UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Cycle Works - Barriers and Solutions for Students Biking to UBC

Anna Okkels, Cayden Orallo, Michelle Wong, Rachael Poquiz, Simone Copping

University of British Columbia

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Group #1

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Executive Summary

The University of British Columbia (UBC) has been monitoring active transportation to and from campus since 1997. Cycling to the UBC campus was in its peak 20 years ago, however in recent years cycling to campus has been making a comeback in popularity due to efforts guided by UBC's Transportation Plan.

Cycle Works is a study designed by UBC students in the faculty of Kinesiology to help develop and implement interventions that enable UBC students increased accessibility to biking to campus. The target population was UBC students who drive individually to campus because they get the least amount of exercise in comparison to other forms of transportation and have the most harmful impact on the environment by car emissions (UBC, 2014). Data was collected through an online Qualtrics survey to ask students of UBC to investigate the potential barriers students face cycling to UBC. Participants were recruited by sharing the survey on UBC student groups and social media platforms. The survey consisted of 18 questions, 5 open-ended questions to ensure qualitative data, this way having a more personal response. The questions consisted of geographic location and climate at UBC, concerns on bike thefts, personal health and safety riding in traffic and on campus, hygiene and comfort, and lastly the built environment on UBC. Complications arose while recruiting participants for the study due to the COVID-19 outbreak. Originally, we were to recruit people by handing out brochures a link to the online survey. However, due to the social responsibility of practicing social distancing, recruitment was done online. In order to try to mitigate the challenge of having reduced access to participants we posted our survey to more platforms on social media, asked more peers we knew at UBC and asked them to ask their friends who drove to UBC to also take the survey.

The key statistical findings from our survey on barriers to cycling to UBC were distance to campus, concerns of bike theft, physical safety in traffic and the convenience of driving.

The barriers found in our survey to be most influential on a student's decision to drive over bike to campus guided our goals and proposed programs of Cycle Works. The three primary goals determined from our results to make cycling a more viable option on campus are SEE; safety, efficiency, and education. Cycle Works recommends implementing specific, broad bike lanes on campus, security cameras to help prevent bikes from getting stolen, maps to show efficient bike routes, and to broadcast the biking resources available to UBC students on social media platforms.

Introduction

Active transportation, which refers to transportation powered by humans such as walking and cycling, has received increased attention in research because of the rising awareness of health and climate issues (UBC, 2020). Commuting by active transportation can have environmental, health, social and economic related advantages compared to driving (UBC, 2020). Biking is a particularly attractive mode of transportation because it is more time-efficient and increasingly improves cardiovascular fitness compared to walking (UBC, 2020). The percentage of students attending UBC that bike to school is significantly less than the percentage of the population that bikes to work in British Columbia (UBC, 2014). This discrepancy is of concern because students undergo significant academic stress, spend many hours sitting while in class/studying and are at an impressionable age, meaning that their habits made at this age might continue throughout their life (UBC, 2020). UBC students driving alone to school are of primary importance to focus research on because they get the least amount of exercise going to school compared to students who bus, walk or bike, they produce the highest amounts of harmful emissions to the environment and the typical student is in their early 20s which is an impressionable age that sets their health behaviors for the rest of their lives (UBC, 2014).

The UBC Transportation Plan was created in 2014. UBC defined three key targets in which they would actively work on to achieve the vision in UBC's Strategic Plan. One of the targets is to increase the number of trips to and from UBC made by walking, cycling or transit so that at least two-thirds of the trips to and from UBC are made in one of the three listed ways by 2040 (UBC, 2014). In 2019 UBC published a transportation report, which included the most recent data regarding the overall travel trends at UBC. There was an increase in the use of bicycles at UBC compared to the previous recent years but only 1.4% of the students attending UBC presently use biking as their main mode of transportation (UBC, 2019). Previous research

has focused on the general public, however, there is a lack of research on specifically why students choose to travel in single occupancy vehicles (SOV) instead of a bike. In order to facilitate change in commuting behaviors to be more sustainable and healthier, it is important to investigate the barriers that specifically influence the UBC students who drive alone when they commute to and from campus. Therefore, identifying potential barriers preventing UBC students from choosing to bike over driving may help increase the use of bicycles and provide valuable information needed to strategize how car use can be decreased and meet the biking goals stated in the UBC transportation plan (UBC, 2014).

By the use of data collection through online surveys this research paper seeks to investigate the following research question: *What barriers do UBC students face when commuting with a vehicle rather than cycling, and what are potential solutions for these barriers?*

Literature Review

Biking can have numerous benefits on an individual's health and the environment. Taylor (2016) stated that biking can increase cardiovascular health, strengthen bone structure, reduce stress, improve flexibility and reduce fat stores. In addition to having significant beneficial health implications biking costs substantially less than driving, which can help reduce psychological stress surrounding financial strains (Taylor, 2016). Furthermore, mainstream media has increasingly spread awareness of the impact that car emissions have on contributing to global warming, which serves as another important reason why people should bike when possible to protect the environment (Taylor, 2016). Despite the many benefits, several factors such as safety, health concerns, the distance of commute and lack of bike lanes influence people to use alternate forms of transportation (Taylor, 2016).

A major concern that university students voiced when deciding on their form of transportation to school was their physical safety (Sutton, 2020). Students reported their preference to drive instead of biking to school because of their fear of potentially hazardous road accidents that could inflict far worse damage to them on a bike compared to being in a car (Sutton, 2020). Cyclists observed that cars consistently drive much closer to them when they are given a bike lane with lines than when they are sharing the road (Shaefer, 2019). Without bike lane lines drivers do not have a visual reference as to how close they are to bikers so they may leave a larger berth to ensure the cyclist is safe (Shaefer, 2019). Investments on infrastructure such as physical barriers would be advantageous to protect bicyclists and help reduce the level of stress they feel biking hence increasing the number of cyclists. Evidence has shown that the estimated health benefits of cycling are typically larger than the risks associated with cycling (Hartog et al., 2010). Hartog et al. (2010) conducted a study to describe whether the health benefits of cycling instead of driving in a private car overcome health risks. To make a comparison between driving and cycling the authors considered traffic accidents, air pollution and physical activity as main exposures. Through a meta-analysis of academic journals, the authors found that the studies supported that inhaled air pollution doses were higher in cyclists compared to people who use cars. Furthermore, they found that the risk of fatal traffic accidents is higher for cyclists than for car drivers. Although the authors found that cyclists have a higher health risk compared to car drivers regarding air pollution and traffic accidents, they concluded that cyclists have nine times more gains in life-years due to the health benefits of biking over driving during their commute. The authors suggested that policies encouraging cycling may have a positive effect on the health of the public. Future policies should be accompanied by

interventions to reduce the risk of air pollution and traffic accidents such as making cycling lanes away from major roads or banning traffic around schools in the morning and afternoon.

A study conducted in Cambridge by Carse et al. (2016) gathered information on the impact that distance to school or workplace had on the prevalence of driving compared to biking. Carse et al. (2016) found supporting evidence that distance to the destination provided to be an important factor in influencing a person's mode of transportation decision, where people living further away from work or school were much more likely to choose to drive over cycling than those who lived near. The authors of this research also gathered data on an individual's socioeconomic status and level of education. No correlation was found between having a higher income and choice of transportation (Carse et al., 2016). Findings in the study could be unique to the sample in the study, which all came from Cambridge, a relatively small country. Higher levels of academic achievement was positively correlated with choosing to bike to work or school where individuals with higher occupational categories chose to bike more often than those with lower (Carse et al., 2016).

Major gaps in the literature include if students were concerned about bike share accessibility, bike theft, and quality of life biking to school. Bike share accessibility is largely ignored and future research on what is the most effective bike share strategy could be conducted, specifically in the metro Vancouver area too because that is where many UBC students live. Bike theft concerns are also neglected to be researched and future research could discuss ways to mitigate bike theft based on previous research on the frequency of bike thefts at UBC. Quality of life barriers such as the inability to bring heavy objects with you on your bike and environmental factors were also missing in the literature. Thus, our paper will try to provide new research on barriers students face on biking to UBC to fill some of the gaps in our literature review.

Methods

We created a survey collecting both quantitative (numerical based data) and qualitative (characteristics and descriptive data) data on UBC students to investigate the potential barriers students face cycling to UBC. A convenience sample, a type of sampling that is used to collect data from population members who are conveniently available, was distributed to fellow UBC students known by the researchers and posted on the Facebook UBC kinesiology group. 36 participants partook in the survey, however only 29 of the responses were analyzed and included in the report due to five failures of obtaining consent, one participant not meeting inclusion criteria and one participant responded after the results had been collected and analyzed. Thus, seven participant's surveys were deleted and excluded from the data (n=29). Inclusion criteria are students that attend UBC and who drive to school alone as their primary source of transportation. Exclusion criteria were students that have reasons preventing them from biking such as physical or cognitive limitations. It is necessary to have the exclusion criteria to make the results more generalizable to the student body of UBC and get data from students that can realistically change their mode of transportation to biking.

The survey was created on the online platform called Qualtrics and included a consent form, 16 questions asking participants to rate if they strongly agree, agree, are indifferent, disagree or strongly disagree with statements provided and consisted of two open-ended questions which allowed for the participants to explain why they chose to drive to school over biking and if they had any suggestions to make biking a better option. Surveys of participants who did not confirm their consent were not included in the interpretation of the results. Three of the survey questions collected data on the influence of the geographic location and climate of UBC, three focused on participant's concerns involving bike thefts, two questions directed

towards accessibility to having a bike, five questions focused on personal health and safety riding in traffic and on campus, two on hygiene/comfort of biking and finally one question asked about the built environment (human-made environment, the setting of human activity) on campus. The quantitative data collected from the study served as a guide for what potential programs and interventions (safe bike storage, bike share, etc.) are important to UBC students. The data collected was presented in frequency tables generated from the statistical analysis program, JASP. The tables displayed how the respondents answered the survey and which barriers they felt most strongly about therefore guided what a beneficial program to bring to UBC would be. Each recommendation made by the participants in the long answer questions was taken into account and recommendations that frequently occurred played a key role in guiding the development of our program. The analysis consisted of reviewing which statement participants most disagreed, agreed or were indifferent about. The cumulative amount of agreed and strongly were added together, likewise with disagreed and strongly disagreed options. Answers that had a 0 score were not included in the tables. The qualitative analysis included considering various barriers and suggestions presented by the participants and which ideas were most frequent across the sample.

Online surveys were a preferable choice for methods in this study because we wanted to gather a relatively large sample size and gather information on a wide range of issues. Surveys are also time-efficient and allow for the collection of both quantitative and qualitative data, which further allows us to create a complex program then addresses the unique needs of the students at UBC. By using an online survey it allowed us to gather data in an organized and accessible manner, while also allowing participants to have the flexibility to fill out the survey when it was convenient to them. Finally, data collected through an online survey does not need

to be inputted digitally from hard copy, which saves time and decreases the chances of human error in converting the data digitally.

Results

Geographic location and climate 48% of participants disagreed or strongly disagreed that commuting to UBC on a bicycle was accessible from where they lived while an additional 48.2% agreed or strongly agreed (Table 3). 62% agreed or strongly agreed it was too far for them to bike to UBC, while only 27.5% disagreed or strongly disagreed and 10.3 were indifferent. 96.6% of participants did not like biking in the rain while the remaining 3.4% were indifferent (Table 9). 79.3% were found to agree or strongly agree that they did not like biking to school because it was too time-consuming, 10.3 disagreed and 10.3% were indifferent (Table 13).

Bike Theft 72.4% of participants agreed or strongly agreed that they would like to store their bike in a shelter while 20.7% were indifferent and 3.4% disagreed (Table 7). 69% of participants agreed or strongly agreed that they were afraid to get their bike stolen, 20.7% did not agree and 10.3% were indifferent (Table 10). 44.8% of participants agreed or strongly agreed that they would bike more if there were more lock-up stations, 24.1% disagreed and 31% were indifferent (Table 11).

Bike Accessibility Additionally, 65.5% of participants included in the study had access to a bicycle most of the time (Table 2). 27.5% of participants agreed or strongly agreed that they would bike more to UBC if there were more bike-share options, 37.9% disagreed and 34.5% were indifferent (Table 12).

Hygiene/Comfort It was found that 48.2% of participants agreed or strongly agreed that their method of commuting was based on comfort while 3% were indifferent and 41.4%

disagreed (Table 1). 41.3% of participants disagreed or strongly disagreed that the shower facilities at UBC are sanitary and accessible enough to justify biking, 20.6% agreed or strongly agreed and 37.9% were indifferent (Table 14).

Personal health & safety Only 24.1% of participants agreed that they felt safe biking to and from campus while 65.5% disagreed and only 6.9% were indifferent (Table 4). 58.6% of participants disagreed or strongly disagreed that they were not fit enough to bike to school while 20.7% were indifferent and 20.6% agreed or strongly agreed (Table 8). 51.7% of participants disagreed or strongly disagreed that the health benefits of biking did not outweigh the cons while 24.1% agreed and 10.3% were indifferent (Table 6). 48.3% of participants were indifferent to feeling more comfortable biking to school if there were accessible safety videos to UBC students demonstrating how to navigate and ride as safely as possible in traffic, while 27.6% disagreed, and 24.1% agreed (Table 16). 58.6% of participants agreed that they were fit enough to bike to school, 20.7% were indifferent and 20.6% disagreed. Most people think they are fit enough to bike to school (58.6% vs. 20.7% indif., and 20.6% not fit).

Built environment 51.7% of participants were more inclined to bike to UBC if there were more bike lanes on campus, while 34.5% were indifferent and 13.7% were not (Table 15).

Significant trends on the barriers that influence UBC students to choose to drive to campus over biking reported in the first open-ended question. The geographic location seemed to be the most prevalent and important factor influencing the majority of students when deciding on what mode of transportation to take on their way to campus. Of the 29 participants that answered why they drive to school over biking, 12 respondents stated that the distance to UBC from their home was too far for them to commute by bike and realistically they do not feel like they have enough time in the day to bike to the whole distance to and from campus. Seven respondents

stated that they drove because it was quicker, such as only taking 20 minutes to drive to UBC without traffic. 8 participants responded they prefer driving because it is convenient and they can do things like carrying their heavy belongings like books, being able to store their belongings and being able to travel quickly to another destination after school. One respondent mentioned that hygiene was a key factor with biking to school and two respondents highlighted comfort, especially in bad weather. The following suggestions were made by the participating students in the second open-ended question. Making safe bike lanes on campus was the most frequent suggestion among participants. Other suggestions included more places to store your bike at UBC and other places around the city such as skytrain stations. More shower facilities on campus and free bike share programs located near skytrains that were equipped to carry heavy books and other belongings were also suggested by participants.

Discussion

Our findings are similar to a study reviewed in our literature review by Carse et al., (2016), with the most prevalent barriers to biking being identified as the distance to commute and time. Feeling unsafe biking to campus was the second most prevalent barrier identified by participants. It was also found that 92% of participants did not like biking in the rain, which can attribute to feelings of being unsafe. According to Sutton, (2020) physical safety while biking was a major concern, which is similar to the 65% of participants in this study that reportedly disagreed with feeling safe biking to UBC campus. Safety can be one of the largest concerns when trying to increase bicycle traffic, especially in Vancouver where the road conditions can be significantly more dangerous when it rains. Additionally, 51.7% of participants were more inclined to bike to school if there were more definite bike lanes. Shaefer, (2019) found that

cyclists felt safest with an actual barrier opposed to drawn lines. Thus, creating more bike lanes with a physical barrier may be able to reduce feelings of imminent danger, in effect, potentially leading to half of our sample participants to at least be more willing to bike. Again, exactly 51.7% of participants identified that the health benefits of cycling outweigh the cons, which can provide an arguable basis that the 51.7% that were more inclined to bike to school if there were more bike lanes are educated and aware enough to realize the potential health benefits from cycling to school. These findings also highlight the potential to provide greater education on the benefits of biking to the remaining participants, which opens up various means of health promotion campaigns. Specifically, 20.6% of participants did not believe they were fit enough to bike to school; therefore, campaigns on how to get fit for biking and reap the benefits of biking to school could be a viable option to providing self-efficacy regarding one's fitness level. However, someone's belief that they are fit enough to bike to school can also be related to the distance in which they have to commute. For example, 62% of our participants thought they lived too far from school and an additional 79.3% of participants thought it was time-consuming. These findings are supported by previous research done by Carse et al., (2016) which stated that distance along with time are the most prevalent barriers to biking over driving. Cumulatively, these findings support the notion that the distance in which students need to commute and the time it takes is the greatest barrier found in the study when compared to other possible confounding and known variables. While this does provide a significant challenge when trying to convert drivers to bikers, it also opens the possibility of creating more accessibility to UBC through more sustainable options than driving such as a more developed infrastructure with the goal to work in conjunction with active transportation such as bicycling.

One example of addressing the barrier of distance could be an underground extension of the skytrain with additional bike-share options at the stations which can provide an indirect incentive to bike for students that live too far from the school. While 65% of participants had access to bicycles most of the time, 27.5% agreed that having more bike-share options would provide greater incentive to bike to UBC.

In our qualitative analysis, several participants suggested that free bike-share options would make biking to school an even more viable option. Furthermore, bike-share options could be included in tuition fees which would allow students to access a network of bikes. These ideas could be possible solutions to the distance between students and UBC that is preventing them from biking.

Another concern expressed by participants was that they were afraid to have their bike stolen. 69% of participants were concerned to have their bike stolen and 72.4% prefer to store their bike in a secure bike storage facility. However, there are 13 free bicycle cages and 200 secure bicycle parking spaces on UBC. Thus, there are free options accessible to students, yet they may not be known to students. A campaign to promote biking could include increasing awareness of the secure bicycle parking that could reduce the concern of being victims of theft. While increasing the number of secure bicycle parking could be beneficial, it may be a more strategic plan to situate them around areas of high foot traffic and with additional security such as security guards and cameras.

One obstacle we proposed was that hygiene facilities such as shower accessibility, yet our findings did not support this. 41.3% of participants think that the shower facilities at UBC are sanitary and accessible enough to justify biking, 20.6% did not and 37.9% were indifferent. However, the indifference could be due to the lack of immediate effect due to the fact that our

sample was primarily drivers. Within the qualitative analysis, we found that three participants voiced that better shower facilities and more availability would make biking a better option for them. Thus, although hygiene facilities do not pose an immediate barrier, creating biking specific shower areas that are regularly maintained can be an added incentive to bike to school by supporting those who choose to bike with easier access to healthy hygiene.

One unforeseen obstacle is the general convenience and comfort of driving over bicycling. One participant mentioned that cycling is difficult with many heavy belongings to carry. Another mentioned that they need to pick-up their child after school and therefore need to drive. Thus, ensuring bike-share programs have a means of supporting these needs could provide greater incentive to bike instead of drive.

One of the biggest limitations we faced in this research study was the global pandemic caused by COVID-19. This disrupted in our initial method of administering the survey, which would have controlled for researcher and participant bias. Originally, we were to recruit people handing out a brochure about the study being conducted with a link to the online survey. However, due to the social responsibility of practicing social distancing to prevent the spread of the virus UBC classes were shut down, causing us to use social media posts as a means of recruiting students into our study. This places a potential researcher and participant bias, which was somewhat mitigated by recruiting only through online posts and no direct messages so that the study sample remained anonymous to the researchers. However, we do acknowledge there is participant bias as each participant would have had some sort of relationship with the researchers, albeit unknown to us, the researchers.

Another limitation of the study was the format in which the data was downloaded after gathering it from Qualtrics. We were unable to obtain any descriptive or inferential statistics

from the use of the JASP program with the .csv file produced by qualtrics due to the program identifying our data as nominal and not ordinal, which prevented t-test and ANOVA statistics to be generated by the JASP. Therefore, for the sake of transparency, frequency of each score was considered and presented in the results section.

Recommendations

As mentioned throughout our findings we notice that people would avoid biking to UBC due to the socio-ecological factors of social and built environments. It was understandable that many of the responses indicated that they were concerned about their safety and security considering it is one of the main concerns of active transportation. We suggest adding cameras to the existing bike lock-up stations and cages to decrease bike theft in the community. Considering one of the health risks of active transportation are crashes and collisions, we recommend improving the bike lane infrastructure. We suggest expanding more and broader bike-specific lanes. These bike lanes will hopefully decrease the number of crashes and collisions of drivers, pedestrians, and bikers. This recommendation of implementing a multitude of bike lanes throughout campus will be considered a long term goal, as this will need to something that is planned out according to construction, and legal street laws, etc. By doing so, we hope students will feel more safe and secure while biking and focus more on the health benefits of their choice.

Another recommendation that could be implemented immediately is promoting what UBC has already done and plans to do to make cycling more accessible to students through social media platforms. UBC has already established many useful biking resources that people may not be aware of. If we were to broadcast, influence, and create incentives to motivate people to choose cycling over driving, this could potentially lead to many more students being

knowledgeable about cycling to and from campus. Along with using social media platforms, we could create more physical posters informing the students of the resources for biking, the long term and short term benefits of biking, and strategies to implement biking into their commute. Placing posters in the student union building and around campus' most visited spots could maximize viewership and awareness. An example could be hosting a draw by posting a picture of your bike on campus on social media and to get entered to win a new bike lock. Another example could be to post a picture of a poster you saw and enter for a chance to win a free helmet or other merchandise such as a month of free bike share. Considering we live in an age of prosumers, a large portion of the UBC student population will have access to these challenges and posts which can reach out to a large audience. Incentives may motivate students who already cycle to UBC to share content on their experiences to influence others to do the same.

We found that many of the responses indicated that driving was more favorable due to the amount of time it would take them to drive to school. In the future, data on whether or not a "park and bike" initiative would be beneficial. If there is an interest in this initiative, we suggest providing bike maps from any main bus loops, skytrain stations, and off-campus parkades to UBC. This bike map could be similar to the map already designed by The City of Vancouver (Appendix B) but with more specific details catered to the UBC community. This map may include specific directions as well as where to find bike-share options at these various transit stations and parkades. By giving people these resources and actively promoting the benefits of biking, it gives students the option to save time by driving to a nearby station that is close to campus to benefit from biking. Physical copies of these maps can also be printed and distributed at the different bike cages across campus or made available online. If students are given a clear and safe route to bike from their location, it may make the decision to bike even 25% of their

daily commute simply from having the convenience of both driving and quickly getting around on campus by bike. Our data also confirmed that people believe the benefits of cycling outweigh the cons.

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Appendix A

Table 1.

How I commute is primarily based on comfort	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	11	37.9	37.9	37.9
Disagree	12	41.4	41.4	79.3
Indifferent	1	3.4	3.4	82.8
Strongly agree	3	10.3	10.3	93.1
Strongly disagree	2	6.9	6.9	100.0
Missing	0	0.0		
Total	29	100.0		

Table 2.

I have access to a bike most of the time.	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	10	34.5	34.5	34.5
Disagree	8	27.6	27.6	62.1
Indifferent	1	3.4	3.4	65.5

Strongly agree	9	31.0	31.0	96.6
Strongly disagree	1	3.4	3.4	100.0
Missing	0	0.0		
Total	29	100.0		

Table 3.

Biking to UBC is accessible to where I live.	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Agree	7	24.1	24.1	24.1
Disagree	12	41.4	41.4	65.5
Indifferent	2	6.9	6.9	72.4
Strongly disagree	8	27.6	27.6	100.0
Missing	0	0.0		
Total	29	100.0		

Table 4.

I feel safe biking to and from UBC campus	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**

Agree	5	17.2	17.2	17.2
Disagree	16	55.2	55.2	72.4
Indifferent	3	10.3	10.3	82.8
Strongly agree	2	6.9	6.9	89.7
Strongly disagree	3	10.3	10.3	100.0
Missing	0	0.0		
Total	29	100.0		

Table 5.

It's too far for me to bike to UBC	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	7	24.1	24.1	24.1
Disagree	7	24.1	24.1	48.3
Indifferent	3	10.3	10.3	58.6
Strongly agree	11	37.9	37.9	96.6
Strongly disagree	1	3.4	3.4	100.0
Missing	0	0.0		
Total	29	100.0		

Table 6

The health benefits of biking don't outweigh the cons.	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	**10**	**34.5**	**34.5**	**34.5**
Disagree	**14**	**48.3**	**48.3**	**82.8**
Indifferent	**3**	**10.3**	**10.3**	**93.1**
Strongly agree	**1**	**3.4**	**3.4**	**96.6**
Strongly disagree	**1**	**3.4**	**3.4**	**100.0**
Missing	**0**	**0.0**		
Total	**29**	**100.0**		

Table 7

I would like to lock my bike in a shelter	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	10	34.5	34.5	34.5
Dislike a moderate	1	3.4	3.4	37.9

amount				
Indifferent	6	20.7	20.7	58.6
Strongly agree	11	37.9	37.9	96.6
Strongly disagree	1	3.4	3.4	100.0
Missing	0	0.0		
Total	29	100.0		

Table 8

I don't think I'm fit enough to bike to school	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Agree	5	17.2	17.2	17.2
Disagree	13	44.8	44.8	62.1
Indifferent	6	20.7	20.7	82.8
Strongly agree	1	3.4	3.4	86.2
Strongly disagree	4	13.8	13.8	100.0
Missing	0	0.0		
Total	29	100.0		

Table 9.

I don't like to	**Frequenc**	**Percent**	**Valid**	**Cumulative**

bike in the rain.	y		Percent	Percent
Agree	18	62.1	62.1	62.1
Indifferent	1	3.4	3.4	65.5
Strongly agree	10	34.5	34.5	100.0
Missing	0	0.0		
Total	29	100.0		

Table 10

I'm afraid my bike will get stolen at UBC.	Frequenc y	Percent	Valid Percent	Cumulative Percent
Agree	12	41.4	41.4	41.4
Disagree	6	20.7	20.7	62.1
Indifferent	3	10.3	10.3	72.4
Strongly agree	8	27.6	27.6	100.0
Missing	0	0.0		
Total	29	100.0		

Table 11

I would bike more if there were more lock-up stations	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	11	37.9	37.9	37.9
Disagree	7	24.1	24.1	62.1
Indifferent	9	31.0	31.0	93.1
Strongly agree	2	6.9	6.9	100.0
Missing	0	0.0		
Total	29	100.0		

Table 12

I would bike more to UBC if there were more bike share options	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	7	24.1	24.1	24.1
Disagree	11	37.9	37.9	62.1
Indifferent	10	34.5	34.5	96.6
Strongly agree	1	3.4	3.4	100.0
Missing	0	0.0		

Total	29	100.0

Table 13.

I don't bike to school because it's too time consuming	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	15	51.7	51.7	51.7
Disagree	3	10.3	10.3	62.1
Indifferent	3	10.3	10.3	72.4
Strongly agree	8	27.6	27.6	100.0
Missing	0	0.0		
Total	29	100.0		

Table 14

The shower facilities at UBC are sanitary and accessible enough to justify biking.	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	5	17.2	17.2	17.2
Disagree	11	37.9	37.9	55.2

Indifferent	11	37.9	37.9	93.1
Strongly agree	1	3.4	3.4	96.6
Strongly disagree	1	3.4	3.4	100.0
Missing	0	0.0		
Total	29	100.0		

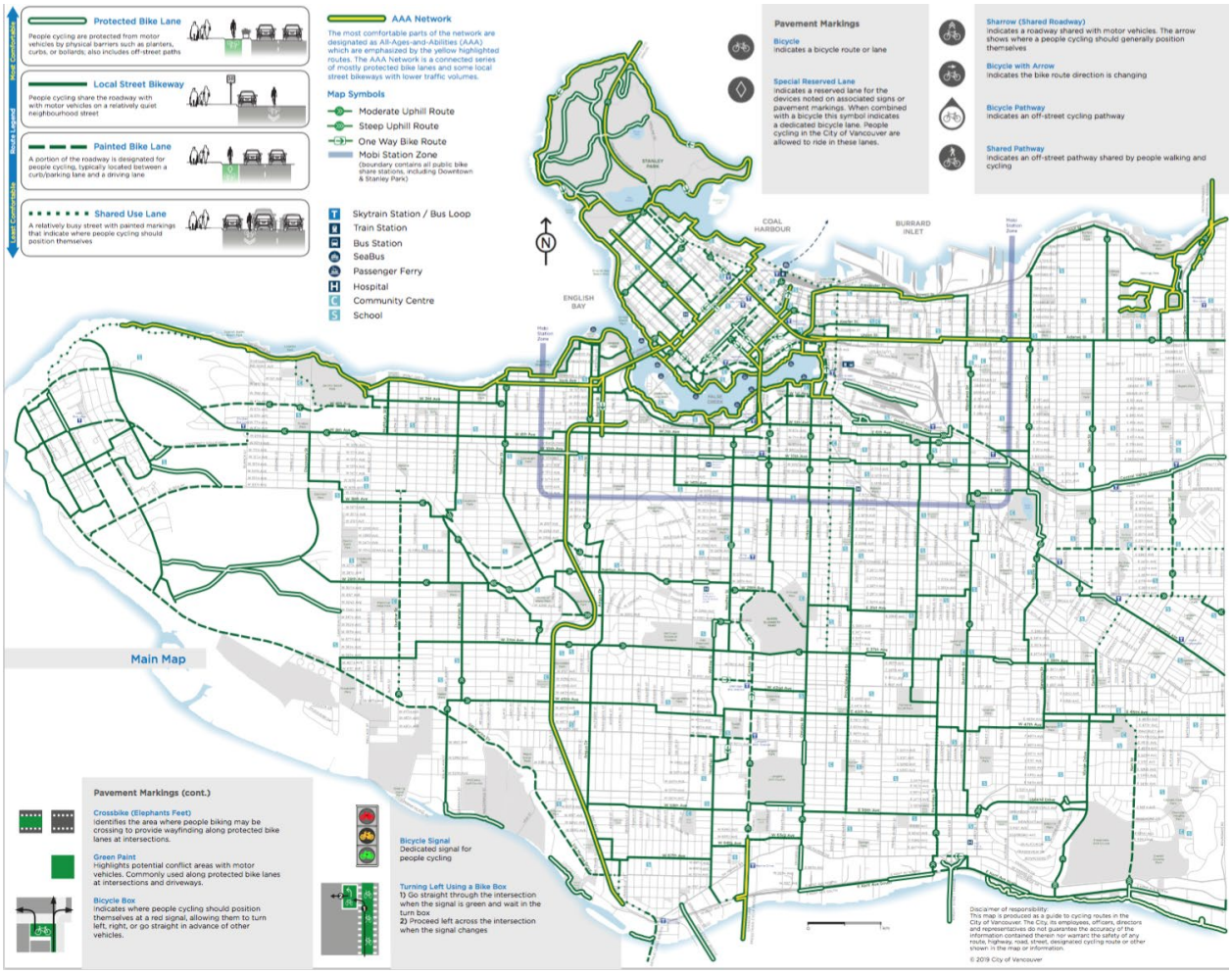
Table 15

I would be more inclined to bike to school if there were more bike lanes on campus	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	12	41.4	41.4	41.4
Disagree	3	10.3	10.3	51.7
Indifferent	10	34.5	34.5	86.2
Strongly Agree	3	10.3	10.3	96.6
Strongly disagree	1	3.4	3.4	100.0
Missing	0	0.0		
Total	29	100.0		

Table 16

I would feel more comfortable biking to school if there were accessible safety videos to UBC students demonstrating how to navigate and ride as safely as possible in traffic	Frequency	Percent	Valid Percent	Cumulative Percent
Agree	6	20.7	20.7	20.7
Disagree	8	27.6	27.6	48.3
Indifferent	14	48.3	48.3	96.6
Strongly Agree	1	3.4	3.4	100.0
Missing	0	0.0		
Total	29	100.0		

Appendix B



Appendix C

Consent Form

KIN 464: Health Promotion and Physical Activity KIN 464: Health Promotion and Physical Activity

Participant Consent Form for Class-based Projects Why do
UBC Students Drive instead of Cycle To Campus Group #1

Principal Investigator: Dr. Andrea Bundon (Assistant Professor, School of Kinesiology, Faculty of Education)

The purpose of the class project: To gather knowledge and expertise from community members on the potential barriers to biking to UBC campus and possible solutions that could be implemented to increase the accessibility of biking to UBC for students.

Study Procedures: With your permission, we are asking you to participate in a survey. With the information gathered, students will critically examine how different individuals understand or engage in health promoting activities or health promotion initiatives.

Project outcomes: The information gathered will be part of a written report for the class project. The written report will be shared with campus partners involved with the project. Summaries of findings will also be posted on the following websites. No personal information that could identify participants will be included in these reports or shared with campus partners.

UBC SEEDS Program Library: https://sustain.ubc.ca/courses-degrees/alternative-credit-options/seeds-sus tainability-program/seeds-sustainability-library

Potential benefits of class project: There are no explicit benefits to you by taking part in this class project. However, the interview will provide you with the opportunity to voice your opinion on your experiences with health promoting activities or initiatives in a broad sense and will provide the students with an opportunity to learn from your experiences.

Confidentiality: Maintaining the confidentiality of the participants involved in the research is paramount, and no names of participants will be collected.

At the completion of the course, all data (i.e. notes) and signed consent forms will be kept in a locked filing cabinet in Dr. Andrea Bundon's research lab (1924 West Mall) at the University of British Columbia. All data and consent forms will be destroyed 1 year after completion of the course.

Risks: The risks associated with participating in this research are minimal. There are no known physical, economic, or social risks associated with participation in this study. You should know that your participation is completely voluntary and you are free to withdraw from the study and there will not be negative impacts related to your withdrawal. If you withdraw from the study, all of the information you have shared up until that point will be destroyed.

Contact for information about the study: If you have any questions about this class project, you can contact Andrea Bundon by phone at 604-822-9168 or by email at andrea.bundon@ubc.ca Research ethics complaints: If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or e-mail RSIL@ors.ubc.ca . or call toll free 1-877-822-8598.

Incentive: - Draw Prizes: - Enter in a contest to win prizes! - 4 prizes, 2 lululemon yoga mats, 2 $25 gift cards, (bookstore, UBC food service) - Entries close April 2nd - Draw will be conducted on April 7th - Please go to the below link and enter group #1 for a chance to

win! - https://ubc.ca1.qualtrics.com/jfe/form/SV_6PToAHxBCyf4rkh

Consent: Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at anytime.

Do you give your consent?

- I consent
- I do not give my consent

Default Question Block

How I commute to school is primarily based on comfort.

- Strongly disagree
- Disagree
- Indifferent
- Agree
- Strongly agree

I have access to a bike most of the time.

- Strongly disagree
- Disagree
- Indifferent
- Agree
- Strongly agree

Biking to UBC is accessible to where I live.

- Strongly disagree
- Disagree
- Indifferent
- Agree
- Strongly agree

I feel safe biking to and from UBC campus.

- Strongly disagree
- Disagree
- Indifferent
- Agree
- Strongly agree

It’s too far for me to bike to UBC.

- Strongly disagree
- Disagree
- Indifferent
- Agree
- Strongly agree

The health benefits of biking don’t outweigh the cons.

- Strongly disagree
- Disagree

Indifferent

Agree

Strongly agree

I would like to lock my bike in a shelter.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

Dislike a moderate amount

Dislike a great deal

I don’t think I am fit enough to bike to school.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

I don’t like to bike in the rain.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

Dislike a moderate amount

Dislike a great deal

I would bike (more) to UBC if there were more bike lock up stations.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

I'm afraid my bike will get stolen at UBC.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

I would bike (more) to UBC if there were more bike share options.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

I don’t bike to school because it is too time consuming.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

The shower facilities at UBC are sanitary and accessible enough to justify biking.

Strongly disagree

Disagree

Indifferent

Agree

Strongly agree

I would be more inclined to bike to school if there were more bike lanes on campus

Strongly disagree

Disagree

Indifferent

Agree

Strongly Agree

I would feel more comfortable biking to school if there were accessible safety videos to UBC students demonstrating how to navigate and ride as safely as possible in traffic

Strongly disagree

Disagree

Indifferent

Agree

Strongly Agree

Why do you drive to school over bike?

What would make biking for you a better option over driving?