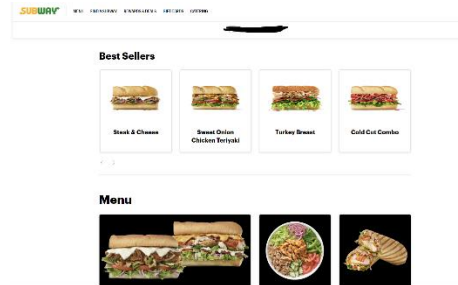
	Value	df	p
$\chi^2$	2.899	1	0.089
N	374		

## Appendix E (Discussion example imagines)

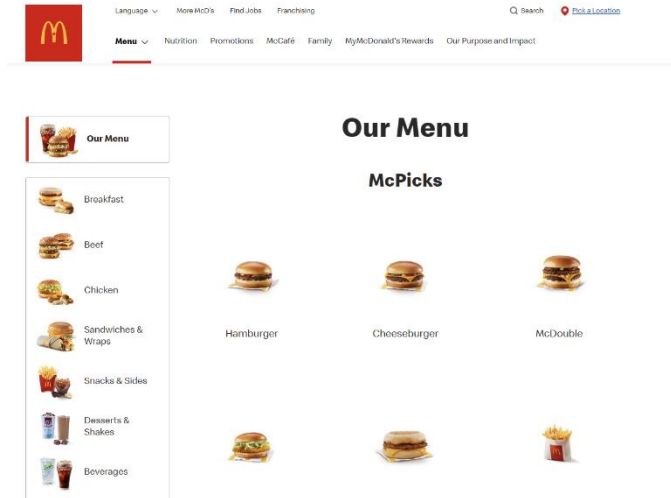
Appendix E1: A&W Canada Menu



Appendix E2: Subway Canada Menu



Appendix E3: McDonald's Canada Menu



Appendix E4: Subway Store menu view (example of elevated menu)



## Appendix F (Contributions of team members)

**Chunkit Hong (Max Hong):** wrote the research questions, methods, anticipated outcomes, and edited background literature in the proposal, and did a final check and submission. In Data collection, promoted our studies across many social media platforms multiple times, and went around the UBC Vancouver campus to recruit more participants in person. In Data analysis, performed multiple data analysis with JASP in the early stages. In the Presentation, as presenter for the presentation phase and answered all questions proposed by clients. Also made edits and final checks on the presentation slides and data presented. In the final report, wrote the executive summary, introduction, research question, hypothesis, final discussions, and implications. Took notes from teammates and wrote methods and results sections and made edits. Did overall formatting and additional research needed for the final report.

**Man Hon Szeto:** wrote background literature in the proposal. Created a question for proposal with other group members. In data collection, promote our surveys on social media, campus. Went around the UBC Vancouver campus to recruit participants to take our survey. In the presentation, helped design the layout and made the presentation look easy to read and understandable, and put information in slides. Supervise presentation slides, and ensure things are going well. In the final report, wrote on general discussion and suggestion for UBC clients, finalised the project and checked for grammatical mistakes.

**Shengqi Cui:** searched the previous studies to support the background literature in the proposal. Also, created the framework of the survey, and re-created the menu from the Mercante. Confirmed the required sample size of present study with Dr. Zhao and made the final process-check of the survey. In data collection, spread the survey on social media, discussion forums of other courses after negotiating with the instructors, as well as went around campus with group members to recruit participants in person. In data analysis, checking the data analysis of study 1, via SPSS and JASP. In the presentation, contributed to create the slide by adding pictures, contents. Then, having office hours with Dr. Zhao checked the slide following criteria, in order to make less mistakes. In the final report, wrote the introduction parts and appendix parts.

**WeiJie Chen:** contributed to creating the question and the data part in the proposal, and supervised the proposal to do a final check. In data collection, spread surveys via different social media, also recruited participants in-person with group members in the UBC campus, twice. In data analysis, asked questions to clear out misunderstandings during the meeting and provided help to Yoshihiro. Then, supervised the slides of the presentation, making sure there are as little mistakes as possible. In the final report, contributed the overall framework of the final report and started introduction and background literature, finding more background literature for the present studies, did the entire method part with the help of Yoshihiro and parts of reference.

**Yoshihiro Toyama:** contributed to the method part, in the proposal. Ran G-power and created surveys for study 1&2 (demographic questions). Booked an office hour with a supervisor for the research topic. In data collection, made surveys' QR cords and recruited participants in-person in the UBC campus and online across social media. In data analysis, using SPSS and Excel organized data, ran the Chi-square in the JASP to analyze data for study 1 & 2, hypotheses testing, and organized and summarized demographic data for study 1 & 2, booked office hours with Dr. Zhao about statistical analysis. In the presentation, contributed to study 1 & 2's data and



result parts. Summarized and prepared all data from the survey based on questions. Booked an office hour with Dr. Zhao before the presentation, to solve the problem of slides. In the final report, contributed the data analysis, method, and result part. Also, created charts and tables for study 1&2, and demographic data in both studies in the appendix.