Sustainable Food Choices: What's on your plate, Vancouver?

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Big Biceps

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Executive Summary

Our choices in the supermarket could affect the carbon footprints we leave behind. Purchasing organic foods not only benefits our health, but also the environment (Loo et al, 2013) This study investigated the following research questions: What do people in Vancouver believe to be the most sustainable food? What kind of food are they currently purchasing? What kind of food are they willing to purchase? The study collected data using survey sampling and online questionnaires. The survey was designed to test the participant's knowledge on sustainable foods, the participant's current food choices, and how willing or reluctant they are to purchase sustainable foods. Using within subject design we asked the participants to rate 1-10 on how sustainable they believe locally grown, Beans and peas, Green Leaf Vegetables, and Read meat are. We found that most participants are willing to purchase organic and sustainable foods, however they do not have sufficient knowledge as to what kind of foods are sustainable.

Research Question and Hypothesis

Our main topic for our study is food choices, particularly focusing on sustainable foods. We proposed 3 research questions that we wanted to find out through our conducted survey. The first question is what do people in Vancouver believe to be the most sustainable food? This will test the participant's knowledge on how well they understand the term sustainability. This leads into our next question of what kind of foods are they currently purchasing and what kind of foods are they willing to purchase? Participants may differ in what they believe to the actual food choices they are making. We hypothesize people in Vancouver believe organic food to be the most sustainable but participants are purchasing more processed foods on a regular basis. We also predict participants would be more willing to purchase sustainable foods if they were more educated on what kinds of foods are considered to be sustainable.

Method

Participants

Our study consisted of participants who are currently living in the Vancouver area. A broad range of individuals aged 18-45 was used in our study. Our sample size of participants resulted in a total of 20 males and 32 females that were used in the study process.

Conditions

We used a within-subject design to examine the beliefs and attitudes, as well as the habits, of Vancouver consumers in relation to various food choices. All participants were subjected to 15 conditions: food sustainability beliefs, current food choices, and inclination to sustainable food practices; and organic food, locally grown food, beans and peas, green leaf vegetables, and red meat. For each of the five food conditions, participants were asked to determine how sustainable they believe the particular food choice to be, identify the kind of food they are currently purchasing, and assess their willingness to purchase the given kind of food.

Measures

We used self-report online surveys through Google Forms to conduct our research. Our questionnaire comprised of three sections, with the first portion registering the participant's demographics, particularly their age and gender. The second section, which encompassed the core of the survey, consisted of questions that assessed information regarding their attitudes and beliefs about the sustainability of various food choices (i.e., organic food, locally grown food, beans and peas, green leaf vegetables, and red meat) using a ten-point scale that ranges from 'very unsustainable' (score 1) to 'very sustainable' (score 10). This portion of the questionnaire also assessed the participant's current food choices by asking them to identify how often they buy a given type of food, from 'once a month' (score 1) to '10 times or more a month' (score 10). Following being informed that the particular type of food is sustainable, participants were further inquired about their willingness to purchase the given food group on yet another ten-point interval scale from 'very reluctant (score 1) to 'very willing' (score 10). The third segment of our questionnaire dealt with the participant's understanding of the term "sustainable food," the kind of food they are currently purchasing and the rationale behind their food choices, the reason as to why they are not presently purchasing sustainable food, and finally their intended future food practices. The general format of these questions involved multiple choice questions with an "other" option to allow the participants to provide an alternative response.

Procedure

Our survey was created from Google Forms online based on our 3 original research questions. All of the participants were given access to our online survey to fill out regarding their lifestyle food choices. Our subject pool consisted of individuals who are currently residing in Vancouver whom we approached and asked to participate at Dunbar, Kitsilano, Marpole, and Sunset community centres. Participants were first asked to fill out an online consent form that informed them that their responses would be strictly confidential and anonymous. Afterwards, each participant was given an unlimited amount of time to complete the survey to the best of their abilities. We provided either an iPad or a laptop during the instances when the participant did not have their own. The survey consisted of five major food conditions that each participant was required to rate on a scale from 1 to 10. In addition, participants were asked to rate how well they understood the term sustainably as well as how willing they are to make a sustainable food purchase.

Results

From the results we collected, we analyzed the mean, median and standard deviation of the five food choices (i.e., organic food, locally grown food, beans and peas, green leaf vegetables, red meat). We evaluated each food choice by analyzing how organic the participant believed the food choice is (on a rating scale of 1-10), how sustainable the participant believed the food choice is (on a rating scale of 1-10), and how willing they are to purchase the food choice given the knowledge that the food is sustainable or not sustainable (on a rating scale of 1-10).

We also ran a two-way ANOVA. The ANOVA showed significant results for the questions [$F_{(2,102)}=53.91$, $p<.001$], significant result for the food choices [$F_{(2,102)}=53.91$, $p<.001$] and also significant results between the questions and the food choices [$F_{(8,408)}=13.19$, $p<.001$]. These significant results are analyzed below.

For our first question, we asked the participant what they believed is the most sustainable food choice. The results below shown in Figure 1 reveals that participants believed organic food to be the most sustainable. The rating for organic food had an mean of 7.77 on the rating scale of 1-10, which was higher than all the other food choices. Participants believed locally grown food to be the least sustainable as it had only an mean of 5.1 on the rating scale of 1-10. Organic food also had the lowest standard deviation compared to the other four food choices.

Mean	7.76923077	5.17307692	6.17307692	7.25	6.73076923
Median	8	5	6	8	7
SD	1.82160654	2.67685178	2.14860788	2.12247543	2.75905202

Figure 1. Mean, median and standard deviation of how sustainable to they believe, (from left to right) organic food, locally grown food, beans and peas, green leaf vegetables, red meat are.
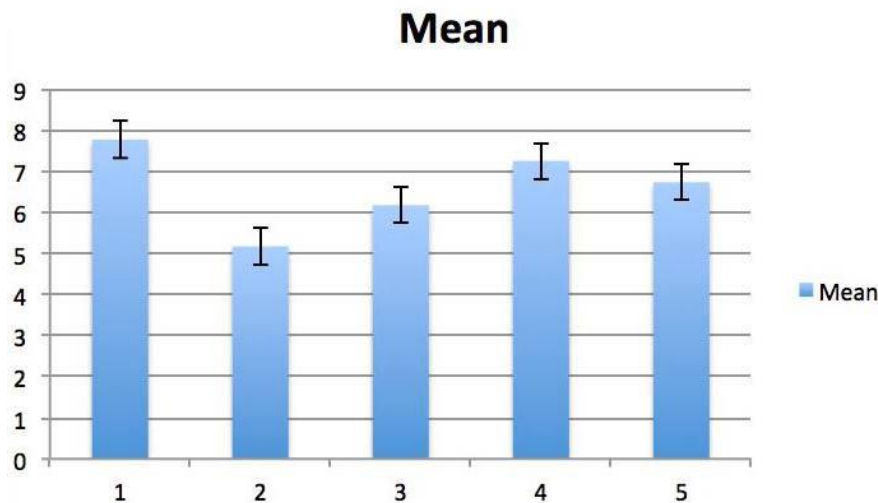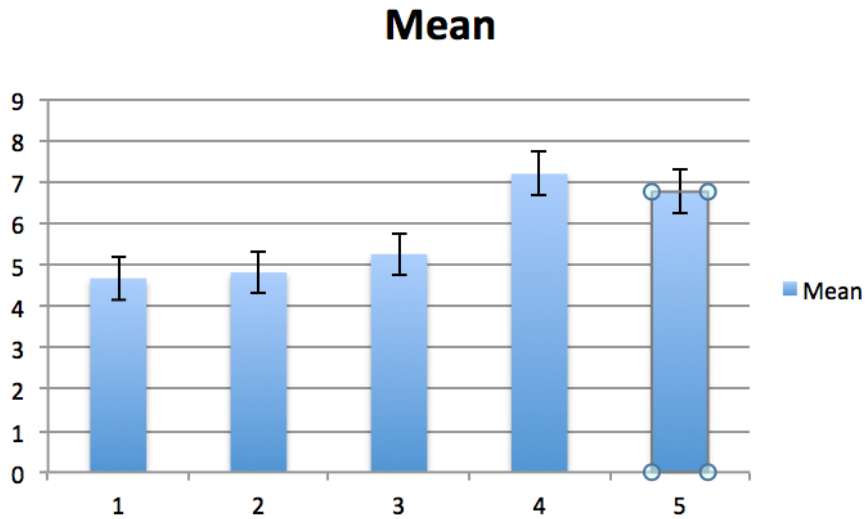

Figure 2. Mean of "How sustainable do you believe (X axis, 1 = Organic food, 2 =Locally grown food, 3 = beans and peas, 4 = green leaf vegetables, 5= red meat)

For our second question we asked the participants to rate how often they purchase the selected food choices on rating scale of 1-10. In Figure 2, "green leaf vegetables" has the highest mean ($\bar{x} = 7.19$) and "organic food" has the lowest mean ($\bar{x} = 4.67$). These results concluded that participants are purchasing green leaf vegetables more often than the other food choices.

Mean	4.67258625	4.81419439	5.25521382	7.1909517	6.67754207
Median	4.5	5	5	7	7
SD	1.81049377	1.95697172	2.22503109	2.21654849	2.32678278

Figure 3. Mean, median and standard deviation of how often do they purchase, (from left to right) organic food, locally grown food, beans and peas, green leaf vegetables, and red meat.
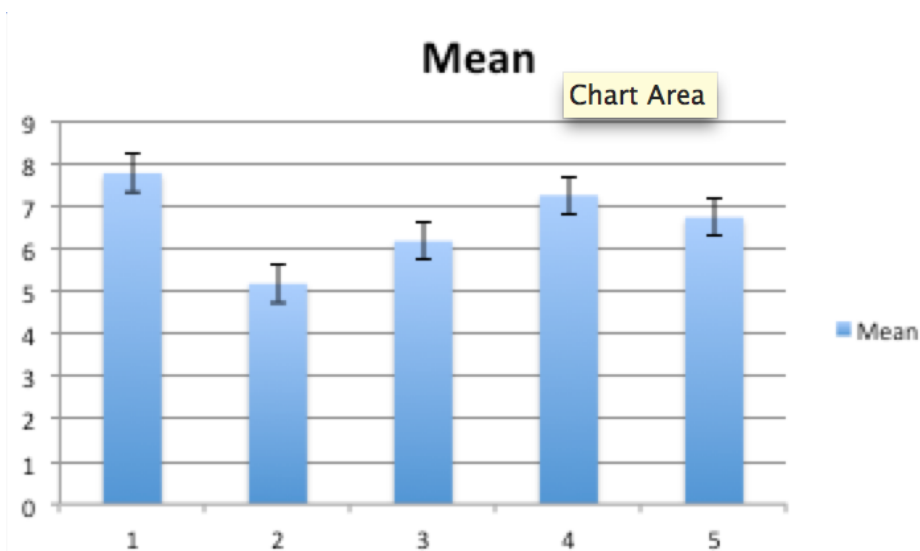
Mean

Figure 4. Mean of "How often do you purchase (X axis, 1 = Organic food, 2 =Locally grown food, 3 = beans and peas, 4 = green leaf vegetables, 5= red meat)

For our third question, we asked participants to rate how willing they are to purchase selected food choices given that it is sustainable. The results concluded that people were willing to purchase all five food choices if they were sustainable.

Mean	7.23076923	7.67307692	6.01923077	7.51923077	7.82692308
Median	8	8	6	8	8
SD	2.11080678	2.07431684	2.30507015	2.38861995	2.10248363

Figure 5. Mean, median and standard deviation of how willing they are to purchase, (from left to right) organic food, locally grown food, beans and peas, green leaf vegetables, and red meat given that it is sustainable.

Mean

Figure 6. Mean of "How willing are you to purchase (X axis, 1 = Organic food, 2 =Locally grown food, 3 = beans and peas, 4 = green leaf vegetable, 5= red meat) given it it is sustainable"

We asked the participants what type of food they are currently purchasing. 33% of the participants are currently purchasing processed foods.
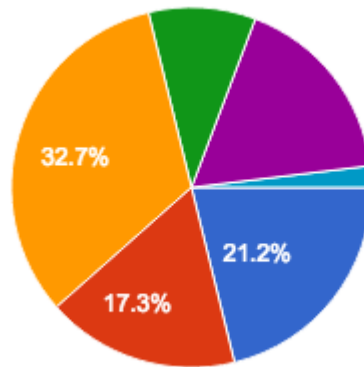
Figure 4. Percentage of people purchasing (yellow = processed foods,
red = non sustainable food, green = sustainable food, purple = fast food, blue = red meat, light blue = other)

We also asked the participants to rate how well they know the term "food sustainability" on a rating scale of 1-10. The results showed that most participants did not know the term "food sustainability" well ($\bar{x} = 4.97$).

Mean	4.59615385
Median	4.5
SD	2.84404859

Figure 5. Mean, median and standard deviation of how well participants knew the term "food sustainability"

Discussions

The purpose of the self-reported online survey conducted was to answer the three research questions including, what do people in Vancouver believe to be the most sustainable food, what kind of food are they currently purchasing, and what kind of food are they willing to purchase. We asked participants about their beliefs on 5 different food sources, and the results of our data show that people in Vancouver believe organic foods are the most sustainable. However, when participants were asked how often they would purchase each food source, organic foods are not commonly purchased by the same group of participants that believe organic foods are sustainable. Instead, the main type of foods that people are currently purchasing are green leaf and vegetables. Participants were also asked whether they would purchase a food source given that it is sustainable, the results show that most participants are willing to purchase sustainable foods if they are informed that the food source is sustainable. The results of our study were significant. Therefore the results supported the hypothesis of all three research questions. Our results supported the hypothesis that participants believe organic food to be the most sustainable and also participants are willing to purchase the food choice given it is sustainable. Our last hypothesis was also supported. Participants are currently purchasing processed food. However, after closely looking at the results, the data shows that most participants do not seem to value the benefits of choosing sustainable foods. This may be due to participants lacking the knowledge of sustainable foods and the value of choosing these foods. Respondents will

have a higher regard for purchasing sustainable foods once they have a better comprehension of what sustainability is (Vermeir I & Verbeke W, 2006).

Limitations of the study may play a role in the validity of the responses. Since time was limited, only a small sample size was collected, causing a lower external validity of the results. The use of self-report online survey may lead to response bias in data collection. Nonresponse bias is one good example, it occurs when the respondents differ in meaningful ways from nonrespondents. Nonresponse may introduce a bias in estimates when nonrespondents differ from respondents in the characteristics measured. Since the response rate for self-reported online survey is often low, it can also cause an increase in the total variance of estimates since the sample size being measured may not represent the entire target group. Similar to Nonresponse bias, voluntary response bias also may also play a role in limiting the representation of the target group. Voluntary response bias occurs when the participants are self-selected volunteers, which often over represent individuals who have strong opinions. The lack of detailed information about each participant limits the ability to fully understand and interpret the responses. The missing information of the participants, such as their ethnicity, cultural background, and income limits the understanding of relationship between the characteristics of each participant and their responses.

Recommendations for Our Client

Based on the results on our survey, most people that live Vancouver lacks knowledge on sustainable foods. Promoting eating sustainable foods may not have a strong impact on food sustainability, because most Vancouver residences are already willing to purchase sustainable foods. The participants demonstrated insufficient knowledge on which foods are sustainable and which are not. For example, many participants have the misconception of red meat being a sustainable food choice. We realized the problem isn't that participants are not willing to purchase sustainable foods, but they do not know what is sustainable and what isn't. To help counter this issue we believe in addition to organic food labels in grocery stores, we can add a sustainability tag on products too.

Appendix

Encountered Issues

We encountered an array of issues during our research, starting with the construction of our online survey. We did not conduct adequate research prior to its development and distribution to the public, resulting in the absence of particular elements necessary to ensure methodological rigor. We incorporated the use of rating scales ranging from point 1 to 10 for close-ended questions on the basis that such scales will allow for a middle "neutral" response option (i.e., point 5) and provide participants with greater alternatives to facilitate a response that better reflects their beliefs and attitudes. We only assigned labels for the endpoints on our 10-point rating scales, thereby leaving the participants to decipher the meaning of points 2 to 9 at their own discretion. The partially labeled scales makes our study prone to error as we had no criteria on which to base our interpretations of their responses. To reduce the likelihood of error that generally ensues from vaguely defined meanings and to increase reliability, we would have

better benefited by utilizing fully labeled scales instead of leaving the response alternatives (i.e., points 2 to 9) open to individual interpretation (as cited in Cozby & Rawn, 2012).

In addition to poorly defined response alternatives, we should have reduced the range of our rating scales. The 10-point scales used in our survey provided too many options that merely served to further increase the ambiguity of the participant's responses. Considering 5-point or 7-point scales are commonly used by researchers, we should have narrowed our response alternatives down to either 5 or 7 options in order to simplify our online questionnaire (Cozby & Rawn, 2012). 5- or 7-point scales still offer a sufficient number of responses to choose from while the odd number of available options continue to provide a "neutral" point (Cozby & Rawn, 2012).

Additional Graphs
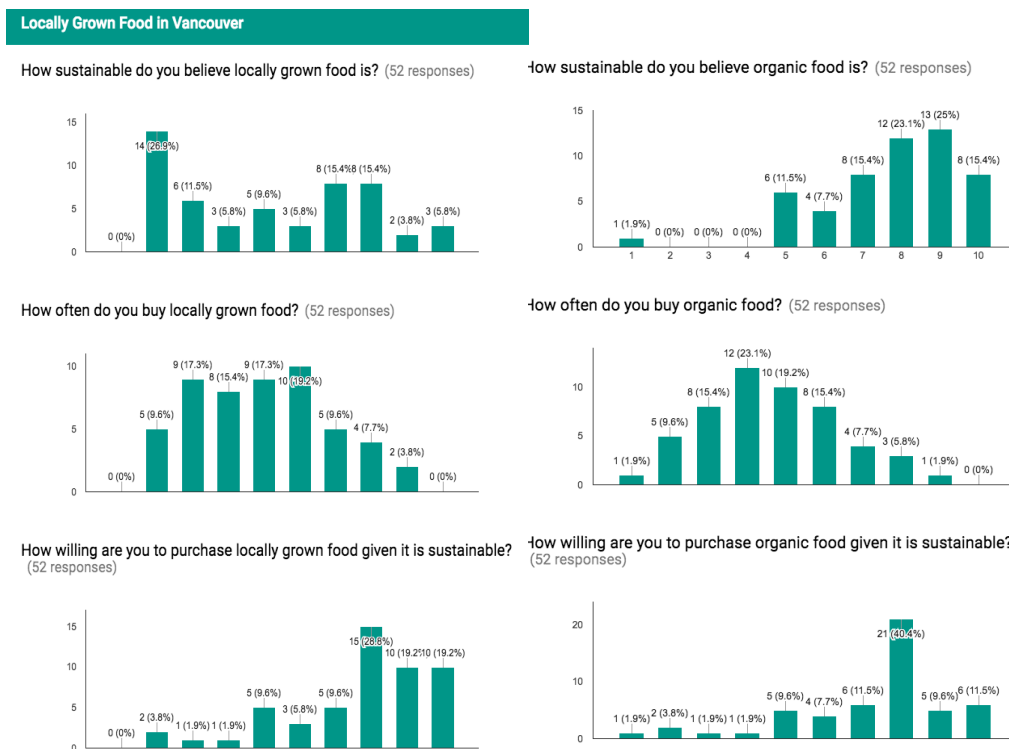
Beans and Peas

How sustainable do you believe beans and peas are? (52 responses)
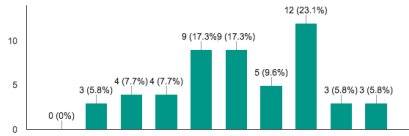
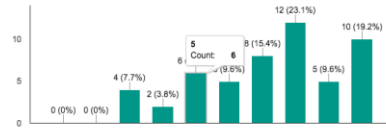**How often do you buy beans and peas?** (52 responses)
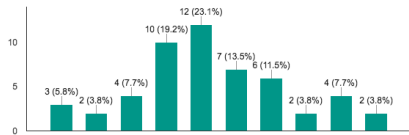
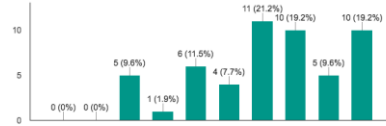**How willing are you to purchase beans and peas given they are sustainable?** (52 responses)
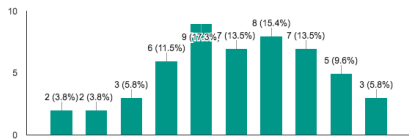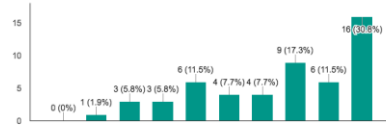

Green Leaf Vegetables

How sustainable do you believe green leaf vegetables are? (52 responses)
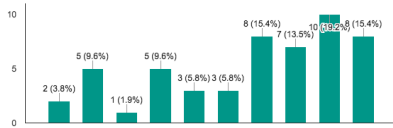

How often do you buy green leaf vegetables? (52 responses)

How willing are you to purchase green leaf vegetables given they are sustainable? (52 responses)
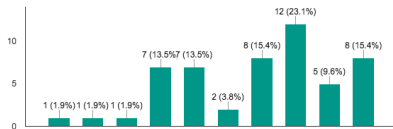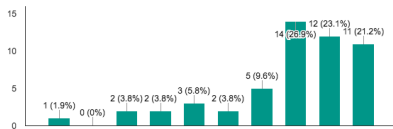

Red Meat

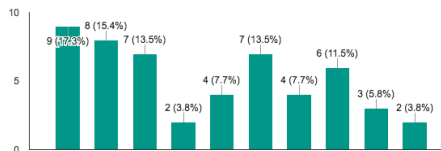**How sustainable do you believe red meat is?** (52 responses)

How often do you buy red meat? (52 responses)

How willing are you to purchase red meat given it is sustainable? (52 responses)

How well do you know the term "sustainable food"? (52 responses)

References

Cozby, P. C., & Rawn, C. D. (2012). Methods in Behavioural Research, First Canadian Edition. McGraw-Hill: Toronto, ON.

Vanhonacker, F., Van Loo, E. J., Gellynck, X., & Verbeke, W. (2013). Flemish consumer attitudes towards more sustainable food choices. *Appetite, 62*, 7-16. doi:10.1016/j.appet.2012.11.003

Vermeir, I., & Verbeke, W. (2006). Sustainable Food Consumption: Exploring the Consumer "Attitude – Behavioral Intention" Gap. *J Agric Environ Ethics Journal of Agricultural and Environmental Ethics, 19*(2), 169-194. doi:10.1007/s10806-005-5485-3