UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program
Student Research Report

UBC Food Services Healthy Beverage Initiative: Student Survey

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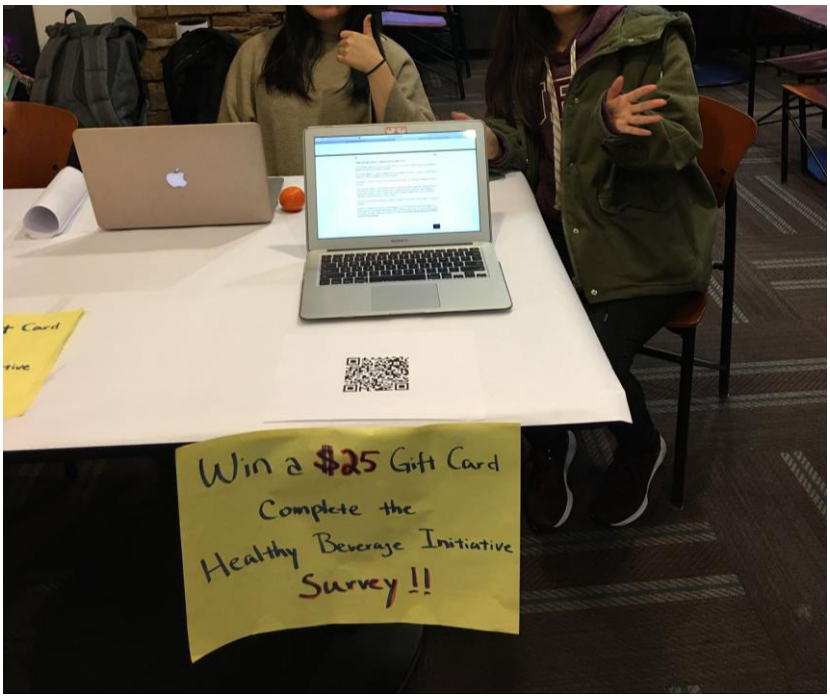
SEEDS Project: UBC Food Services Healthy Beverage Initiative:

Student Survey



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Executive Summary

Sugar sweetened beverages (SSBs) represent a large amount of sugar consumption in Canada (Malik, Popkin, Bray, Despres, Willet, 2010) and the habitual consumption of SSBs is associated with certain chronic diseases, such as obesity and diabetes (Vasanti, Barry, George, Jean-Pierre, Frank, 2010). Previous studies and reports have shown that certain interventions such as taxation, hydration stations and phasing out SSBs can help reduce the consumption SSBs (Jones & Hammond, 2017; Alfred Health, n.d). Healthy Beverage Initiative (HBI), led by various UBC divisions including UBC Wellbeing, aims to promote water consumption and considering phasing-out SSBs across the UBC Vancouver campus. The goal of our project is to understand UBC students' behaviors and attitudes towards SSBs and gain feedbacks that could help develop the HBI. This was done by presenting background information of the HBI for classes and dining halls at UBC, and administering online surveys. In total, we collected 288 responses and analyzed 965 responses with extra provided by UBC Wellbeing. We identified increasing accessibility in clean/filtered tap water and providing cheaper healthier beverages as the preferred strategies by UBC students to reduce SSBs consumption. Both process evaluation and outcome evaluation have been done to confirm the survey effectiveness and community partner satisfaction. Future evaluation survey for our medium-term objectives is also proposed. We also created a report and an infographic for UBC Wellbeing to present to UBC executives. We hope this will enable the executives to make the decision that best serves the interests of UBC community. Through this project, we learned the importance of establishing a timeline and creating a Logic Model when working on a health driven intervention. We also acknowledged being flexible as essential in order to meet our community partners' needs and concerns.

Introduction

Sugar-sweetened beverages (SSBs) refers to any liquids that are sweetened with various forms of added sugars, such as corn syrup, glucose, or lactose (Centers for Disease Control and Prevention, 2017). Research shows that frequent consumption (≥2 SSBs per day) of SSBs is associated with the development of obesity, type II diabetes, and cardiovascular disease (Vasanti *et al*, 2010). In addition, Centers for Disease Control reports that heart disease and diabetes respectively accounted for 23.4% and 2.9% of the total mortality rate of United States in 2015 (Heron, 2017). To address this, a Healthy Beverage Initiative (HBI) has been launched by the University of California San Francisco (UCSF) in 2015, where they took progressive actions in phasing out the sales of SSBs and limiting sales to zero-calorie beverages and non-sweetened beverages (Bole, 2015). Inspired by the UCSF project, The University of British Columbia (UBC) started to explore its own HBI project in 2018. The first phase of this project is a comprehensive analysis of the current beverage consumption in UBC community and its influencing factors, using an online survey. The survey can also help understand behavior changing strategies and evaluate how UBC students, faculties and staffs (target audience of the HBI project) view the role of the university in promoting tap water and non-sweetened beverages consumption (beverage classification see appendix B). Hence, the initiative can be implemented appropriately for the UBC community.

This project was completed in collaboration with the members of the HBI team at UBC Wellbeing, including Melissa Baker, Rachelle Delaney, and Heather Quigley. David Gill from UBC SEEDS Sustainability Program was also supportive in the development of the project.

Situational Assessment and Planning Framework

i. Problems

As stated above, emerging evidence has suggested that habitual consumption of SSBs is associated with increased risk of many chronic conditions, such as obesity and diabetes. A meta-analysis of 11 cohort studies showed that, people who consumed 1-2 servings of SSBs daily had 26% greater risk of type 2 diabetes than those who did not usually drink SSBs (<1 serving/month) (Anari, Amani, & Veissi, 2017). Another meta-analysis of randomized controlled trials (RCTs) also showed reduction in body mass index (BMI) gain in children when SSBs were reduced (−0.17; 95% CI: −0.39, 0.05), whereas increase in body weight in adults when SSBs were added (0.85 kg; 95% CI: 0.50, 1.20) (Malik, Pan, Willett & Hu, 2013). The health effect of SSBs was proposed as not only related to the consumption of sugar itself, but also because of the replacement of other nutrient-rich food by the empty calories (Malik, Schulze, & Hu, 2006).

Young adults are most susceptible to the effect of SSBs because they drink SSBs more frequently than any other adult age groups. For example, according to Statistics Canada (2015), among individuals between age of 19 and 30, 47% of men and 27% of women reported having consumed regular soft drinks in the previous day, which is the highest among all adult age groups. Similar to this trend, UBC students consume a significant amount of SSBs. In a conversation with the UBC HBI team, SSB's were noted to make up a significant portion of beverage sales on campus (HBI Team, personal communication, January 2018). This consumption of SSBs may be putting the UBC community at a risk of related adverse health effects.

Reducing UBC community's consumption of SSBs may be beneficial, but also challenging. Currently, the SSBs are available at all retail outlets on UBC campus. Also, UBC is under a cold beverage agreement (CBA) with Coca Cola, which allows Coca Cola to promote its

products on campus (Nguyen, 2017). The current CBA will end in the summer of 2018, which will provide UBC the opportunity to reshape its food environment. The health promoting teams at UBC, e.g. UBC Wellbeing, will serve as community assets for our project and exploring the reduction of SSBs consumption in UBC community.

ii) Behaviors

To date, there is limited research evidence on SSB consumption in the context of Canadian universities, with the majority of research being conducted in US. Appropriate knowledge translation will be made while we transfer US data to the Canadian context.

Attending university or college has been reported to be a critical period for weight gain through behaviors related to SSBs consumption (Deliens, Clarys, De Bourdeaudhuij & Deforche, 2015). According to West et al., (2006), 95% of college students in the United States claimed to have consumed SSBs in the past month and 65% of students reported to drink SSBs daily. Study habits and alcohol consumption are two contributors to SSBs consumption among university students (Malinauskas, Aeby, Overton, Carpenter-Aeby & Barber-Heidal, 2007). According to Malinauskas et al. (2007), 50% of college students in the United States consume energy drinks while studying or completing a major course project. Alcohol consumption and partying among college students can also increase their consumption of SSBs, with 65% of students report to consume energy drinks in order to increase their energy while partying, 54% reported to drink with alcohol, and 17% reported to treat a hangover after parties (Malinauskas et al. 2007).

Screen-viewing behaviors among young adults have recently been identified to be associated with their consumption of SSBs. Although screen-viewing behaviors, including television watching and computer use, have long been considered as a potential contributor to excess weight gain through the reduction of energy expenditure, recent studies have shown that

screen-viewing behaviors may also affect dietary behaviors, such as the consumption of energy dense snacks and SSBs (Kremers, van der Horst & Brug, 2007). Based on the study conducted by Vereecken et al. (2006), adolescents who spent more time watching TV were more likely to consume SSBs on a daily basis and were less likely to consume fruits and vegetables. Moreover, Kremers et al (2007) have also identified that the habit strength of both behaviors correlated with a large effect size, meaning that habitual screen-viewing behaviors would be correlated with a higher consumption of SSBs on a daily basis. We should note that most of the studies were conducted with adolescents aged between 11 to 16 years old. Although results were likely transferable to university students, future research is warranted to fully understand the association between screen-viewing behaviors and SSBs consumption in our context.

iii) Mediating Factors

Various individual, interpersonal, environmental factors are closely associated with the consumption of SSBs. Increasing personal knowledge of the health impact of SSBs (e.g. obesity and diabetes) can have positive influence on limiting SSBs purchase and consumption at the individual level (Roberto, Wong, Musicus, Hammond, 2016). In the study of Rober. C and her colleagues (2016), warning labels on SSBs were used to educate consumers about the health risks associated with consuming SSBs. The results showed an increase in consumer's knowledge and harm perception, and a reduction in their purchase of SSBs. They also found the influence of the warning labels were similar regardless of consumers' education levels, indicating nutrition education can be effective in populations of various educational backgrounds.

Public advertisement relating to SSBs can also influence the drinking beverage choices. Media campaigns about sugary drinks and obesity showed effective result on raising awareness about SSBs, increasing knowledge about health impacts associated with excessive sugar

consumption, and prompting behavioral intentions to reduce SSBs consumption (Boles, Adams, Gred., & Manhas, 2014).

Availability of SSBs on campus appears to impact all university members' beverage choice. Looking at the on-campus food purchasing behavior, university students tend to purchase food and beverages based on major factors such as taste, value and availability (Tam, Yasa, etc., 2017). According to the research conducted by Bipasha et al. (2017) on students attending private universities of Bangladesh, 80.1% of the students reported to drink SSBs because of the good taste and refreshment, followed by cost (6.6%) and convenience (2.6%). Block et al's (2013) study also identified that taste is the most important determinant for choosing SSBs among college students. As for value, an average price of a SSB in a UBC vending machine is around $1.50, and average price of a bottled water is $2.00 (information given by UBC HBI team). In Tam's (2017) study, almost all respondents wanted less expensive choice at university. The price of SSBs would influence consumers toward purchasing more SSBs over healthy beverage choices. As we mentioned above, right now, SSBs are virtually available at every AMS food services, campus partners, vending machines, and food trucks on UBC campus. The greater availability, affordability, and accessibility of SSBs on campus, comparing with those of the healthier options, have put on barriers for the university members to reduce SSBs consumption.

iv) Health Behavior Theories

Given that our intervention targets both the community and individual level, we considered the Stages of Change Model, Diffusion of Innovations Theory, as well as the Social Cognitive Theory as the theory frameworks to support our project.

The Stages of Change Model aims to understand what stage an individual is at in making a behavior change. These stages include pre-contemplation, contemplation, preparation, action,

or maintenance (appendix C). To assess this at UBC, the HBI student survey will ask questions such as whether students are trying to reduce there SSB consumption, or trying to increase their healthy beverage consumption (see survey q. 20 and 33 in appendix K).

The Diffusion of Innovations Theory recognizes how new ideas and social practices spread within a community or organization (Glanz, 1997). Several concepts of this theory including innovation, social system, and communication channels, and are observed in our project (see appendix C). Our project explores a relatively new concept, aiming to understand the consumption of sugar sweetened beverages at UBC, as well as attitudes towards the HBI (innovation). In order to be effective, our intervention relies on clear communication about the HBI (communication channels) to students and faculty at UBC (social system). Applying this theory to the survey will also provide insight into what will make the HBI successful. Results will shed light on the whether the HBI can be trialed first (trialability), if the HBI is the best for fit for UBC (compatibility), and if effects of the HBI are in fact measurable (observability).

The Social Cognitive Theory helps to explain how personal and environmental factors, as well as human behaviors influence each other (Glanz, 1997). Two of the concepts of this theory, reciprocal determinism and self-efficacy, are most evident in our project (see appendix C). Beverage consumption is inherently complex and requires an understanding of the many factors of behavior. The student survey seeks to understand these relationships at UBC (reciprocal determinism). In turn, the results of the survey may shed light on what interventions are most appropriate to promote healthy beverage consumption, such as modifying the environment. The HBI student survey also aims to inform how to best promote health for individuals take action for themselves (self-efficacy). Given that a HBI is a relatively new idea, it is important that small, incremental steps are made in order to ensure success.

v) Limitations of our situational analysis

The situational analysis was done using various sources such as peer-reviewed articles, local, provincial and national statistics, as well as governmental and academic reports on previous and current similar interventions. The information was gathered in an evidence table where we could highlight the main points of each source then evaluate those points to develop our intervention. We noted any information that could aid us to conduct effective surveys and to receive useful results. Throughout our situational analysis, we acknowledge that research pertaining to national and provincial data may not apply directly to the population of UBC. With this limitation, our situational analysis may be limited in the data and research about SSBs consumption and health statuses in UBC. Another limitation was the issue surrounding the availability of some needed statistics that we hoped to use to evaluate UBC's health statistics to better inform our survey results, for example, the rates of obesity and type II diabetes in UBC student population. However, such data was not accessible.

Project Goals and Objectives

Our goal for this project is to understand UBC students' current SSBs consumption situation, the influencing factors of their habits, their preferred strategies to reduce SSBs consumption and their perspectives on the proposed HBI project. Through the survey, we also aim to increase the awareness amongst UBC community about the negative health effects of SSBs and promote drinking water. Additionally, we also aim to enhance the awareness of UBC executive members on the SSB issue in UBC community and gain their support to the UBC HBI project.

Objectives:

Short-term objectives (within 1 year):

- Complete the online survey design by reviewing and refining the survey provided by UBC Wellbeing by February 19th, 2018.
- Achieve at least 300 survey responses from UBC students by March 9th, 2018
- Increase knowledge of students' perspectives on SSBs by survey analysis and generate 1 written report with 1 infographic for UBC executives by the end of March 2018

Medium-term objectives (1-5 years*):

- Enhance the awareness of UBC students about the health impacts of SSBs indicated by a 50% increase in the number of students who would like to cut-down SSBs consumption
- Reduce the frequency of SSBs consumption in UBC community indicated by a 30% drop of the number of students who drink SSBs on daily basis

Long-term objectives (5+ years*):

- Improve overall health of UBC students, staff and faculties on campus

*Note: no specific date is set for the medium and long-term objectives because it also depends on the overall progress of the HBI project, which is not controlled by our team.

Project Outputs

Structure

Survey production

The survey was primarily developed by UBC Wellbeing. The questions were drawn from a previous survey conducted by the University of Sydney, and were modified for the UBC context. Our role was to review a long form of the survey in a meeting with UBC Wellbeing, provide suggestions to address clarity, and to decide on what questions would be most applicable to condense into a short-form survey to serve our project. The long-form survey was distributed to a different student population by UBC Wellbeing.

Sampling

Our preliminary ideas of how to administer the survey included using newsletters, listservs, and approaching undergraduate societies. It was made clear by UBC Wellbeing, however, that student participants were best engaged through in-class presentation, in order to explain the HBI and be able to answer any questions. Allowing time during this engagement for the students to complete the survey would also increase the response rates. Initially, our group contacted professors from current and previously enrolled courses. Using an email template provided by UBC Wellbeing, we requested permission for 10-15 minutes to speak to their class about our project and for students to take the survey. After many responses indicating this was too much time, or against faculty policy, our team and UBC Wellbeing revised our approach. Instead, we asked for 5 minutes and provided the professor with a follow-up email that included the survey link to distribute to the students. The revision increased the number of professors that agreed to having us present to their class. We also noticed an overrepresentation of the Faculty of Land and Food Systems (LFS) due to our initial sampling approach. To address this, we began contacting professors using email addresses obtained from the Student Services Center class registration lists, with a focus on larger faculties, including Business, Arts, and Sciences.

Survey administration

In days prior to attending each class, our team contacted the professors to verify the date, time, and classroom number. Our team divided into groups of 2-3 and presented to the classes in accordance with the talking points designated by UBC Wellbeing (see appendix D). A follow-up email, provided by UBC Wellbeing, was then sent to the professors which included the survey link to distribute to students (see appendix E). To reach more students, we had also discussed with UBC Wellbeing to administer the survey to students at collegia, the dedicated space for

UBC commuters. After discussing this further, it was determined this approach may not have been well received without proper advanced notice. Instead we worked with UBC Wellbeing to conduct the survey at Totem, Vanier, and Open Kitchen dining halls (see appendix F).

Content

As suggested by UBC Wellbeing, when analyzing data, we combined our survey with the long-form survey collected by UBC Wellbeing (only for questions also appeared in short-form survey). This provided a larger and a more representative sample of the target population.

A total of 288 responses were collected from our in-class survey. The response rate is 13.5%, calculated from total course registration (1861 students) subtracting the dining hall survey response. With the long-form survey, a total of 695 responses was obtained from UBC students in 17 different faculties (see figure 1 and 2, appendix G). For data analysis, we balanced the sample against student distribution in each faculty based on the UBC enrollment statistics.

One of the questions in the survey asks about the respondent's frequency of SSB consumption. Given that evidence suggests health concerns arise from consuming 1-2 SSBs daily, it is worth noting our results indicate 3% consume multiple times a day and 11% once per day (see appendix H for figure 3). Regarding the mediating factors that influence one to choose SSBs over healthy beverages, the results show taste/flavour is the major influencer (28.4%) while caffeine/energy boost (13.9%) and availability of SSBs on campus (13.5%) were second and third influencers respectively. Studying the students' water consumption habits on campus is critical to promoting tap water consumption. 56.1% claimed they drink about the right amount of water while 33.2% stated they drink too little water. Students were also asked to select the measures that they thought to help with increasing their water consumption. This question demonstrated the concept of preparation in the Stages of Change Model by studying the possible

motivators that lead to an increase in students' water consumption. Based on the results, increase in access to water refilling stations/fountains (33.2%) and having cleaner or better functioning water stations (24.4%) were reported to be the top two strategies. Lastly, 47% of the respondents strongly agree or agree with cutting down the intake of SSBs, which also represented the preparation stage in the Stages of Change Model. However, 14% of the respondents disagree or strongly disagree with reducing SSBs consumption (see appendix H for figure 4).

Cross Tabulation Results

Several interesting findings were observed while cross tabulation was performed. First, we discovered that habit (87%), surpassing taste/flavour (85%) and availability (52%), became the major factor that influenced the SSBs consumption in the population who claimed to drink multiple times a day (see figure 5 in appendix I). We also looked into the people who took a positive stand in cutting down their SSBs consumption and studied their preferred strategy. For those people, besides increasing access to free tap water (76%), they also considered phasing out SSBs on campus (57%) as the second-best strategy (see figure 6 in appendix I). This is not seen in other populations. Lastly, we found that most participants do not see UBC as a big promoter in SSBs on campus. However, the population who strongly agreed upon cutting down SSBs consumption still think there is too many advertisements regarding SSBs on campus.

Thematic Analysis

The final question of the survey allowed for participants to provide any further comments or suggestions related to the HBI and received 147 responses (see appendix J). These responses were coded using recurring themes that became apparent upon reviewing them. For responses where multiple themes were mentioned, each theme was counted individually. The overarching themes were related to availability, affordability, artificially sweetened beverages, promotions

and procurement, positive and negative perspectives on phasing out SSB's, and others that did not fall into any of these categories (see appendix J for code). Of the people with negative perspectives towards phasing-out SSBs, many used liberties as a reason, some thought increasing water accessibility should be a priority and some thought education as a better initiative.

Delivery of Project Output

A report was generated to capture the essence of the results collected from both long and short-form survey. This report will be distributed to UBC executives, and it will be published on SEEDs library. Lastly, an infographic has also been created for UBC executives to convey the survey results in a more visualized manner (refer to appendix K for the infographic).

Evaluation Plan

Based on the scope of our FNH 473 project, our evaluation plan will focus on the short-term and the medium-term objectives of our project.

Short-term Objectives-Process Evaluation

To properly monitor the progress for our short-term objectives, process evaluation was conducted every week. This entailed weekly progress reviews during group meetings, where we compared current project progress with the project schedule set at the first meeting of the term. We also actively communicated with our community partners and stakeholders to report our progress and discuss the challenges we encountered during project implementation.

Our process evaluation showed that the project was delivered as we planned in a timely manner. Necessary refinement of the ongoing project activities was done after discussion with our community partners as mentioned in the project output session.

Short-term Objectives-Outcome Evaluation

An outcome evaluation was conducted after we finished the survey collecting. The indicators for the outcome evaluation are number of survey responses, representativeness of the survey sample and satisfaction of our community partners. The results are as follows.

In total, we received 288 survey responses, which counts as 96% of our goal (300 responses). The response rate is 13.5%. Along with the responses from the long-form survey provided by UBC Wellbeing, a total of 695 responses were obtained. The majority of the respondents are undergraduate students (75.5%). 72.5% of the students are domestic and 27.5% are international. Those distributions are similar to those from UBC enrollment statistics: 83.2% undergraduate and 25.8% international on the Vancouver campus. The students who participated in the survey were from 17 different faculties, with LFS (26%), Arts (21%), Sciences (18%) as the three leading faculties. According to UBC enrolment statistics 2017/2018, the 2 largest undergraduate faculties are Arts (23%) and Science (14%), which were also largely sampled in our survey. However, we do have an overrepresentation of the Faculty of LFS (3% of total UBC student population) due to the limitation of our sampling method. We used statistical adjustments (i.e. balancing against student distribution) to reduce this effect in our data analysis. According to the post-survey meeting with our community partners, they are satisfied with our outcomes.

One limitation of this project was that the response rate was low which may increase the risk of non-response bias. Moreover, another limitation of the survey was regarding the types of questions; certain close-ended and multiple-selection questions have the risk of lowering the validity of the survey. For future surveys, we recommend trialing the survey with a small group first to test for reliability.

Medium-term Objectives-Outcome Evaluation

Our medium-term objectives focus on increasing awareness and reducing SSBs consumption amongst UBC community. To evaluate our achievement, we plan to conduct a future survey using frequency of SSBs/water consumption, knowledge of SSBs' health effects, intention to cut down SSB consumption and satisfaction of UBC SSBs policy as the evaluation indicators. The survey will follow the similar question set as the current survey, since we aim to assessing similar behavior indicators. The delivery method will be the same by approaching classes and dining halls on UBC Vancouver. The timing of the survey will be decided upon future discussion with UBC Wellbeing with consideration of the overall progress of HBI project. The current survey will serve as the baseline for this proposed medium-term outcome evaluation.

Conclusion

For this project, we collected feedbacks from UBC students regarding their perspectives on SSBs, which will inform the HBI project design, as well as help the UBC executives make the decision that best serve the interest of UBC community. From the survey, we were able to collect and analyze students' SSB consumption rates, behavior influencers and opinions on ways to decrease SSBs consumption on campus. Conducting the survey was also a tool to raise awareness amongst students on the health effects of SSBs.

The results of our survey indicated that a significant number of students (14%) consume SSBs on daily basis. The majority of students would like to see an increase in accessibility and availability of clean, filtered tap water, which would help them increase their consumption of water while reduce intake of SSBs. This aligns with the statistics obtained in which 33.2% responded that they were drinking too little water in a day. Another common response for factors

that help students make healthier purchasing decisions was to make unsweetened and water-based beverages, such as sparkling water or infused water, cheaper than SSBs.

The primary lesson we learned from this project was the importance of developing a timeline and executing the project according to it. For example, setting S.M.A.R.T. goal to reach out to a certain amount of professors by Feb. 26th was crucial to get the desired sample size for the survey. We also appreciated the benefits of the Logic Model, as it enabled us to summarize comprehensive information and form an evaluation plan from early on. As the survey team, our next step is to design future survey to assess the outcomes of the HBI. Ultimately, we hope that our result will be a great reference for UBC executives when making decision, and for UBC Wellbeing when designing future HBI strategies to better cater the needs of the UBC community.

Authors' Contributions

Ilan Wright was the contact person for the community partners, communicating with them on a weekly basis and reporting back to the group through email. He also developed the health behavior theories for the project, drafted the project outputs, and reviewed and revised the draft report. Dafna Bicaci drafted the goals and objectives of project, wrote the conclusion, reviewed and revised the draft report, and created the infographics for the survey results. Along with Ilan, Dafna also performed the thematic analysis of the survey results. Dawn Shum drafted the introduction of the report and worked together with Ilan to develop the project output. Ya Wen conducted research to draft the problem analysis in the situational analysis of the report and developed the evaluation plan. Mengmeng Dong conducted research to draft the section of mediating factors in the situation analysis of the report and created the newsletter. Amy Gao conducted research to develop the section of behaviors in the situation analysis of the report and

organized the authors' contribution. Amy, Ya and Dawn were also responsible for the cross-tabulation analysis.

Apart from individual responsibilities, all group members have come together to make equal contributions to the project. All group members worked together to conduct initial research before launching the project, met with community partners to revise survey questions and inform future plans, drafted the logic model, reached out to faculties, and conducted the survey with students at both class rooms and dining halls. All group members came together to prepare presentations and present our findings to stakeholders and FNH 473 class. At the end, all group members read, revised and approved the final report before submission.

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Appendix A - Project Logic Model

Inputs	Outputs		Outcomes -- Impact		
	Activities	*Participation*	**Short**	**Medium**	**Long**
• Time and knowledge of UBC Wellbeing/FNH 473 Team • Survey material and equipment • Gift cards as incentives • Support from 473 prof/TA and David Gills from SEEDS Project	• Survey revision • Community engagement and survey administration • Result analysis • Generating final report & infographic for UBC Wellbeing and Executives	• UBC students • UBC faculty • UBC Executives	• Increase students' awareness of HBI project • Increase knowledge of SSBs consumption in UBC community • obtain knowledge of UBC students' perspectives on SSBs	• Enhance UBC students' awareness about the health impacts of SSBs • Decrease frequency of SSBs consumption and increase tap water consumption in UBC community	• Policy change related to SSBs on both UBC campus • Improve health of UBC students, staff, and faculty on campus

Assumptions

- Students are open about the ideas of HBI
- Students/staffs have minimal knowledge on the health risks associated with the consumption of SSBs
- UBC Executives will put the HBI in action

External Factors

Off campus food providers selling SSBs; SSBs marketing and advertising; Guidelines for food and beverage sales in BC schools; Health-focused culture in Vancouver; Cold-beverage agreement

Evaluation Plan

Process Evaluation

- Weekly progress review
- Community partner check-up
- Ongoing refinement of project strategy

Outcome Evaluation

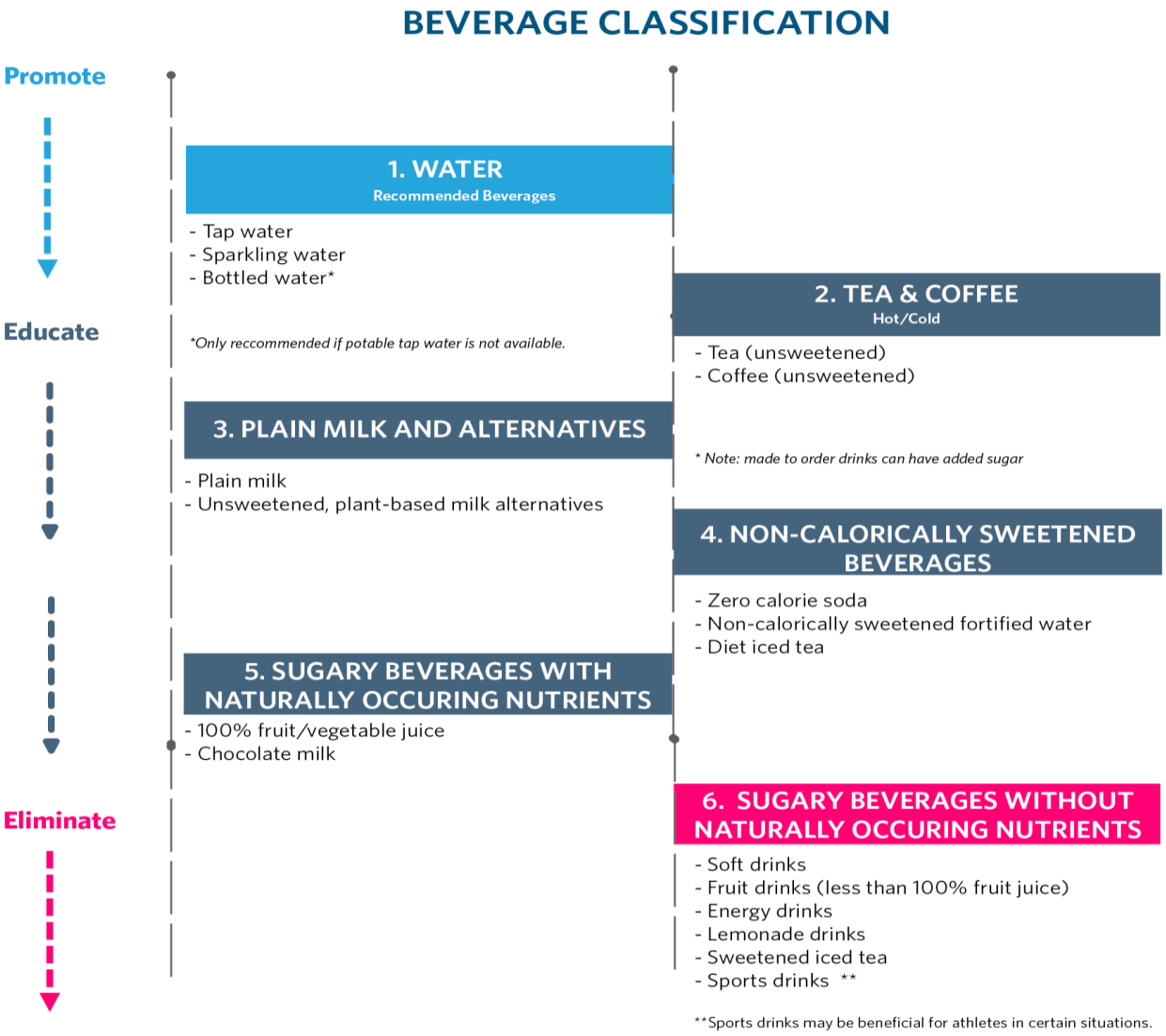
For short-term outcomes:

- Survey evaluation - Community partner satisfaction

For medium-term outcomes:

- Future survey to assess change of behaviour

Appendix B - Beverage Classification Diagram



*Beverage classification by Popkin, Armstrong, Bray, Caballero, Balz, Willett (2006). Adapted by UBC Wellbeing.

Appendix C - Health Behavior Theory Concepts and Definitions

Table 3. Stages of Change Model

Stage	*Definition*	*Potential Change Strategies*
Precontemplation	Has no intention of taking action within the next six months	Increase awareness of need for change; personalize information about risks and benefits
Contemplation	Intends to take action in the next six months	Motivate; encourage making specific plans
Preparation	Intends to take action within the next thirty days and has taken some behavioral steps in this direction	Assist with developing and implementing concrete action plans; help set gradual goals
Action	Has changed behavior for less than six months	Assist with feedback, problem solving, social support, and reinforcement
Maintenance	Has changed behavior for more than six months	Assist with coping, reminders, finding alternatives, avoiding slips/relapses (as applicable)

Table 7. Concepts in Diffusion of Innovations

Concept	*Definition*
Innovation	An idea, object, or practice that is thought to be new by an individual, organization, or community
Communication channels	The means of transmitting the new idea from one person to another
Social system	A group of individuals who together adopt the innovation
Time	How long it takes to adopt the innovation

Table 5. Social Cognitive Theory

Concept	*Definition*	*Potential Change Strategies*
Reciprocal determinism	The dynamic interaction of the person, behavior, and the environment in which the behavior is performed	Consider multiple ways to promote behavior change, including making adjustments to the environment or influencing personal attitudes
Behavioral capability	Knowledge and skill to perform a given behavior	Promote mastery learning through skills training
Expectations	Anticipated outcomes of a behavior	Model positive outcomes of healthful behavior
Self-efficacy	Confidence in one's ability to take action and overcome barriers	Approach behavior change in small steps to ensure success; be specific about the desired change
Observational learning (modeling)	Behavioral acquisition that occurs by watching the actions and outcomes of others' behavior	Offer credible role models who perform the targeted behavior
Reinforcements	Responses to a person's behavior that increase or decrease the likelihood of reoccurrence	Promote self-initiated rewards and incentives

Glanz, K. (1997)

Appendix D - HBI Classroom Surveys — talking points

- Introductions: names, SEEDS project group, class, etc.

- SEEDS projects advance UBC sustainability strategies through initiatives that bring together students, staff, faculty, and community partners.

- Our project involves working with UBC Wellbeing on a healthy beverage initiative at UBC; we'll be talking a bit about it and introducing a survey that we hope you'll complete (outside of class).

- One of the goals of UBC Wellbeing is to **increase tap water consumption at UBC,** and this goal could be **furthered through the adoption of a healthy beverage initiative on our campuses.**

- A healthy beverage initiative is an ambitious way of exemplifying UBC's commitment to wellbeing. Our students, staff, and faculty work and learn in a demanding, high-performance academic environment; having access to healthy food and beverages campus, plus the information necessary to make healthy dietary choices, will help our community members thrive.

- UBC Wellbeing is working with students, staff, and faculty to explore **how best to promote water consumption and reduce sugar-sweetened beverage consumption at UBC.**

- In February/March 2018, UBC Wellbeing is leading a series of engagement sessions and surveying with staff and students on both campuses, to collect diverse perspectives on how best to engage our community in a healthy beverage initiative.

- The survey: six minutes long, asks for your perspectives on consuming and purchasing sugar-sweetened beverages on campus. Your professor will forward you the link — we would greatly appreciate you filling it out.

- Thank you, etc.

Appendix E - Post-presentation email to profs (with survey link)

Dear (professor name),

Thank you for allowing us to speak with your class today. As promised, I'm sending you a link to the Healthy Beverage Initiative survey, along with a short introduction, which you can forward on to your students. I have added a note about where they can send questions should any arise.

Thank you again for your time!

(your name)

[email text to forward to students]

Following today's in-class presentation on a Healthy Beverage Initiative at UBC, I'm sending you the link to the survey that the SEEDS students introduced. It should take no more than six minutes to complete, and your participation will help improve the health and wellbeing of the UBC campus community.

Survey participation is voluntary and anonymous. The deadline for completion is March 9th.

https://ubc.ca1.qualtrics.com/jfe/form/SV_exnqoen7L4dWO8J

If you have any questions, please send them to Sara Kozicky, UBC Wellbeing Scholar (wellbeing.scholar@ubc.ca).

Appendix F - List of classes/locations that survey was administered to

CLASS or Club	Class Size	DATE/TIME	INSTRUCTOR
LFS 350-MACMILLIAN 166	126	Feb 26 1:00 PM	Will Valley
FNH 250- ORCH 3074	67	March 1st 10:40	Gail Hammond
FNH 473- MCML-167	67	Feb 26th, 2:00 PM	Gail Hammond
FRST 231-(STATS)- FSC 1221	75	Feb 27th, 11:00 AM	Younes Alila
SOCI 101- NLSC 100	197	Feb 27th, 3:30PM	Christopher Mckenzie
HKYOURS Club -Volunteer Dep.	10	During meeting time	Joyce Wong
SPPH 481C-Prison Health	46	March 7th 5:30pm	Ruth Martin
CHEM D215-CHEM 402	15	Feb 28th 10:40am	Brian Patrick
CHIN 493 - Buchanan D218	59	Mar. 1st 2:00 pm	Xiaowen Xu
COMM 203- Angu 243	60	Feb 28th 2:30 pm	Tom Knight
COMM 203- Angu 243	55	Feb 28th 4:00 pm	Tom Knight
CNPS 362	15	Feb 27th 4:30pm	Gillian Smith
COMM 362- ANGU 343	44	Mar 1st 11 AM	Yann Cornil
COMM 362- ANGU 343	44	Mar 1st 2 PM	Yann Cornil
KIN 464- WOOD 6	117	Mar 6th 9:30am	Andrea Bundon
BIO 112- Wesbrook 100	300	March 5th 2pm	Anne Lacey Samuels
Orchard Commons Dining Hall	N/A	March 5th 5:30pm	
Totem Dining Hall	N/A	March 5th 5:30pm	
Vanier Dining Hall	N/A	March 8th 5:30pm	
COMM 394- ANGU 343	49	Mar 1 - 11am	Steven Minns
LING100 004 - Swing 121	178	Mar 7 - 2 pm	Suzanne Gessner
PSYC 308A 003 - Geography 100	179	Mar 6 - 2 pm	Ara Norenzayan
PSYC 308A 004 - Math 100	158	Mar 6 - 3:30 pm	Ara Norenzayan

Appendix G - Graphs for Demographics

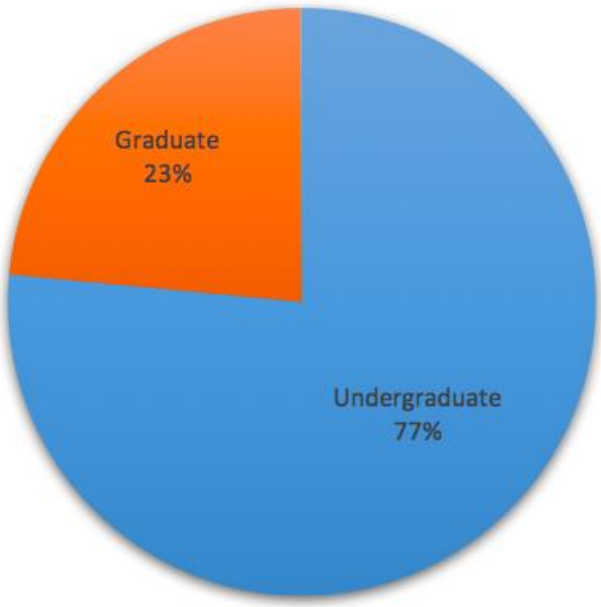


Figure 1: The demographics of the student survey.

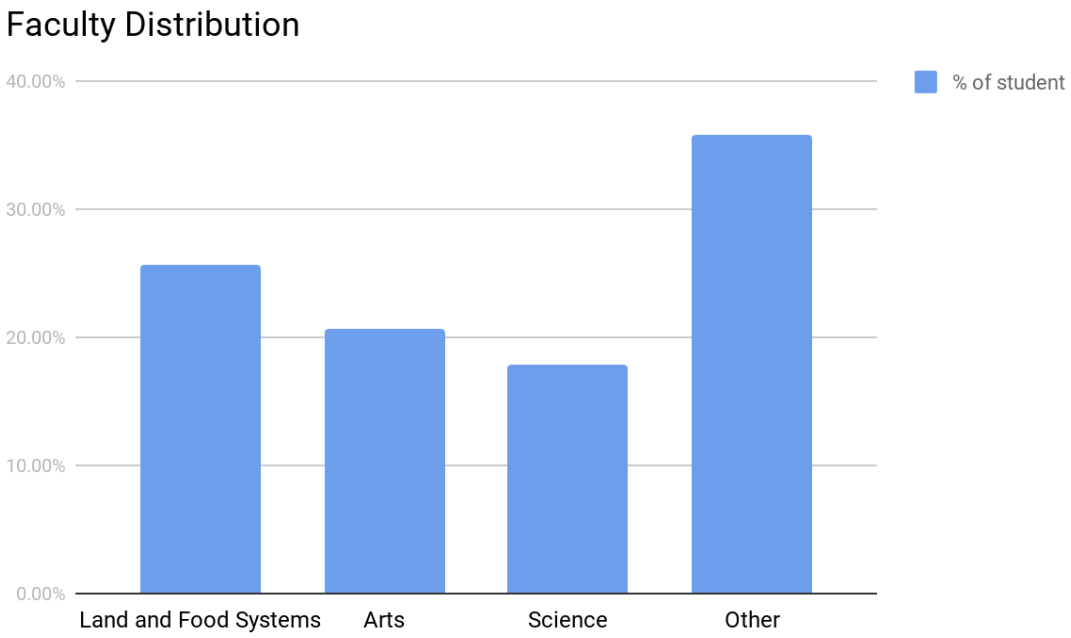


Figure 2: The faculty distribution of the student survey.

Appendix H - Graphs for Descriptive Results

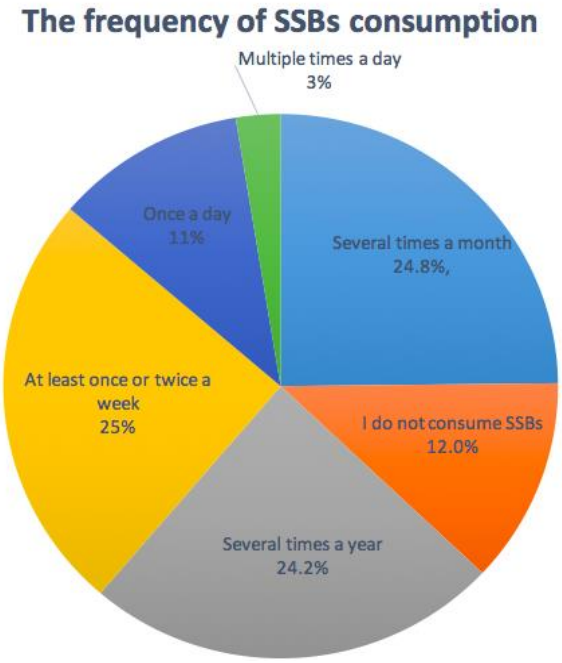


Figure 3: The frequency of SSBs consumption reported by the respondents.

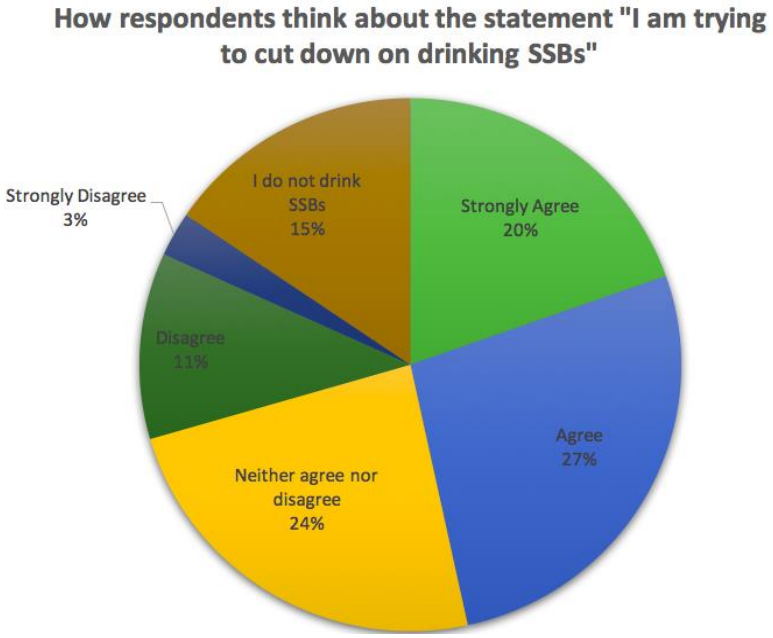


Figure 4: The perspectives of respondents upon the statement “I am trying to cut down on drinking SSBs.”

Appendix I - Graphs for cross tabulation

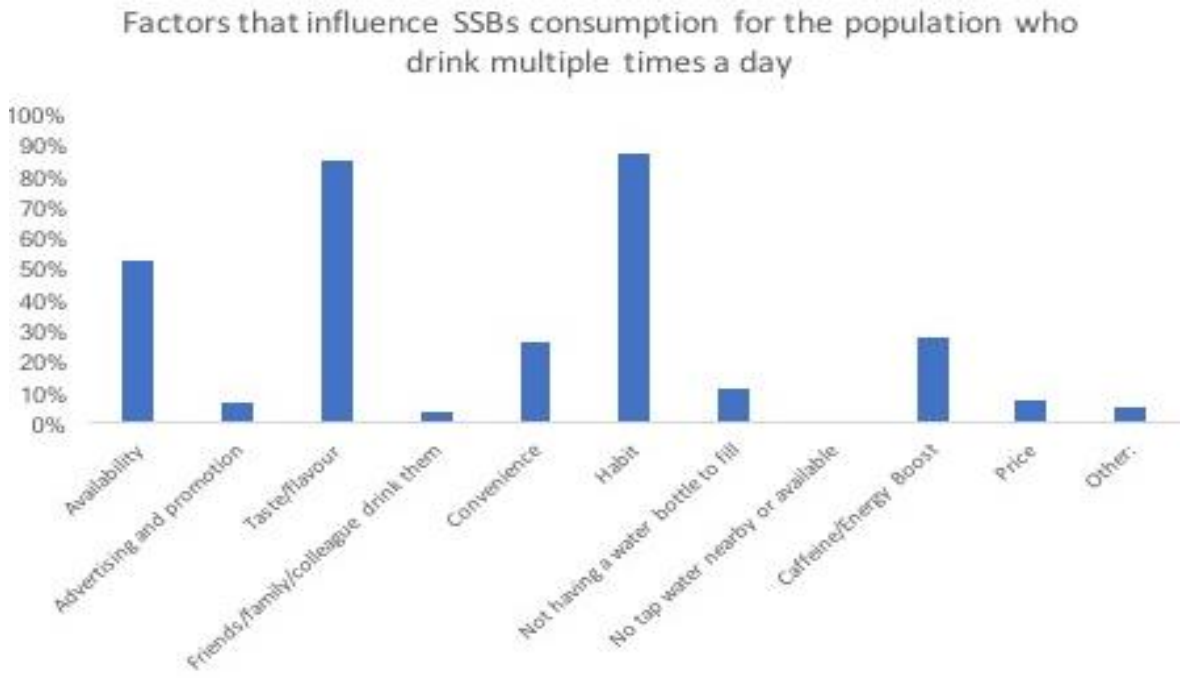


Figure 5: The influencing factors of SSBs consumption for the population who claimed to drink multiple times a day.

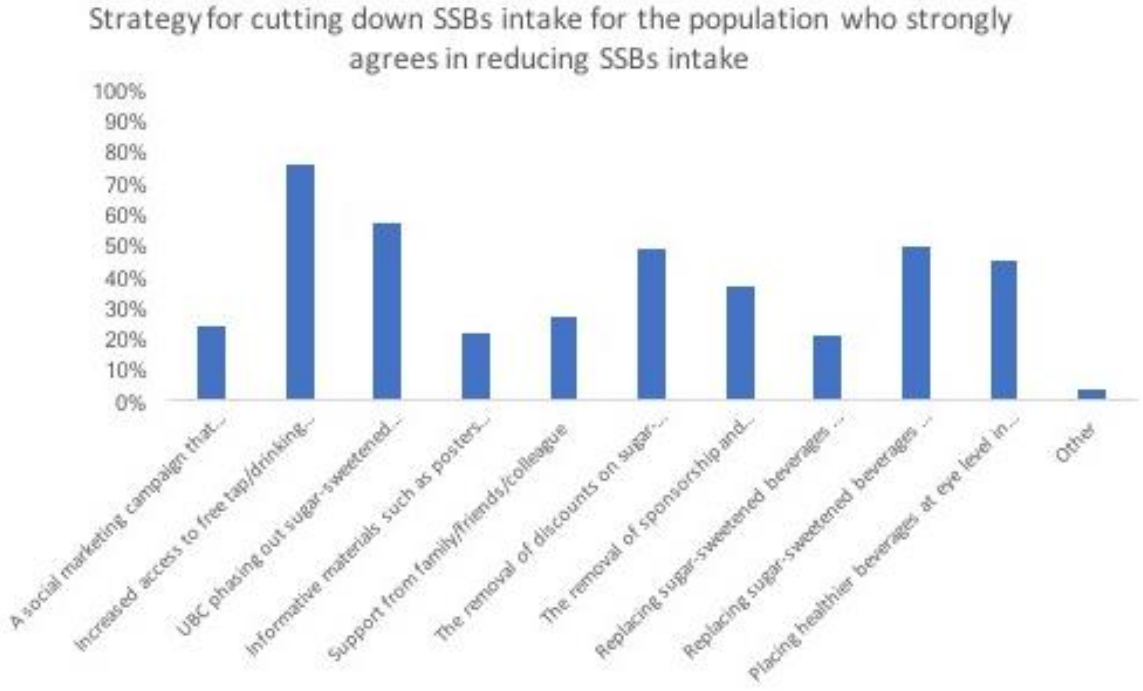


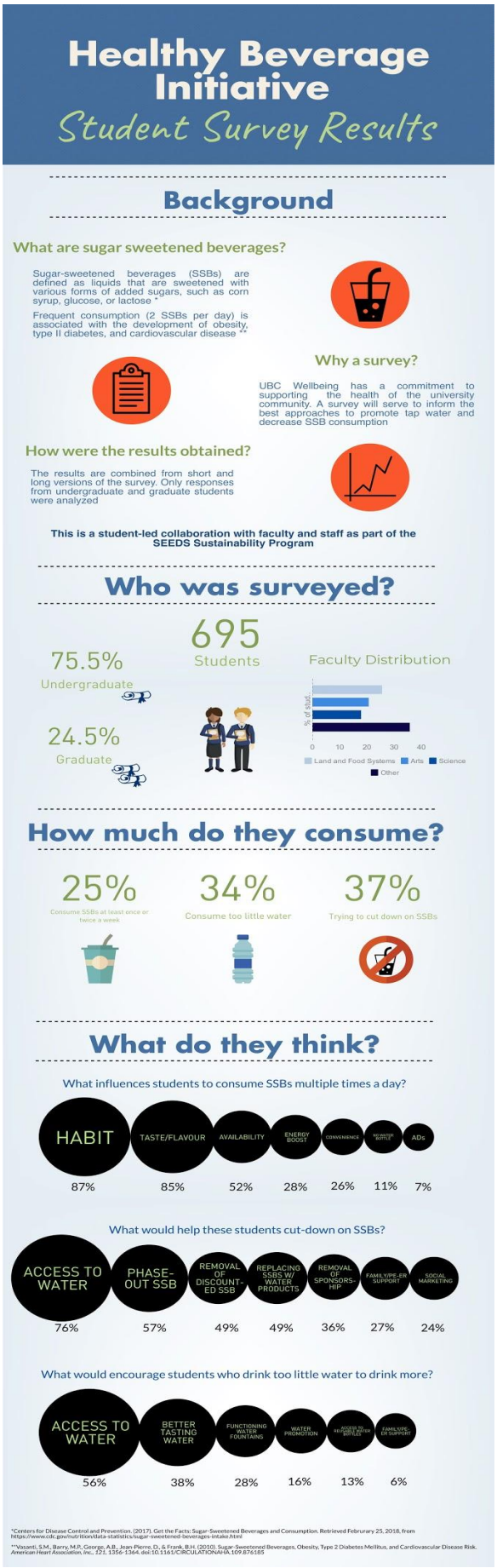
Figure 6: The strategies for cutting down SSBs intake for the population who strongly agree in reducing SSB intake

Appendix J - Thematic analysis table

Theme	**Description**	**Number of Responses (Total = 147)**	**Quotes**
Affordability	Relates to increasing cost of SSB and/or decreasing cost of "healthy" beverages	27	"Make healthier options cheaper!'
Access	Related to more options of healthy beverages, specifically water fountains and SSB alternatives	59	"MORE WATER STATIONS!" "Put water fountains in all buildings. Having a building with only coca cola vending machines is borderline criminal."
Promotions and Procurement	Related to marketing of healthy beverages and marketing of SSB	6	"Stop advertising for REDBULL in the sub"
Phasing out SSB (+)	perspectives on whether removal of SSBs at UBC was portrayed positively	8	"Please remove them from campus, UBC needs to be a healthier place to live and go to school." "I think this initiative is worthwhile and I'm pleased to see UBC is trying to get on board with reducing consumption of these products on campus. "
Phasing out SSB (-)	perspectives on whether removal of SSBs at UBC was portrayed negatively Sub-categories: (16/32) impeding their choices and taking away their rights (10/32) increasing access to clean water and availability of affordable healthy beverages should be a priority. (6/32) the effect of education would be greater than phasing-out SSBs.	32	"I don't think it's a matter of removing access to unhealthy beverages, I think the focus should be on promoting and making healthy beverages (other than water) more financially accessible compared to unhealthy beverages." "I believe that as an institution, UBC has a very important role to play in defining standards for the future - both on a community level and a global level. I believe UBC should minimize sugar-sweetened beverages on campus, but I do not believe they should be banned or eliminated entirely; people should be able to consume these drinks if they so choose."

Artificially Sweetened Beverages	Related to misconceptions with adverse health effects of ASB's and concerns of replacing SSB with ASB	10	"Emphasis should be placed on drinking water and unsweetened drinks, NOT on shifting consumers from sugar to artificial sweeteners as they are not any better."
Other	Responses did not fall into any of these categories and included general opinions related to sustainability, education, personal beliefs..	17	"Perhaps make those sugar-sweetened beverage sizes SMALLER. Increase purchase of healthier options with a card/loyalty program" "I would suggest that promotion of healthy levels of activity should go hand in hand with any campaign against sugar sweetened beverages"

Appendix K - Infographic



Appendix L - Short-form Survey Questions

Q1. What is your primary role at UBC? Please choose one option that best describes you at this point in time.	Q20. I am trying to cut down on drinking sugar-sweetened beverages. (Likert scale)
Q1.a. What is your primary role at UBC? Please choose one option that best describes you at this point in time.	Q21. What would help you cut down on drinking sugar-sweetened beverages? (Select all that apply)
Q2. Which faculty or unit are you primarily associated with?	Q21. What would help you cut down on drinking sugar-sweetened beverages? (Select all that apply +Text)
Q3. Are you a domestic or international student?	Q33. I am trying to increase my consumption of healthy beverages. (Likert scale)
Q4. Are you a UBC Thunderbird athlete?	Q22. What would help you increase your consumption of healthy beverages? (Select all that apply)
Q7. How regularly do you consume sugar-sweetened beverages? Please choose the answer that best applies to you. (Likert scale)	Q25. I believe UBC should promote the health and wellbeing of its students, staff and faculty. (Likert scale)
Q11. How regularly do you consume sugar-sweetened beverages? Please choose the answer that best applies to you. (Likert scale)	Q26. I believe UBC should implement policies and guidelines that regulate the marketing and promotion of sugar-sweetened beverages on campus. (Likert scale)
Q11.a. What influences you to choose sugar-sweetened beverages over healthy beverages ? (Select all that apply) - Other: - Text	Q27. I believe UBC and all food providers on campus should increase the availability and marketing of healthier beverages to its staff, faculty, and students. (Likert scale)
Q12. How do you perceive your water consumption habits on campus? (Likert scale)	Q28. I believe there is too much promotion of unhealthy beverages at UBC. (Likert scale)
Q13. What would encourage you to drink tap water more often on campus? (Select all that apply + Text)	Q29. Do you have any further comments or suggestions to make regarding sugar-sweetened beverages on campus? (Text)

Appendix M - Newsletter-Style Report for Community Partner

THE UNIVERSITY OF BRITISH COLUMBIA

SEEDS PROJECT: Healthy Beverage Initiative: Student Survey

A group of six students from FNH 473 class at University of British Columbia conducted a SEEDS project collaborating with the members of Healthy Beverage Initiative (HBI) team: Melissa Baker, the manager of Nutrition and Wellbeing of Student Housing and Hospitality Service; Rachelle Delaney and Heather Quigley, Content and Engagement Strategist of UBC Wellbeing; and David Gill, Program and Policy Planner of the Community Planning Department.

What We Learned:

Ourselves

By conducting the Healthy Beverage Initiative student survey, we hoped to understand the perspective of UBC students on this initiative and aimed to increase awareness on the health effects of sugar-sweetened beverage (SSB) consumption and to promote water consumption. Throughout this project, we learned the importance of developing specific timelines in order to implement the plan of action efficiently. Given that time was limited, having a timeline set at the beginning really helped our group to work together to reach the desired sample size. We also enjoyed the opportunity to conduct a survey from start to finish, learning about sampling methods, survey administration, and analysis of raw data.

Community we worked with

We were able to understand the community we worked with by conducting the survey on our target population directly. After analyzing the data received from the survey, we learned about various perspectives the UBC students hold on HBI. For example, we learned that taste and flavor are the major influencers for students to consume SSBs. Results obtained from the survey could inform the directors of HBI and other stakeholders **on improving the initiative to meet the community's needs and make informed decisions on relevant policy changes.**

What it's like to 'do' public health nutrition in the community

Working on a public health nutrition project in the community involved many areas of considerations in order to achieve our objectives. It can be difficult sometimes when there are different perspectives in a population; there can be different receptivity, comprehension, and exclusion within the community. We have learned to flexibly adapt to different situations, environmental changes, and to a diverse population, in order to reach our expected goal.

We hope our results can have a positive impact on the HBI project, and the overall health of UBC students in the future. We truly appreciate this learning experience and having the opportunity to collaborate with our community partners.