

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Barriers UBC Vancouver Staff face when Considering Cycling as a Mode of Transportation

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University of British Columbia

KIN 464

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BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

Executive Summary

The purpose of this study was to identify and analyze the barriers University of British Columbia (UBC) staff face when considering cycling as a mode of transportation and provide UBC Campus + Community Planning with recommendations that encourage staff to cycle. With only 1.4% of more than 155,000 trips made to and from the university being from cyclists, increased health initiatives such as cycling to work can provide long-term benefits for both UBC staff, community, and environment (UBC, 2019).

Using a mixed method design, 56 UBC staff members were surveyed and asked to provide information regarding their current modes of transportation to the university and identify the barriers they faced when considering cycling to the university. Four participants who drive alone to the university were interviewed in order to provide deeper insight regarding the barriers they faced when considering cycling as a mode of transportation. Statistical analysis and thematic analysis were used to segregate data and deduce prevailing themes from the survey and thematic analysis was used to deduce themes from the phone interviews. The results of the data provided the base for the recommendations provided to UBC Campus + Community Planning.

Results from the survey revealed that 7.14% of participants carpooled to the university, 14.29% walked to the university, 17.86% cycled to the university, 28.57% used public transportation to the university, and 32.14% drive alone to the university. Of the participants who stated they indicated they drive alone, 43.73% indicated they would at least consider cycling if barriers were addressed. The most significant barriers identified by UBC staff were Distance of travel (Mean = 7.3), Inclement Weather (Mean = 7.1), Lack of bike friendly road/pathway (Mean = 5.7), and lack of shower facilities (Mean = 4.4.). Thematic analysis of the interviews revealed that Distance of travel, Shower facilities, and Lack of bike friendly road/pathways were significant barriers.

We proposed 3 different recommendations to address the barriers revealed by the data: 1) To address the barrier of distance of travel, having a location off campus in which staff travelling long distances can park and cycle to the university can reduce the number of vehicles on campus while increasing staff health. 2) To address the barrier of bike pathways, increasing bike safety on bike pathways by introducing barriers that separate bicycles, pedestrians and vehicles would be effective. 3) To address the barrier of shower facilities, an increase in cleaning shower facilities as well as communication of the location of showering facilities would address this barrier.

Since two of the most significant barriers are largely outside the bounds of the university's control, it's not realistic to imagine that cycling will ever become the most frequent method of transportation by UBC staff. This finding is consistent with previous cycling transportation research (Gardner & Abraham, 2017). However, with 57.2% of our respondents reporting that they would at least consider cycling should some of the existing barriers be addressed, it's important to analyze the controllable barriers and develop solutions to overcome them.

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Introduction & Literature Review

As health promotion and physical activity have gained more importance in daily life, the mode of transportation in which the University of British Columbia Vancouver Point Grey Campus (UBCV) staff use to arrive and depart the university has begun to gain considerable interest (Kinesiology 464 001 Health Promotion and Physical Activity, 2020). Specifically, UBCV staff who choose to drive to the university alone have garnered the most interest (Kinesiology 464 001 Health Promotion and Physical Activity, 2020). Cycling has been identified as a “vehicle” in which health promotion and physical activity can be increased with the UBCV staff community and has the added benefit of reducing the number of vehicles that travel to and from the university. With more than 155,000 trips to and from UBCV being made each weekday, and only 1.4% of these trips being made by bike, a clear question is presented (Kinesiology 464 001 Health Promotion and Physical Activity, 2020). What stops UBCV staff from cycling to UBCV? The purpose of this project is to identify and determine the key barriers that impede UBCV staff members from using cycling as a means of transportation to the university.

Research regarding why individuals choose to drive to work, instead of using other modes of transportation revolves around the practical and affective motives individuals hold (Gardner and Abraham, 2007; Mann and Abraham, 2006). Gardner and Abraham (2007) conducted a semi-structured qualitative interview in which they looked to explore the driving decisions made from the driver’s perspective, as well as investigate if there exists a relationship between the practical and affective motives individuals hold. Their results revealed six overarching themes that influenced the decision to drive to work versus using other modes of transportation (Gardner & Abraham, 2007). These included journey time concerns, journey-

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

based affect, minimizing effort, personal space concerns, minimizing monetary costs, and the desire for control. All which represent why individuals prefer the use of vehicles over other transportation modes such as cycling (Gardner and Abraham, 2007). To add to this list of affective motives, they also found the practical motive of self and identity as another reason as to why individuals chose driving rather than using other modes of transportation (Gardner and Abraham, 2007). Mann & Abraham (2006) found similar results when looking at the role of affect in United Kingdom (UK) commuters' travel mode choices. Their semi-structured qualitative interview of 18 individuals revealed 5 affective motives as to why individuals preferred to drive alone instead of using other modes of transportation (Mann and Abraham, 2006). This included car ownership and identity, autonomy, personal space, journey-based affect, and affect-utility integration (Mann and Abraham, 2006).

Although cycling to work has been found to be one of the most sustainable and beneficial travel modes, most people do not consider cycling as a mode of transport to get to work (Gatersleben and Appleton, 2007; Uttley and Lovelace, 2016). Health wise, cycling to work is considered as physical activity, with benefits such as lower risk of cardiovascular disease, cancer and diabetes (Uttley and Lovelace, 2016). Economically, those who cycle spend less on gas, transportation, and have faster commute times due to less encountered traffic (Uttley and Lovelace, 2016).

Uttley and Lovelace (2016) and Gatersleben and Appleton (2007) both conducted studies on staff at two universities to determine who cycles, why they decided to cycle, and how more people can be persuaded to cycle to work on a daily basis. Gatersleben & Appleton (2007) conducted a "Green Travel Plan" at the University of Surrey in the UK, which was held to encourage the use of transportation, other than cars, by implementing new bus routes, cycling

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

lanes, cycling parking and facilities for those who cycle. Furthermore, the University of Surrey increased parking permit prices and limited the number of people who lived less than two miles from the university to buy a permit (Gatersleben and Appleton, 2007).

Both Uttley and Lovelace (2016) and Gatersleben and Appleton (2007) had similar results as those who did not cycle to work either lived too far, commute time, were concerned about safety, or did not want to cycle in bad weather. However, for those who did cycle to work, they commonly did so for the enjoyment, health benefits, or lower cost for transportation (Gatersleben and Appleton, 2007; Uttley and Lovelace, 2016). The participants of Uttley and Lovelace's (2016) study reported that they would consider cycling or would cycle on a more consistent basis if cycling facilities, and road safety were improved (Uttley and Lovelace, 2016).

The crux of our assessment of UBCV staff drivers will be determining the feasibility of transferring their commute to bike use. According to a 2016 Census analysis by Yaropud, Gilmore & LaRochelle-Cote (2019), 15.9 million Canadians commute to work with 74% of that group driving. The average Canadian commute time was 26 minutes, with Vancouver boasting a higher 30-minute average. For this reason, long commutes are described by Stats Canada as a "big city problem". The 649,810 recorded car commuters residing in Metro Vancouver live a median distance of 8 kilometres from their place of work, but 37,990 have a commute of over an hour. Gilmore (2017) reported that 40.6% of Vancouverites utilized some form of sustainable transport in 2016. 9.1% engaged in active transportation, such as walking or cycling, making Vancouver the top of this category amongst major Canadian cities. Cycling was the smallest component of all transport, accounting for just 2.3% of all transportation. Which clearly shows that Vancouverites are more willing to commute via cycling than almost any other municipality.

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

The City of Vancouver is already showing improvement in bicycle use. According to the *Walking + Cycling in Vancouver: 2018 Report Card (2019)*, 2018 had the second highest number of bike trips on record, with an estimate of over 2.4 million individual bike trips around the city. This is due in large part to an expanded cycling network which stretches over 325 kilometers, 25% has a AAA rating for safety and accessibility. The rise of bike sharing has also played a role, with ridership seeing a 30% increase in 2018 compared to previous years with over 700,000 individual trips.

UBC's electric bike (E-Bike) program has generated similar success. The program offers free 24-hour access to e-bike's for UBCV staff, which has attracted a total of 381 staff members to sign up (UBC, 2019). The target audience for this program is similar to our project, which is UBC staff members who commute alone. Participants expressed how the program encouraged them to use a bike to travel to and from UBC, instead of driving alone. They also reported interest in the program being conducted again the following year. Although staff members were in favor of the program, they also pointed out barriers present to them and the process of cycling to UBC. Members mentioned the inconvenience of the bike shops location as well as the cost of owning an e-bike being too high.

Although there are effective programs currently taking place on campus, further research regarding the practical and affective motives specific to UBCV staff needs to be conducted. Identifying the major barriers relating to the location of UBCV, and the willingness for staff to bike will allow for more comprehensive programs to be designed.

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Methods

Rationale

This study was conducted at the University of British Columbia Vancouver Point Grey Campus because based on previous studies, universities tend to be sizable employers therefore offering a relatively large sample of commuters, which can provide more opportunities to study travel behavior (Uttely and Lovelace, 2016). The sampling population chosen for this study was staff members who chose to drive alone to the university. Universities consist of many buildings within a single destination, which allows for emphasis on where staff are commuting from and how this may or may not affect their mode of transportation (Uttely and Lovelace, 2016). The focus of this study is on staff members at UBCV because many other studies have primarily prioritized student travel behavior, thus more research needs to be done on staff mode of transportation choices at universities (Uttely and Lovelace, 2016).

Participant Recruitment

A general online survey was used to provide the largest sample of data and was the easiest to execute. Using Qualtrics online survey website, a questionnaire was crafted to address our specific inquiries. Links to this survey, as well as information about our project, were temporarily circulated to staff via online Facebook advertisement, as well as emails sent directly to UBC staff member email accounts. The survey also included an option to share contact information for respondents who drive alone. This allowed for us to conduct individual phone interviews and collect more detailed information from participants who drove alone to the university. The survey data was collected over a period of twenty-five days, beginning on March 2, 2020 and ending on March 26, 2020. Phone interviews to collect more detailed information were conducted beginning on March 27, 2020 and ending on March 29, 2020. Several different

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

essential data components were collected in the survey. Firstly, and most importantly, respondents were asked what their primary mode of transportation to the university was. Options such as driving alone, carpooling, public transport, biking, and walking were offered as responses. This allowed for the isolation of our target population while also gaining a broader understanding of the field of inquiry. Information was also collected on how long staff commutes are in order to address the feasibility of cycling for staff. Inquiries were also made regarding participants' feelings towards cycling in general, their perception of cycling accessibility to campus, and how frequently they use bicycles outside of commuting. Finally, participants were provided with a list of common barriers to cycling and were asked to rate how each of them affected their willingness to cycle to the university on a 10-point scale.

Data Analysis

Once the online survey deadline was reached, data from the survey was taken and segregated in excel into categories representing what mode of transportation was used to commute to the university. The barriers faced when making the decision to cycle or drive and the distance of the commute to the university was then analyzed. Using statistical analysis, this data was then used to form bar graphs and pie charts that accurately represented the results. The responses gathered from the semi structured phone interviews were transcribed and then analyzed using thematic analysis. Responses were segregated into prevailing themes based on the results of the analysis.

Challenges and Limitations

Research of any kind comes associated with a bevy of potential problems, especially when it requires buy-in from a very small target group without prior arrangement. That is exactly

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

the situation we found ourselves in while investigating the obstructions to cycling faced by UBC staff members who drive to work alone.

The first challenge we faced was identifying the appropriate channels to distribute our survey. Without enough staff completing our questionnaire, our sample would have been problematically small and information on the target population of staff who drive alone would have been even smaller. To overcome this obstacle, we aggressively marketed our survey in both online as well as in person in order to maximize the number of participants. Individually distributing communications to staff offices and sending mass email using publicly available staff emails were solutions that we undertook.

The online survey itself also posed a significant challenge in terms of the potential biases present in the answers. In a public forum, the average person may feel embarrassed to disclose a tendency to drive alone or an unwillingness to cycle. Given the colloquialism “just like riding a bike”, respondents may have felt ashamed if they are unable to cycle or cycle well. While the anonymous aspect of the survey mitigated some of these concerns, we still expect respondents to skew or soften their responses regarding cycling. Therefore, the framing of our questions was carefully adjusted, balancing potentially skewed ratings questions with more concise, black and white answers.

Still, there remained the additional concern of the online survey providing insufficient or merely surface information. While the anonymity and expansiveness of the survey was essential to the aggregation of data, lack of depth was a realistic critique. To combat this predictable issue, survey participants who fit the target population were given the option of providing contact information for researchers to conduct a short interview. Coupling interviews with the online

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

survey allowed us to obtain a more specific and personal understanding of the issues exposed by the data, further filling in the picture for our project partners.

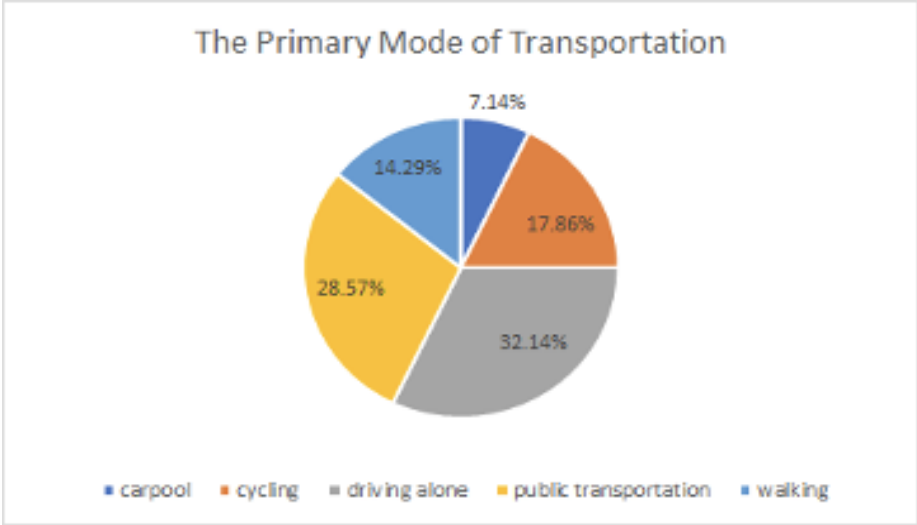
Interviews posed their own set of challenges. With the sudden arrival of Covid-19, scheduled interviews had to be conducted over the phone. Obtaining consent to record phone call and accurately transcribing and removing personal information identifiers from calls was extremely important. Therefore, in order to participate in a phone interview, participants were required to complete a consent form prior to the interview. Some respondents were not willing to participate in phone interviews as more personal information such as phone numbers would need to be provided.

Results

From the 61 participants that responded to the survey, only 56 valid and complete participant surveys were included in the study. 5 participant surveys were removed from the study due to the responses being incomplete. Of the 56 participants used in the study, 7.14% participants “Carpooled” to the university, 17.86% participants used “Cycling” as a mode of transportation to the university, 32.14% participants “Drive Alone” to the university, 28.57% participants used “Public Transportation” to the university, and 14.29% participants “Walked” to the university.

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

Figure 1: Mode of transportation to the university or Participant Background

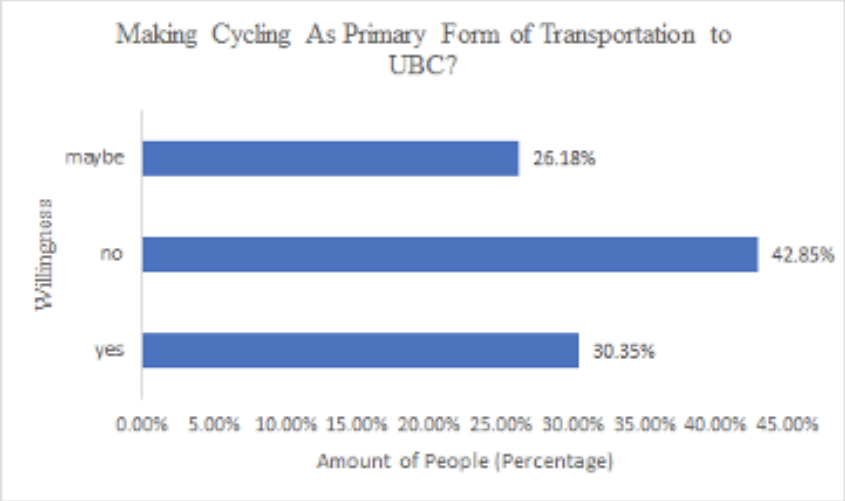


The distribution chart of primary mode of transportation for participants

In the graph below, almost half of the participants would not consider cycling as their primary form of transportation as it has 17.86%. Participants who said yes only have 30.35%, and the rest of the participant claimed that they might consider cycling as the primary form of transportation to UBC Campus

Figure 2: Participant perception regarding making cycling the primary mode of transportation

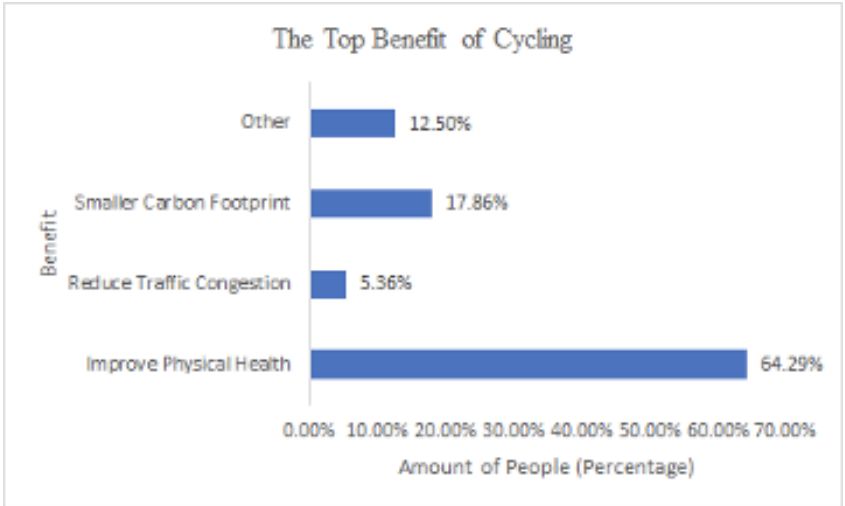
BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION



The bar chart for the making cycling as primary form of transportation to UBC

In Figure 3, the graph has shown the opinion from the participant about the benefits of cycling. Majority of the participants have suggested that cycling could improve physical health, which 64.29% of the participants voted for. There are 5.36% of participants think it could reduce traffic congestion, and 17.86% think it could reduce the carbon footprint. 12.5% of participants think there are other benefits, such as faster than public transportation and it is the cheapest method of transportation.

Figure 3: Participants perceived benefit of cycling

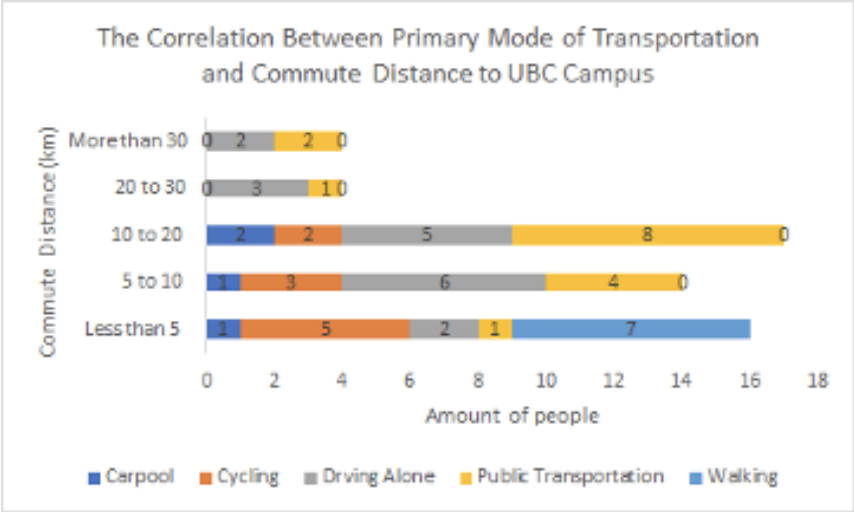


BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

The bar chart for the top benefits of Cycling

The graph below, illustrates the distance in which participants who live from the campus as well as their varying modes of transportation the closest to campus. Participants who reported “walking” as their mode of transportation live “less than 5km” of the university. Participants who reported “cycling” as their mode of transportation are distributed between “within less than 5km”, “5-10 km” and “10-20 km” from the university with the majority reporting “less than 5km”. Participants who reported “Drive Alone” as their mode of transportation were distributed between all 5 options with the majority of participants reporting “5-10 km” and “10-20km”. Participants who reported “Carpool” as their mode of transportation were between “less than 5”, “5-10km” and “10-20km” Participant who reported “Public Transportation” as their mode of transportation were distributed all 5 options with majority of participants reporting “5-10 km” and “10-20 km”.

Figure 4: The Correlation between Modes of Transportation and Commute Distance to UBC campus



The bar chart of the correlation between primary mode of transportation and commute distance to UBC campus

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

Participants were asked to identify if physical limitations, Inability to ride a bicycle, Frequency of bike theft, Distance of travel, Inclement Weather, Lack of bike friendly paths/roadways, Lack of shower facilities on campus, or lack of access to a bike were the barriers preventing them from cycling to the university. The results were distributed on a 0-10 Likert scale, with “0” representing not a barrier and “10” representing a significant barrier. Ratings from each barrier were collected and averaged. The top 3 barriers were distance of travel with an average of 7.3, inclement weather with an average of 7.1, and the lack of bike friendly road or pathway with an average of 5.7. Table 1 includes averages for all barriers surveyed.

Table 1: The average rating of the barriers that preventing participants to bike to UBC campus

Barriers	Average Rating
Physical Limitation	4.2
Inability to Ride a Bicycle	2.2
Frequency of Bike Theft	4.4
Distance of Travel	7.3
Inclement Weather	7.1
Lack of Bike Friendly Road/Pathway	5.7
Lack of Shower Facilities on Campus	4.4
Lack of Access to a Bike	4.0

Table 1. The average rating of the barriers that preventing participants to bike to UBC campus

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

Improvements participants would like to see from UBCV

Participants were asked to describe improvements they would like to see UBCV implement for them to consider cycling to the university. The following themes arose from the data, improved bike pathways and Improved facilities were the main concerns. For improved bike pathways participants stated that a “change of topography”, “flat bike routes”, and “less hills” were needed. For improved facilities, participants stated that “access to showers”, “better showers/change rooms”, and “more individual bike lockers” are needed.

Phone Interviews

Four participants participated in phone interviews and were asked to provide more insight regarding their survey answers. Specifically, participants were asked to elaborate on answers they provided on the survey regarding the barriers they faced when deciding to cycle or drive to the university. Participants were also asked if they would consider cycling if the barriers they faced were addressed. Thematic analysis was used to analyze the participants' responses. Based on their responses, three themes arose from the analysis. Distance of travel, Facilities, and Bike pathways as barriers that impacted participants' decision to cycle to the university.

Discussion

Based on the results of our survey and interviews, the two most significant barriers to staff cycling are outside the bounds of university control, distance of travel to campus and the frequency of inclement weather in the Vancouver climate. This finding is consistent with previous cycling transportation research (Gardner and Abraham, 2017). Without any adequate means of controlling these variables, it is not realistic to imagine that cycling will ever be the

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

most frequently used method of transportation by UBC staff. Indeed, 42.8% of our respondents indicated that they would never consider cycling as a primary means to commute to the university. However, 57.2 % (Yes = 30.35%, Maybe = 26.18%) of our respondents would at least consider cycling should some of the existing barriers be addressed. Three of those controllable barriers emerged in the data.

Survey and interview respondents commented that the lack of bike friendly roads and pathways, adequate facilities, and frequency of bike theft as barriers to cycling to the university. Bike friendly roads and pathways received an average of 5.7 on the Likert scale and was further supported as a barrier by the themes deduced from responses interviewees provided. For example, seven individuals identified issues with roadways or road safety as a primary concern that they would like to see the university address. Lack of Facilities for showering and changing received an average of 4.4 on the Likert scale. But upon evaluation of the themes that emerged from the qualitative responses, the issue was repeated by interviewees and survey respondents. The main issue raised by participants was not a lack of showers and changing rooms, but rather general uncertainty surrounding their locations and discomfort concerning their level of cleanliness. Finally, the frequency of bike theft received an average rating of 4.4 on the Likert scale. The UBC Try an E-Bike Program Evaluation Report (2019) found the threat of bike theft to be the second highest barrier for entry into their program, and the highest applicable to our study as we weren't reviewing the cost of a specific program. While still being one of the top barriers to cycling, bike theft may be less influential than previously assumed. In general, it seems issues of personal safety or comfort are more important to respondents than protection of property, although far more difficult to assuage.

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

This connects to the problem presented by our partner because it identifies the barriers and relative weights that each barrier holds for UBCV staff members who drive alone to the university. The study outlines prevailing themes and concerns that staff members grapple with and changes staff members would like to see made. Subsequently, the study enhances our understanding of the issue by highlighting areas such as facilities and bike pathways as areas to be improved upon in order to convince UBCV staff to consider cycling as a mode of transportation.

Recommendations

After analyzing data from survey responses and phone interviews to understand the barriers faced by staff who drive alone to the university, several barriers presented themselves. If properly addressed, UBCV staff who choose to cycle to the university over driving alone could see significant health benefits. Therefore, we recommend the following to address the barriers presented above.

Distance of Travel

1. Have a location off campus that allows staff to bike to campus. During phone interviews, participants were asked if having a location off campus where staff could park their vehicles and cycle to the university would influence their decision to cycle. 3 of the 4 interviewees stated that they would consider doing so. This illustrated to us that even though distance was the main barrier faced by the majority of the survey and interview participants, it could be overcome by having a location off campus that staff could leave their vehicles and cycle the remaining distance. This option would be of interest to those who live more than 15km from the university, with one interviewee even commenting that “my colleagues who live in Coquitlam or Burnaby,

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

that would be a great option for them”. Creating a location that is specific to those who travel long distances, to leave their cars and cycle the remainder of the way, can promote physical activity within staff at UBC, but also reduce the number of vehicles travelling to and from the university.

Bike Pathways

2. While distance and weather were decidedly the two largest barriers to cycling, a perceived lack of bike-safe roadways and fears over safety were distinctly the third most impactful area of concern. Participants expressed a clear discomfort with their ability to share the road with much larger motor vehicles. Due to its isolated location, UBC campus has just four main points of entry: SW Marine Drive, W 16th Avenue, University Boulevard, and Chancellor Boulevard. Each of these are major streets that exhibit high levels of traffic during peak commuting hours. Neither they, nor the major intersecting street of Westbrook Mall, feature any form of physical barrier between the bike lane and the traffic. Given that these are high risk areas for biking and the staff population has a high level of discomfort with exposed biking, a top priority must be reaching out to the city in order to install physical barriers between bike and car lanes on major entrance roads to UBC. Furthermore, a consistent and clear connection of bike routes throughout the city would increase the staff’s confidence in cycling longer distances as well as allow people to feel safer by having a bike lane, instead of sharing the road with larger motor vehicles.

Shower Facilities

3. Although the survey results indicated that only an average of 4.4 survey participants found shower facilities to be a barrier, responses from the phone interview indicated

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

that most participants found the condition of the showering facilities as a significant barrier. Three participants conveyed that of the facilities they were aware of, they were unsure of the level of upkeep they received. This discouraged them from electing to take shower at the facility as they needed to be clean and ready for work. Therefore, a review of the condition and cleaning practices of shower facilities can be conducted to address this barrier. In addition, implementing new cleaning practices that require showering facilities be cleaned more frequently would allow for users to feel confident that sanitary shower facilities are always available for use.

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

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BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

Appendices

Appendix A - Sample Consent Form for Interviewees

KIN 464: Health Promotion and Physical Activity

Participant Consent Form for Class-based Projects

Barriers UBC staff who Drive Alone face when Considering Cycling as a Mode of Transportation Group 10

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 topic of the barriers faced by UBC staff when deciding to cycle to the UBC Vancouver campus.

Study Procedures:

With your permission, we are asking you to participate in a phone interview. Audio from the phone interview will be recorded and then transcribed verbatim. 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/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-sustainability-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

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

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.

Consent:

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

Subject signature _____

Date: _____

BARRIERS UBC STAFF FACE WHEN CONSIDERING CYCLING AS A MODE OF TRANSPORTATION

Appendix B - Survey Questions

Default Question Block Block Options ▾

Q1: What is your primary mode of transportation to UBC Campus?

- Walking
- Public transportation
- Driving alone
- Carpooling
- Cycling

Q2: How far is your commute to UBC Campus?

- Less than 5 KM
- Between 5-10 KM
- Between 10-20 KM
- Between 20-30 KM
- More than 30 KM

Q3: How often do you use a bicycle for transportation?

- Never
- Everyday
- Almost everyday
- Two to three times a week
- Once a week
- Less than once a week

Q4: How feasible do you consider commuting via bicycle to be in your own life?


- Not at all
- Very difficult
- Challenging
- Limited obstacles
- Easy to implement

Q5: How would you rate the impact of the following obstacles in preventing you from cycling to campus more often?


	0	1	2	3	4	5	6	7	8	9	10
Physical Limitations											
Inability to Ride a Bicycle											
Frequency of Bike Theft											
Distance of Travel											
Inclement Weather											
Lack of Bike Friendly Roads/Pathways											
Lack of Shower Facilities on Campus											
Lack of Access to a Bike											

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Q6 Would you ever consider making cycling your primary form of transportation to UBC?

 Yes
 Maybe
 No



Q7 What is the top change that UBC could make to entice you to commute more frequently by bike?



Q8 What do you consider to be the top benefit of cycling?

 Improved Physical Health
 Smaller Carbon Footprint
 Reduced Traffic Congestion
 Other

Q9 If you commute exclusively by driving alone, our student researchers would like to hear from you in greater depth. If interested, provide your primary means of contact below and we will reach out to set up a interview. (Optional)

Appendix C - Interview Question

1. One of the questions we asked was how feasible you consider commuting via bicycle would be in your own life. If possible, could you please elaborate on your answer and what those barriers are?
2. Would you consider making cycling a secondary mode of transportation if one of the barriers you stated were addressed? If not, why?

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3. If the university had a location where you could commute to, leave your vehicle and either rent or use your own bike to cycle to the university. Would that make you consider cycling to the university as an option?

Appendix D - Results

Figure 1: Mode of transportation to the university or Participant Background

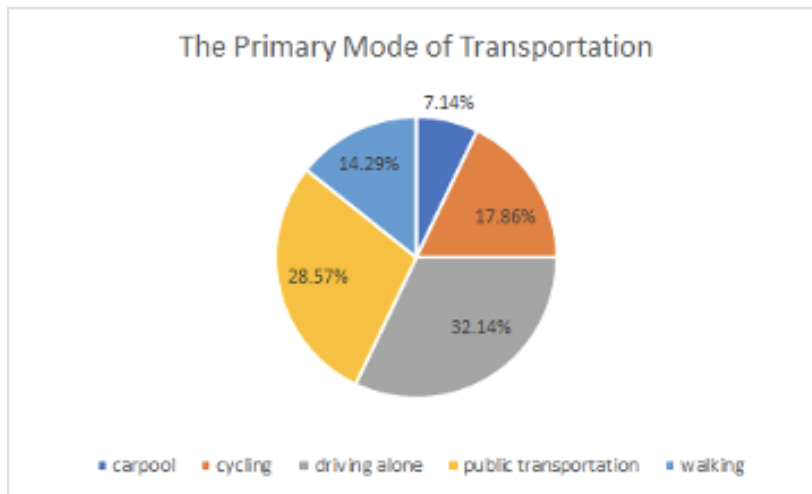
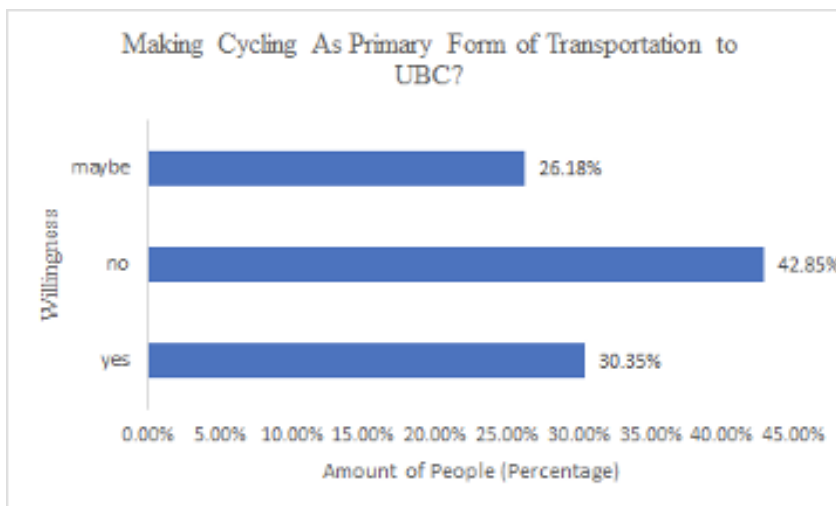


Figure 2: Participant perception regarding making cycling the primary mode of transportation



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Figure 3: Participants perceived benefit of cycling

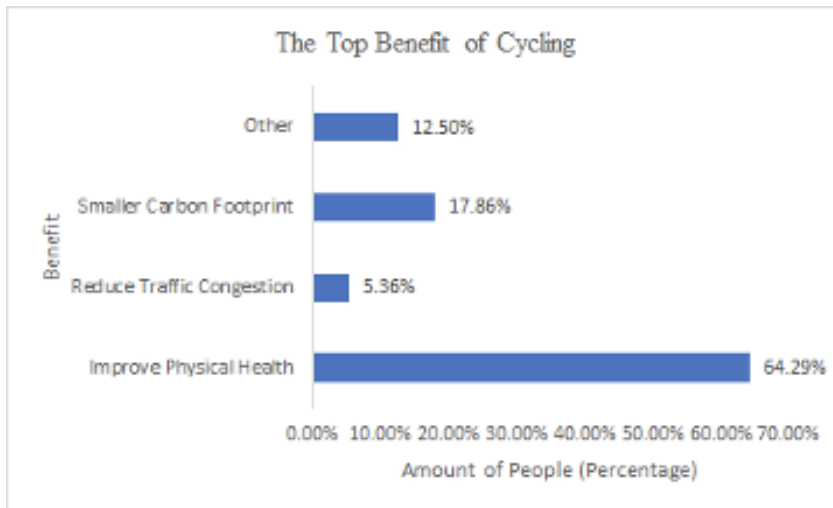
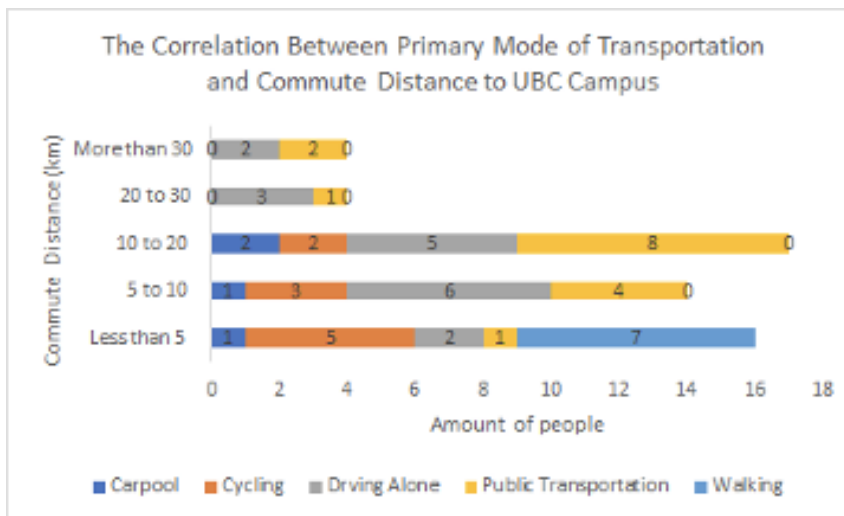


Figure 4: The Correlation between Modes of Transportation and Commute Distance to UBC campus



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Figure 5: Barriers faced when deciding to cycle to the university

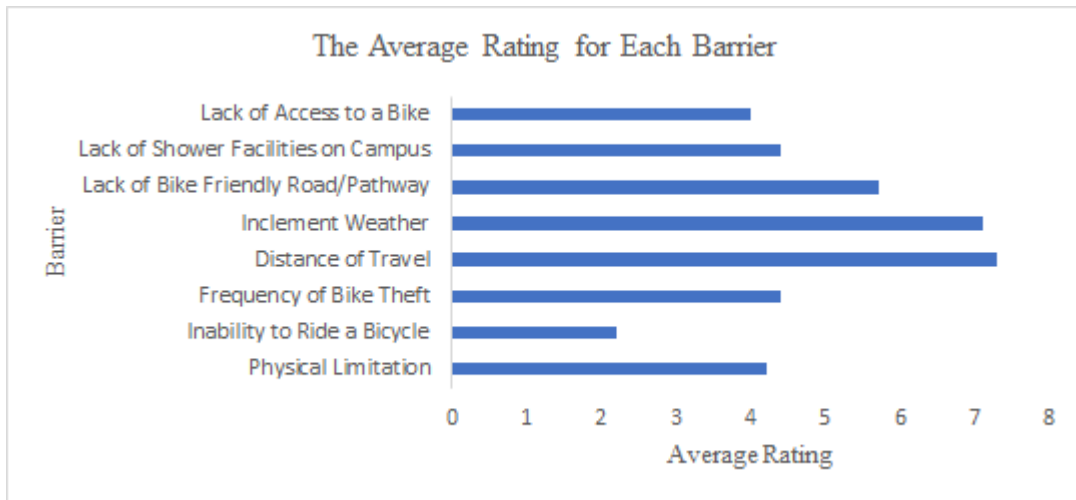


Table 1: The average rating of the barriers that preventing participants to bike to UBC campus

Barriers	Average Rating
Physical Limitation	4.2
Inability to Ride a Bicycle	2.2
Frequency of Bike Theft	4.4
Distance of Travel	7.3
Inclement Weather	7.1
Lack of Bike Friendly Road/Pathway	5.7
Lack of Shower Facilities on Campus	4.4
Lack of Access to a Bike	4.0