

FINAL REPORT: Cycling User Groups

Group 13

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**Executive summary:**

The objective of this project is to provide the Active Transportation Unit (City of Vancouver) with insights into how bike routes can be made safe and comfortable for diverse users. The target audience we chose for this project was faculty and staff who commute to UBC by bike. This group of individuals was selected in order to determine the downfalls to choosing cycling as a primary means of transportation to campus. In order to obtain these limitations, we conducted interviews with faculty who commute to UBC regularly. Many of the participants expressed their passion for cycling because of reasons such as being environmentally friendly, cost effective, a way to get daily exercise, and out of pure enjoyment. From our research of the 5 staff and faculty commuters, we were able to identify three specific areas of development and improvement. These included increasing and incorporating colour variation in bike lanes, widening lanes for cyclists and improving the overall road conditions and terrain throughout the commute. Results from participants showed that the colouring of bike lanes provided an important visual cue for cars to be wary of the divide between territories. Cyclists travelling through intersections with coloured bike lanes also found this a useful tool in order to plan and follow their designated routes. Additionally, participants stated that they would alter their route of commuting to have access to these bike lanes as they provide a sense of safety and security. Although participants generally deemed roads to be a comfortable width, concerns arose when passing attempts were made. Furthermore, the quality of terrain and road conditions resulted in similar outcomes. The findings suggest areas of improvement for bike lanes throughout the Vancouver community to increase the amount of citizens engaging in cycling as a means of transportation.

## **Introduction & Literature Review:**

The purpose of this project is to connect with avid cyclists and gather insight from them on how improvements can be made to bike lanes with regards to safety and comfort. The specific group that will be targeted is faculty and staff at the University of British Columbia who consistently commute to work on their bicycle. A sample of 5 people within this population took part in a short interview composed of 12 questions regarding their perceptions on bike routes and the safety/comfort levels of them. Ideally, gathering information from individuals who frequently utilize bike lanes in the Vancouver area will help provide us with meaningful insight from users, spanning beyond our own outward perceptions. The findings we gather from cycling commuters in Vancouver will then be shared with the Active Transportation unit in Vancouver, and will have the potential to impact further designs and adjustments of bike lanes in the area.

Several studies and articles have been examined to help guide this project. As seen in many media forums, including a recent article in the New York Times (Shilton, 2017), cycling is a very promoted form of commuting. As cycling continues to be promoted within our society, is it important that the bike lanes available are accessible and user-friendly. Hopefully, by learning from the perceptions of current bike lane users, we can help improve upon this aspect. As predicted, this project is not the first one to examine different bike lane designs and their differing levels of safety. A study in Portland examined how differing colours between bike lanes and roads have impacted safety perceptions of both cyclists and drivers. The study found many positives in the sense that drivers seemed to be more aware of cyclists, and would yield more frequently, but on the contrary, bikers were less likely to take precautions such as scanning and providing hand signals when crossing these parts (Hunter, Harkey, Stewart, Birk, 2000). With this knowledge, we have the opportunity to discuss the implementation of coloured bike

lanes with users, and if it is considered appealing, precautions could be taken in advance to minimize the lapse of proper cycling signals/behaviours. Another article that we examined is focused on a different theme, diving into the world of E-bikes. E-bikes are not extremely common in North America, but are becoming increasingly popular in Europe and China (Bliss, 2016). With Vancouver being quite a cycling city, and one that receives high levels of immigration from places such as China (27.7% of immigrants are Chinese), we can predict that the E-bike fad will soon be upon us too ("Vancouver Population 2018," 2017). Considering this into the design of bike lanes could help reduce future problems that may arise with the potential use of E-bikes. Finally, as this study is being conducted to receive insight from current bike lane users, it is important that we obtain knowledge about the users. One study categorized cyclists into four groups; "the strong and the fearless," "the enthused and confident," "the interested but concerned," and "no way, no how" (Dill & Mcneil, 2013). By analyzing the types of cyclists, we can help better address their specific needs. Fifty-six percent of the study's population fit into the "interested but concerned" category, and further analysis concluded that concern could be reduced through reduced traffic speeds and increased separation between bike lanes and roads (Dill & Mcneil, 2013). Knowing trends in cyclist perceptions can allow information to be gathered beyond the 5-10 participants within our study. Each of these articles provides us with good information to guide our own study on.

### **Methods:**

For our project, we chose to focus on faculty and staff who commute to UBC. There are many reasons why we decided to narrow our user group to this specific population. Our primary reason for choosing this group of people was due to the fact that they appear to be a stable population within the UBC community. In comparison to the majority of students who attend

UBC for a four-year undergraduate degree, faculty and staff appear to work at UBC for a longer period of time. Another reason for our choice of examining faculty and staff commuting to UBC is related to our strong belief in connecting with this user group. As Kinesiology students, we feel that it will not be a difficult task to find faculty who commute to UBC on a regular basis, as we are already aware of a number of professors and UBC physiotherapists who engage in such behaviour. Lastly, as a result of the importance of this group of people on campus, we want to find ways to better understand the challenges associated with biking to campus and how we can make biking a primary means of transportation for all members of the community.

Our primary means of data collection for this project was through the use of interviews with our selected user group. We set up multiple interviews with various faculty members here at UBC throughout the duration of the semester. Our goal was to have all data collection completed by March 20th in order for us to compile and analyze all of the feedback we were given.

We conducted five separate interviews with faculty and staff members of UBC who choose cycling as their primary means of transportation to campus. In order to recruit our subjects we first reached out to faculty we knew of who commute to campus by bike. This provided us with two interviews, but we knew we needed to expand our recruiting technique. We asked for assistance in reaching out to this community through our professor, Dr. Andrea Bundon. We compiled a generic email with information regarding our study, which was then sent to faculty within the School of Kinesiology. From there, we were approached by numerous people who were interested in participating in our study. However, there was difficulty in scheduling times to set up an interview, as many of the potential candidates were away for conferences or on vacation. The times they could meet up to engage in our project were too far into the semester to have enough time to compile and analyze all of the data. Fortunately enough,

we were able to set up 4 in-person interviews with our condensed recruitment timeline. In addition, we were able to conduct a phone interview to accommodate for a participant who was away but still interested in partaking in the study.

The interviews were divided up by group members with a pre-arranged script (see Appendix A). The interviews took place throughout the first three months of March so that we had an adequate amount of time to analyze data. With participant consent via a signature of the terms to our project, we recorded interviews on our mobile phones and from there transcribed the information onto Google Docs. Our interview process was efficient, informative, and professional. After the interviewing process, we were able to gather all of our findings and evaluate the major themes across all of our participants responses.

### **Results/Findings:**

Based on the opinions and thoughts of the cyclists that we interviewed, these are our findings. Firstly, here is the information we gathered about the commutes of our riders. Typically, the riders we spoke to try to bike to campus 3-5 days a week. Ideally, they strive for the latter of that, but factors such as weather, work and family schedules and distance of destination inhibit the ability to solely commute by bike. On average, our riders commute 5 - 10 km per ride. The terrain rider's find on their commute is fairly easy as there are not many hills, but they did voice the difficulties of hills and how they try to avoid them. All the cyclists we interviewed bike alone. When asked (in question 12) which cyclist category they would identify as, the riders we interviewed split between "strong and fearless" and "enthused and confident." Now onto the specifics of these rider's opinions, based on their cycling experiences.

The riders agree that winter months, December and January, are the months they are least likely to bike to campus. This is due partially to harsher climates, and also to the busyness of

family schedules around this period of time. Upon further investigation into the impact of weather, our riders voiced that they have a higher chance of choosing their bikes as a commute during warmer seasons. However, only 1 rider identified as a “fair weather rider,” and the majority of them said that rain does not prevent them from commuting by bike. The riders not identified as “fair weather riders” agreed that they will bike to campus in some poor weather, and agree that heavy showers and icy roads are the two conditions that will make them choose not to bike as their way of commute. On the contrary, the riders also shared that biking in warm temperatures has its cons as it can get very hot while biking in the summer and they cannot delay their clothing, while in colder temperatures they can add layers and dress warmly. One rider even shared that she would most likely bus in the summertime and ride her bike during spring, fall and winter.

On their commutes, our riders expressed that they do feel safe for the most part. Within the city of Vancouver there were high feelings of safety, but some riders expressed concern when biking on major traffic routes and biking over bridges. One rider prominently expressed that their feelings of safety were due to their helmet. Most of the bikers stated that speed and quantity of traffic does impact their feelings of safety, and expressed that they avoid routes with high levels of traffic. For example, one rider stated that they would bike down West 8<sup>th</sup> Avenue, rather than more busy streets such as West 4<sup>th</sup> Avenue or Broadway. In addition, riders said that they felt more comfortable biking alongside cars that were moving at a slower speed. One rider however, identified themselves as a bike racer, and stated that being used to high speeds, they were not impacted by the speed of traffic.

In respect to bike lanes, all but one rider had bike lanes present on their commute. The anomaly, did not have bike lanes on his commute because he strove to take the fastest route,

preferring speed over safety. As for the others, a couple of them took similar routes on streets that were primarily for bikes rather than cars, and otherwise they stuck mainly to bike lanes while traveling alongside traffic. The riders we interviewed had a wide variety of answers regarding whether the presence of bike lanes affected their chosen route. One of the riders said it does not affect their commute because they take the fastest route possible. Another said that they see cycling more as a training opportunity, rather than a commute, so they do not tailor their route to use bike lanes. Two riders were lucky as their fastest route includes bike lanes. One rider shared that she would adjust her commute so that there are bike lanes present. Another rider said their route was comprised fully of bike lanes, but this was a coincidence, not something that was specifically sought out. Additionally, one rider voiced their concern of puddles and potholes, which could be harmful to riders and interfere with the ability to use bike lanes. As for size, all of the riders who use bike lanes believe they are wide enough. However, challenging situations can still arise. One rider shared that it is challenging to pass others, especially if cars or busses are going by at the same time. Another rider shared that on University Boulevard on the UBC campus there is often construction interfering with their ride, and that busses will go into bike lanes, which is, in their opinion, a very dangerous situation. As for differences in colouring between bike lanes and the road, all the riders have experienced places where bike lanes are different colours than the road. They have found that in these instances the bike lanes are usually green. However, a vast majority of bike lanes are not tinted or coloured. They expressed that the different colours are helpful, but more so for car drivers. They believe it helps cars be more aware of cyclists, but can also provide a false sense of security to cyclists. They expressed that they find the colours very helpful for them as cyclists in guidance through intersections, which can sometimes be tricky. All riders expressed that they would like to see more of this colour

variation present in Vancouver, and specifically on UBC campus. As mentioned, it would be exceptionally helpful if more intersections had these coloured markings.

Finally, in regards to E-Bikes, one rider said that they would consider the use of one, especially when tired. Not many of the riders had put much thought into the idea of an E-Bike and majority of them said they were not interested in riding one as they all valued the physical activity and exercise they achieved while biking on their commutes.

### **Discussion:**

Through our research we were looking to understand the specific challenges associated with biking to campus. More specifically, we wanted to identify what can be done to make biking a primary method of transportation for all members of the community and ensure user safety.

The responses collected from the 5 participants provided us with an opportunity to address issues and improve the controllable areas of the commute such as bike lanes, colouring of bike lanes, quality of roads and access to e-bikes with additional intentions of enticing future commuters to bike.

The results show that there are three main areas of suggested improvement; bike lanes, colouring bike lanes and quality of terrain. Additional comments on weather and e-bikes were also incorporated into findings.

Firstly, those with access to bike lanes found this feature to be comfortable and safe as it marks the territory and route for bikers. These designated sections were deemed wide enough for bikers to be separated from motor vehicle traffic. Many suggested that they would even take alternative routes if it allowed them to access these bike lanes. Challenges arose however, when riders attempted to pass one another with cars travelling alongside them at the same time.

In many areas, bike lanes are painted a different colour to denote the difference between the area for vehicle traffic and bikes. With respect to the colouring of bike lanes, interviewees explained how these coloured lanes are seemingly more for cars to be wary of bikers than for the bikers themselves. However, when travelling through areas of uncertainty such as intersections coloured bike lanes were identified as a good guide for riders to follow. Nonetheless, this colouring creates an opportunity to raise awareness about the presence of bikers and create culture change as more drivers are paying attention to where bikers are travelling and the separation of biking and driving space.

The positive feedback towards bike lanes and colouring of bike lanes suggests that the further implementation and developments to these areas would improve the overall experience and safety of the individuals commuting by bike. However, riders have raised concerns about the quality of terrain along their commute. More specifically, large potholes along University Boulevard that pose a safety hazard as cyclists and vehicles are trying to avoid these damaged areas and in turn approach or travel into one another's territory.

The views on e-bikes were split between the interviewees. Some stated they would never be interested while others discussed the possibility of using them depending on energy levels and convenience. Many stated that the access to these biking services could largely be improved.

Lastly, the weather and time of year had a great impact on commuters' decisions to bike. Results show the months of December and January to be the most unfavourable time to bike. The reasoning for this was primarily because of heavy showers and icy roads. However, riders also expressed the summer as a time they also chose different methods of commuting due to the simple fact that you cannot de-layer your clothing options to adjust to the warmer temperatures.

The majority of the riders from our research group classified themselves as confident, strong riders and may therefore be difficult to generalize to the larger population of potential riders. It can be assumed that this confidence is a result of increased experience and that this increased experience would also lead to an increase in comfort and ability to adjust around adversities on the road. These skills and abilities may be lacking in less experienced cyclists and they may therefore interpret the conditions related to their cycling experience differently. Having an interview group with a greater range of experience could make the findings more holistic for all riders and provide data to inform creating the conditions to enable everyone the opportunity to choose to cycle in an environment deemed safe for all.

Performing a face-to face-interview allows for the possibility of both interviewer bias and interviewee bias. The interviewer could be potentially prompting the participant to answer the questions in a certain direction, while the interviewee could be answering the questions to what they believe the proper responses would be and not necessarily their personal experiences. It would be interesting to see whether or not an anonymous survey would produce different results.

### **Recommendations For Client:**

After completing our project, we recognized there are several areas of improvement for the safety and comfort of bike path users based on the findings from our study. The most common recommendation from our participants was with regards to the bike path conditions. Many of the participants explained that the roads are not well paved and oftentimes extremely bumpy to bike along. This was a primary limitation for individuals who do choose cycling as their primary means of transportation to campus. For example, along University Boulevard it has been noted that there are many potholes that impose on biker's safety. Not only does this threaten cyclists, but also impacts drivers as they tend to veer into bike lanes to avoid these

potholes. By removing potholes and improving road conditions, both cyclers and drivers will feel an increased sense of safety throughout their commutes to and from campus.

Another recommendation from our participants that we found to be insightful regarded further division between bike lanes and the sides of the road. One of the major concerns among our participants was that they continually feared a parked car opening its door as they biked by. One way to reduce this fear involved an improvement on the driver's behalf to make it mandatory that they open their door with their right hand as this will ensure they see any bikers who may be cycling by. The suggestion from a cyclist's perspective is to make the bike lanes more user friendly on major roads, as these are commonly used for commuting purposes. The term "User Friendly" according to our participants consisted of colour variation from bike lanes to car lanes to confirm that each mode of transportation is valid and secure. It was noted that Vancouver does this well, however there is room for expansion to communities like UBC. Additionally one of our participants noted that bike lanes could be enlarged further to allow for safe passing of other cyclists. For example, along Southwest Marine Drive, the bike lanes are very narrow with traffic passing at high speeds which limits a cyclist's ability to pass others safely.

One final proposal for our project relates to reducing the amount of car traffic. Our participants believe that implementing more Bikeshare programs throughout the community would increase the cycling population and therefore decrease road congestion.

All of the recommendations provided by participants from our study seem to be insightful and useful. We hope the Active Transportation Unit can take these recommendations into consideration when planning ways to make biking safer and more comfortable for the diverse population of users.

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## Appendices:

### Appendix A- Interview guide

1. How often do you commute to campus?
2. Do you feel safe when riding?
  - a. Does the speed of traffic impact your feeling of safety when riding?
3. How far is the commute?
4. How difficult is your commute? (i.e. terrain)
5. Are there bike lanes throughout your commute?
6. Do you bike alone or with others?
7. Are the bike lanes wide enough?
8. Is your commute affected by lack of bike lanes (i.e. you take a longer route so you can follow bike lanes?)
9. Does the season affect your choice of commute? (i.e. are you more likely to commute in the summer term rather than winter term)
  - a. Why is this? More sunlight? Warmer temperatures?
  - b. Which months are you more likely to bike to campus? Which months are you least likely to bike to campus?
10. Would you be interested in the possibility of riding an E-bike?
11. Have you experienced places where bike lanes are different colours than the road?
  - a. If yes, have you found this to be helpful? Why or why not?
  - b. Would you like to see more of this colour variation around Vancouver?
12. Which of these cyclist categories would you classify yourself as?
  - a. Strong and fearless

- b. Enthused and confident
- c. Interested but concerned
- d. No way, no how