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Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

UBC HOPR Bike Share Program:

What can student-reported experiences and barriers tell us about the accessibility and convenience of HOPR Bike bike share on UBC campus?

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Executive Summary

Bike share programs such as HOPR offer a convenient, flexible and affordable method of active transport. HOPR Bike Share caters to the 66,000+ students who currently attend the University of British Columbia at their Vancouver campus, and has done so since their introduction in 2019. Commuting to work or school by bike, rather than a vehicle, has been shown to improve overall health status and fulfillment of the recommended 150+ minutes of weekly physical activity. Previous research has noted that limitations to commuting via bike include weather conditions, lack of affordability, payment options, as well as restricted bike share parking spots.

The aim of this project was to identify the barriers that limit usage of HOPR bike share, and propose recommendations for how to increase the accessibility of bike sharing programs on campus. The results will hopefully offer useful insights to HOPR bike share and may help them expand their user base on campus.

Participants completed an online survey through Qualtrics consisting of 19 close-ended questions (with the option to add more information) regarding demographics, participant familiarity with HOPR bike share, physical activity, transportation habits, and perceived barriers to use of HOPR. 1 open-ended question was proposed to participants to share their thoughts and/or recommendations concerning the HOPR bike share program. Through the survey, we received 42 participants, 39 of which were included in our analysis. Potential participants were incentivized with the option to be included in a prize draw.

Only a quarter of our participants had a history of HOPR usage, and a large number of non-users were unfamiliar with docking stations as well as the inability to take the bikes off campus. The current and past HOPR users in our study were mostly white, male students, which mirrors prior research findings on bike share programs. Overall, the sample population reported that a lack of familiarity with HOPR was a key barrier to usage, as well as restricted docking stations, cost, limited payment options, not being able to take the bikes off campus, and poor climate conditions in Vancouver.

Our recommendations pertain to pricing, accessibility, and awareness. This could mean including subsidies for HOPR memberships, including different bike models, and increasing awareness of the service through advertising. The main limitations to our study include sampling bias and lack of generalizability. Convenience sampling yielded an overrepresentation of Kinesiology students, which does not allow for the results of the study to be generalized to the entire student population. Participant burden was indicated as several participants did not complete every question properly, leaving questions blank or failing to answer within specified text boxes. For the purpose of further research, we recommend distributing the questionnaire to all faculties in order to obtain a more representative sample.

Introduction

Bike sharing systems aim to provide individuals with convenient and flexible access to bicycles without the cost and hassle associated with purchasing and owning a bike (Chen et al., 2019). Increased bike usage as a form of active transport has the potential to improve individual health and air quality when compared to transport by vehicle. Compared to vehicle commuters, cyclists and walkers are more likely to have improved self reported health status and to have completed the recommended 150+ minutes of moderate to vigorous activity per week (Vancouver Coastal Health, 2015). Current iterations of bike sharing systems involve either a dock system, in which bikes are picked up and dropped off at specific locations or "docks", or a dockless system where bikes can be dropped off and picked up anywhere in which the bike sharing system operates (HOPR, 2021). Both docked and dockless systems involve cashless mobile payments and GPS tracking all routed through the user's smartphone (HOPR, 2021).

Our study assessed a bike share program specific to the UBC campus, namely "HOPR" - a bike share company that prides itself on connecting people, communities and destinations through their service (HOPR, 2021). Upon the arrival of HOPR bike share in 2019, they replaced the previous pilot program "Drop bike" launching 200 bikes to be serviced by the UBC community (HOPR, 2021). With the goal of conducting research on how to increase the usage of the HOPR bike share program at UBC, we further examined the existing academic literature to identify a research gap, created a survey for students to report their experiences with HOPR bike share, and analyzed the results to form future recommendations. Through this, we aimed to provide insight on benefits, facilitators, barriers and limitations of bike share programs.

Literature Review

Affordability

Tornes (2011) discusses the relationship between the presence of physical health promotion and the amount of cycling recorded; focusing on biking as a mode of transportation, while highlighting some of the limitations to the Vancouver Public Bike Share Program. Using a mixed-methods approach to gather data, Tornes found that the major barriers to participation included, lack of affordability, only one mode of payment - that being by credit card, and location of bike share spots. He also concluded from socio-economic data, that these restrictions caused the program to appeal mostly to white, employed male riders (Tornes, 2011). In relation to Tornes's study, HOPR facilitates their program that parallels the same problems with accessibility issues. Although HOPR deems their bikes 'dockless', improper parking of a HOPR bike that doesn't qualify as a parking location or pond, results in a twenty dollar fee (HOPR, 2021). Additionally, HOPR only accepts payment through credit card companies and has not yet produced a capable feature within their program to pay otherwise (HOPR, 2019).

On the contrary to Tornes' study, Winters et al. (2019) points out that much of the research conducted on bike share usage fails to consider that a specific demographic makes up a large portion of the rider base, namely "super-users". The authors of this study categorized the users of Vancouver bike shares as super and regular users based on the number of trips completed (Winters et al., 2019). They found that the super-users make up nearly half of all completed trips, and were likely to be younger, male, and of lower socioeconomic status (Winters et al., 2019). However, the generalizability of this study is limited as the results were based on information collected in a survey which only 14.7% of rider share members participated in (Winters et al., 2019). This study contradicts the idea that the effect of

socio-economic status on public bike share services is unclear and this is especially important to consider in the context of the HOPR bike share program, given that UBC's student base is so diverse.

Weather

In accordance with HOPR and generalized bike share programs, inaccessibility will not be solely based on proper location servicing and payment methods. A prominent issue for bike share programs is weather, as Vancouver is situated on the coast of the Pacific Ocean and rains roughly around 150 days per year (Weather Stats, 2022). A comparative analysis by Bean et al. (2021) further demonstrates the effects of weather on bike share usage, comparing usage data from a range of climate zones. Observing public bike share program usage data from forty different cities, Bean et al. (2021) were able to combine climate data from each city to create a correlation between the two and provide information on how likely trips were to occur based on the weather conditions. The authors report that time of day is the largest determinant of usage, and that extreme temperatures and precipitation negatively impact bike share usage. However, commuting trips are less affected by these weather conditions. This study did not include wind data, which may have caused wind-related decreases in ridership to be attributed to precipitation or not included at all. In regards to weather on campus at UBC and based off the weather statistics of Vancouver, HOPR's bike-share will likely follow a similar pattern to this study; as Bean et al. (2021) showed that poor climate conditions, such as an increased quantity of precipitation, had a negative impact on usage of public bike share programs.

Helmet Use

Zanotto & Winters (2017) identified a public bike share program that was launched in Vancouver during 2016 that included a helmet for the user to use while riding. HOPR currently does not provide helmets for UBC students to wear while biking, although they recommend the use of a helmet. Further, Zanotto & Winters (2017) conducted 87.5 hours of cycling dividing cyclists into two groups: personal bicycle users wearing a helmet, and bike share users wearing a helmet . After concluding their study, they found that helmet use was higher for personal riders in comparison to bike share riders, as 78.1% of personal riders wore a helmet while 64.0% of bike share users wore a helmet (Zanotto & Winters, 2017). These findings are significant to HOPR bike share as they currently do not provide a helmet for users, identifying a potential barrier to usage by UBC students.

Ultimately, several barriers and limitations exist within the bike share system that have clear relevance and implications to the current structure of the HOPR bike share program available to the UBC community. These problems occur primarily due to accessibility and convenience difficulties which include a lack of payment options, having to dock or park HOPR bikes in specific zones, the availability of HOPR bike use being limited to the UBC campus, and the role that weather will play in dictating usage of this bike share program. In consideration of the potential limitations and barriers to UBC students, the purpose of our proposed study was to determine how we can increase accessibility and usage of the HOPR bike share program specifically for the UBC student population. In pursuing the purpose of this study, a number of critical questions must be addressed to facilitate UBC student involvement in the HOPR bike share program. Our research question sought to address the following; How is the UBC students

population's usage of HOPR affected by Vancouver's climate, the incapability of taking HOPR bikes off campus, limited bike parking and docking regions, and limited payment methods as well as price?

Methods

Our study aimed to collect 50 complete survey responses from our target population of currently enrolled UBC students at the undergraduate level. This target population narrows the field of interest to specifically identify the barriers that negatively affect the students' usage of the HOPR bike share program. This offered insight into the areas that need improving upon to increase the participation levels within this bike share program, particularly by addressing accessibility issues.

Participants completed an online survey using Qualtrics through UBC. The survey format gathers large amounts of quantifiable data which is straightforward to analyze, allowing participants to contribute with as much information as they wish. Additionally, Qualtrics allows participants of the survey to recommend this particular survey to others, providing a great method to disperse the survey amongst more UBC students.

Prior to taking the survey, participants were presented with an electronic consent form. This informed participants that their answers would remain anonymous through number coding which cannot be traced, and presented separately from their demographic information, ensuring participant confidentiality and privacy. Additionally, they were informed that they could exit the survey at any time, in which case their answers would not be recorded. The form stated that the participant gave their consent to participate in the research by clicking on the "I consent" button and completing the survey. The survey was composed of 13 questions broadly focused on current

HOPR bike share usage, and mainly consists of close-ended questions (Appendix A). Daniel (2016) claims that taking a quantitative point of view is fundamentally sound to conduct research without using copious amounts of time and materials.

Participants

Recruitment of participants was done through our social media platforms, including Facebook, Facebook Messenger and Instagram. Recognizing that the scope of participants may be limited if the survey were to be limited only to group members' friends and contacts, we intended to provide bypassers on UBC campus with the QR code to enter the survey. However, due to COVID related concerns regarding interactions on campus, we opted to exclusively collect data through online channels.

Participants were incentivized to complete the survey by having the option to enter a prize draw, provided by Dr. Negin Riazi, with the prizes being a FitBit watch and a one year HOPR membership. Each participant was informed about the raffle in the description of the research survey. They were then entered into the draw by filling in their email address at the end of the questionnaire.

Data collection

During questioning, respondents were asked to briefly provide a profile that would indicate their demographic, as well as their physical activity habits and attitudes. The general basis of these questions were primarily derived from a socio-demographic perspective, since Ursaki and Aultman-Hall (2015) suggest that white, affluent males are more likely to use bike share programs than any other socio-demographic class cohort. These questions revealed each

individual's gender, ethnicity, age, and year of study (Appendix A). Participants were also asked if they had heard of or previously used the HOPR bike share program. Other questions were focused on aspects relating to the amount of physical activity performed per week, competence levels associated with bicycle riding, and preferred methods of transportation (Appendix A).

After gathering information that would present a general profile of the individual, the following questions pertained to the usage and barriers associated with the HOPR bike share program. We chose to utilize close-ended questions, with the option to add a longer answer, as we aimed to get a quantitative answer to which barriers were the most significant, but open-ended answer options would allow participants to provide unique input that could help us better understand the reasoning for their answer selection. However, the greater focus remained on the close-ended questions as these tend to collect more responders, are more simple to analyze, and produce less missing data (Daniel, 2016; Reja et al., 2003). As seen in Appendix A, limited payment options, lack of parking spots, and HOPR bike inaccessibility off campus were specific topics that participants could choose to select. More specifically, questions given would address if the participant was negatively affected by a particular barrier or not.

Data analysis

Data generated from the Qualtrics survey was exported in a spreadsheet and organized using Microsoft Excel before being imported into JASP. Descriptive statistical analysis was done via cross tabulation. Responses to multiple choice questions were organized into frequency tables to highlight correlations, the strength of which were then assessed using chi square tests. All of the survey answers were summarized in simple charts (Figure 1, 3, 5, 8, 9, 10, 11, 13, 14, 16). Pie charts were created in Microsoft Excel to display the gathered data in an easy to view

manner, and labels were added for interpretation by the reader (figure 2, 4, 6, 7, 12, 15). Answers related to demographics were organized and interpreted to determine the most likely or frequent users of HOPR, which served as a basis for further understanding the answers pertaining to biking attitudes and behaviors. Answers collected through the fill in the blank answer option were gathered and interpreted by group members to augment the information collected by the pre-set answer options. As these answers were qualitative in nature, we grouped them by similarity and used them, alongside the pre-set answers, to determine what were the most important barriers to HOPR usage.

Results

42 responses were collected over 9 days, three of which were discarded due to inappropriate behavior, rendering it impossible to know whether the rest of the survey answers were genuine. Since our population was already limited due to the sampling method and limited distribution, the exclusion of these responses was necessary in order to obtain the most representative sample and reveal participants' genuine concerns regarding HOPR. The demographic results showed that respondents were overwhelmingly white (70%), though there was a similar distribution between men and women, as well as a minority of non-binary/third gender/queer participants. Half of our participants were in the 21-25 age range overall. However, half of the participants who reported having used HOPR were in the 16-20 age range, and the majority of non-users were between 21-25 years of age.

Only 1/39 respondents claimed that they rode their bike to UBC campus, which shows almost no experiences of students who travel to campus via bicycle. Of the rest of the participants, 15 bus to campus, 8 use a vehicle, and 10 already reside on campus. On-campus

biking data revealed that 9 out of 39 participants use bicycles for transportation, and 22 walk or run. Just over a quarter of the participants in the study (10/39) regularly use or have used HOPR in the past, with the majority of them being full time students. Participants who were enrolled in the Faculty of Arts (10/39) or the School of Kinesiology (14/39) made up the greatest distribution of the sample. Moreover, 28% of respondents were 4th year students which represented the largest body of students within a given year of study. Out of the 10 reported users, 7 claimed that they used the HOPR bike share program at least once or twice per year. 90% (9/10) of the users were 25 years of age or younger and consisted mostly of white, male riders.

Out of 27 of those who didn't own a bike, there were 21 participants who had not used HOPR in the past. This could perhaps suggest that individuals who are familiar with biking as a method of transportation (ie biking infrastructure, safety protocols, etc.) are more confident and or more inclined to use a bike share service as a method of transportation. However, further investigation pointed to the fact that the HOPR bike share program may not be well known amongst students, as data shows that 18/39 respondents were unsure about the inability to take HOPR bikes off campus, and 17/39 respondents were unfamiliar with HOPR's docking regions.

This study showed from question 19 that a quarter of respondents (11/39) found the price to be too expensive and only 2/39 stated that the HOPR bike share program was effective. In addition, 8/39 participants selected having to park bikes in specific docking regions as their main barrier to usage of the program.

7 responses recorded in the "other" category showed that 2 participants did not suggest any potential barriers that limit their use of the bike-share service. The other 5 mentioned one of the following: HOPR was unknown to them, personal bike already in possession, no interest in

the program and preference of walking. Lastly, 53% of participants suggested rain as an obstacle to using HOPR, which mirrors previous research on bike share program struggles in cities where high levels of precipitation and harsh weather conditions exist (Bean et al., 2021).

Discussion

Docking

Regarding specific docking regions posted around campus, almost half of the participants in the study stated that they were unsure of any docking regions found on campus. This unfolded a key detail, since there was a majority of those who were unaware about HOPR's docking regions, as well as 8 participants who found specific docking regions to be a primary barrier to HOPR usage. The combination of these findings demonstrate that the research question in this study was specific enough to identify potential barriers surrounding the location of HOPR's parking and docking regions. Furthermore, additional research conducted by Tornes (2011) discussed locations to specific bike share positions as restrictions to the public that contributed to the lack of bike share program usage. This study expresses a recurrent problem that is consistent with the findings presented in our research.

Payment Methods

Payment method limitations were also addressed by the participants as a main barrier that would inhibit the use of the HOPR bike share program. Moreover, 11 participants found the expense of using the HOPR program to be a flaw. In 2011, Tornes identified key findings surrounding price ranges that pose significant impediments to the usage of bike share programs, which were also consistent with our study. Additionally, both Tornes (2011) and Winters et al.

(2019) mention an intriguing result in their findings, being that price influenced the socio-economic demographic of who would be able to use bike share programs and those who would not.

Incapability of taking HOPR bikes off campus

Another potential area of concern the HOPR bike share program presents was the inability to take bikes off campus. To determine the impact of this, participants were asked whether or not this factor would have a negative effect on their HOPR usage. As a result, 21% said yes, 36.8% said no, and 42% were not sure. These findings suggest that this dynamic of being unable to take HOPR bikes off campus does not seem to be a major factor influencing bike share usage of UBC students. However, if you exclude those who were unsure or unaware of HOPRs incapability to go off campus, it provides a different perspective and poses a greater limitation than the data implies.

Climate influence

One of the questions our study sought to answer was how Vancouver's climate affected UBC student HOPR usage. Figure 7. illustrates that of the 10 HOPR users, only 1 individual selected poor weather conditions to be their main barrier of HOPR use. This finding conveys that HOPR users as a whole do not find the weather to be a major inconvenience. This suggests that other barriers such as price and having to park bikes in specific docking stations are more significant obstacles. However, when asked specifically if poor weather conditions affected their usage of the HOPR program, 53% confirmed that the weather does negatively impact their usage, while 35% were unsure. Further, our findings are consistent with the claims made by

Bean and colleagues (2021), as they demonstrated that poor climate conditions, such as an increased quantity of precipitation, had a negative impact on usage of public bike share programs.

Lack of familiarity with HOPR

Although this was not specifically addressed by any research question, a common theme was identified relating to the lack of knowledge and use encompassing the HOPR bike share program. This was found to be a major limitation that can be attributed to the lack of HOPR participants, since the vast majority (29/39) of participants in this study haven't used HOPR before. In addition, 24/39 respondents also reported they do not own a personal bike, thus demonstrating a large population of participants who could be benefiting from the HOPR service. This may be attributed to the lack of knowledge the participants demonstrated in regards to the program, as Figure 14 and 15 (Appendix B) illustrate that 70% of those who have used the HOPR bike share program in the past only did so once or twice per year. After further investigation, these findings helped to solidify the fact that the HOPR bike share program is not well known, considering that 18 of the 39 respondents for question 15 (Appendix A) were unsure about the inability to take HOPR bikes off campus, as well as 17/39 respondents being unfamiliar with HOPR's docking regions.

Limitations

There are several limitations impacting our research study, which may be beneficial to consider with respect to future research. Firstly, due to the survey being open for a short amount of time and not distributed via channels garnering large amounts of attention, only 42

respondents were obtained. The survey was distributed via social media platforms to contacts including friends and classmates, with instruction to pass the survey link along to 2 friends. Furthermore, these two factors resulted in sampling bias, as well as an unrepresentative sample of the UBC student population. In addition, there were issues with participants filling out questions incorrectly, for instance people who selected "other, please specify" did not fill out a response in the text box. Specifically, for question 20 (Appendix A) participants were asked to give any recommendations to improve the HOPR bike share program for UBC students, and only 10/39 that completed this question. Although the survey was estimated to take less than 5 minutes, these results may suggest participant burden. Further, we had to omit 3 respondents due to responses that were not applicable to the research study and indicated that the participants were not answering the survey genuinely. Overall, it is important to consider these limitations when analyzing the data as well as making inferences about the UBC population.

Recommendations

The results of our study suggested that a primary barrier to utilizing HOPR was the price of the service. A short-term suggestion to remedy this barrier can include lowering the price of the various services. Lowering membership costs as well as the expense per ride would help to increase the usage within HOPR's program. The inclusion of subsidy programs would also be beneficial to riders; given that HOPR has a partnership with UBC, membership costs can be included with student fees at a discounted rate with the ability for students to opt out. This provides students with an option to save money if they decide not to be involved with the membership.

Our findings also suggested that UBC students were not utilizing HOPR due to a lack of awareness, education, and awareness regarding the bike-share service. When asked about recommendations that could be made to increase HOPR use, survey participants suggested the following:

"Increased advertising and dockless bikes"

"Not sure very unfamiliar with them"

"More advertising to say what it is since I am not that familiar with it"

"Awareness"

Suggestions to improve upon these suggestions would be to utilize various methods of advertising around campus to increase HOPR use. These may include, social media posts, new user and referral incentives, flyers, demonstrations, infographics, and program promotion campaigns. Long term improvements that could be made to HOPR revolve around the common theme of inaccessibility. When asked what recommendations could be made to improve HOPR's service, survey participants commented:

"Make them more accessible (more bike concentration on campus, decrease price)"

"Purchasing better bike models"

A long-term suggestion that could be made to HOPR would be to increase the number of bikes that are currently on campus, while also including a variety of bike models that cater to various abilities and interests of students. As participants suggested to improve the quality of the bike models, an addition of higher quality road bikes would be beneficial for more experienced riders. This would increase the diversity of HOPR bike models and attract more riders to engage in use. In addition, several participants expressed that they did not feel confident biking. With this in mind, HOPR should provide a helmet to accompany their bikes to help solve this problem.

Investing in helmets will ultimately increase bike rider confidence and allow new users to utilize the service without fearing for their personal safety.

Further, when discussing the future of the HOPR program, it is important to consider why students bike on campus. The findings revealed that the majority of participants bike on campus for convenience, demonstrating a key concept to improve within the HOPR bike share program. Therefore, the HOPR program can cater to riders to make their experience more convenient by reducing or eliminating the payment penalty when a bike is not docked in a designated region and allow users to take bikes off campus.

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Appendix A: Survey Questions

1. Are you a domestic or International student
    a. Domestic but currently living outside of the province
    b. Domestic and currently residing in BC
    c. International
2. What year of your studies are you in
    a. 1st
    b. 2nd
    c. 3rd
    d. 4th
    e. 5th+
3. What is your current student Status
    a. Full-time
    b. Part-time
    c. Other
4. What faculty/School are you a part of
    a. Applied science
    b. Science
    c. Arts
    d. Commerce
    e. Education
    f. Land and Food systems
    g. Kinesiology
    h. Medicine
    i. Law
    j. Pharma, Science
    k. Forestry
    l. Economics
    m. None
    n. Other
5. What is your age?
    a. 16-20
    b. 21-25
    c. 26-30
    d. 31-35
    e. 36-40
    f. >40
6. What gender do you identify as?
    a. Man

    b. Woman
    c. Non-binary/third gener/queer
    d. Two-spirit
    e. Other
    f. Prefer not to asy
7. What ethnicity do you identify with most
    a. Caucasian
    b. Chinese
    c. South Asian
    d. Korean
    e. South East Asian
    f. Hispanic
    g. Middle Eastern
    h. Filipino
    i. Japanese
    j. Indigenous, Metis, Inuit
    k. African, Black, Caribbean
    l. Other
8. What is your primary means of **transportation TO campus**
    a. I reside on campus
    b. Bus
    c. Personal car
    d. Biking
    e. Walking/running
    f. Electric scooter
    g. Skateboard
    h. other
9. What is your primary method of transportation **while you are ON campus**
    a. Personal car
    b. Biking
    c. Walking or running
    d. Electric scooter
    e. Skateboard
    f. Other (please specify)
10. If you do bike to/on campus what are your reasons for doing so - select all that apply
    a. Health/fitness
    b. enjoyment
    c. Convenience
    d. I do not bike to/on campus
    e. Other: please specify (textbox)

11. Do you own a personal bike that you use at UBC
    a. Yes
    b. No
12. Have you used the bike share program HOPR
    a. Yes
    b. no
13. If yes, how often do you use the HOPR bike share service
    a. I have not used the program
    b. Once or twice a year
    c. Once or twice a month
    d. Once or twice a week
    e. Several times a week
    f. Everyday
    g. Several times a day
14. Does having to park HOPR bikes in specific docking regions negatively affect your usage of the program
    a. Yes
    b. No
    c. Not sure
15. Does not being able to take HOPR bikes off UBC's campus negatively affect your usage of the program
    a. Yes
    b. No
    c. Not sure
16. Do you find the HOPR payment methods limited
    a. Yes
    b. No
    c. Not sure
17. Do you find HOPR affordably priced
    a. Yes
    b. No
    c. Not sure
18. Does the rain (poor weather conditions) negatively affect your usage of the program
    a. Yes
    b. No
    c. Not sure
19. Of the barriers listed below, what is the main barrier/inconvenience that limits your usage of the HOPR bike share program
    a. Limited payment methods
    b. Price or expense

c. Having to park in specific docking stations
d. Inability to take bikes off campus
e. I believe the current HOPR bike share system is effective
f. I do not feel confident biking
g. UBC does not have sufficient bike lanes
h. Rain (poor weather conditions)
i. Other (please identify) (textbox)

20. What might you recommend to encourage increased usage of HOPR bikes
    a. Please identify (textbox)

Appendix B: Results & Data

Frequencies for RACE/ ETHNICITY ▼

USED HOPR	RACE/ ETHNICITY	Frequency	Percent
Yes	White	7	70.000
	South Asian	0	0.000
	Korean	0	0.000
	South East Asian	0	0.000
	Hispanic	0	0.000
	Middle Eastern	1	10.000
	Filipino	0	0.000
	Japanese	0	0.000
	African, Black, Caribbean	2	20.000
	Missing	0	0.000
	Total	10	100.000
No	White	11	37.931
	South Asian	4	13.793
	Korean	4	13.793
	South East Asian	2	6.897
	Hispanic	2	6.897
	Middle Eastern	0	0.000
	Filipino	1	3.448
	Japanese	1	3.448
	African, Black, Caribbean	4	13.793
	Missing	0	0.000
	Total	29	100.000

Chi-Squared Tests

	Value	df	p
X^2	9.571	8	0.296
N	39		

Figure 1: Frequencies for Race/Ethnicity of HOPR Users and Non-Users

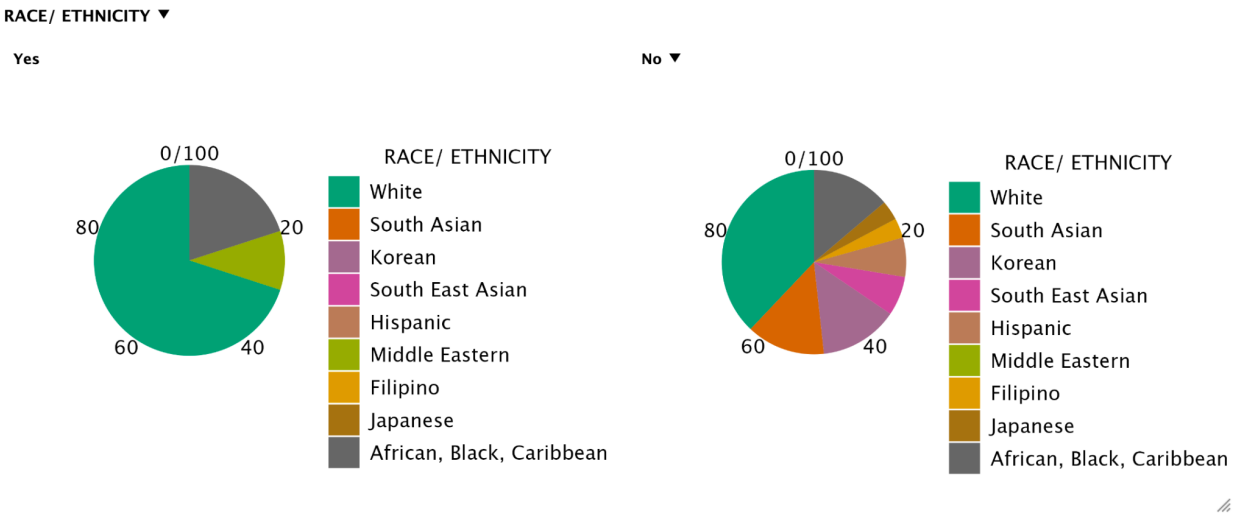


Figure 2: Race/Ethnicity of HOPR Users and Non-Users

GENDER	USED HOPR		Total
	No	Yes	
Man	15	6	21
Woman	11	4	15
Non-binary/third gender/queer	2	0	2
Prefer not to say	1	0	1
Total	29	10	39

Chi-Squared Tests

	Value	df	p
X^2	1.137	3	0.768
N	39		

Figure 3: Frequencies for Gender Identification of HOPR users and Non-Users

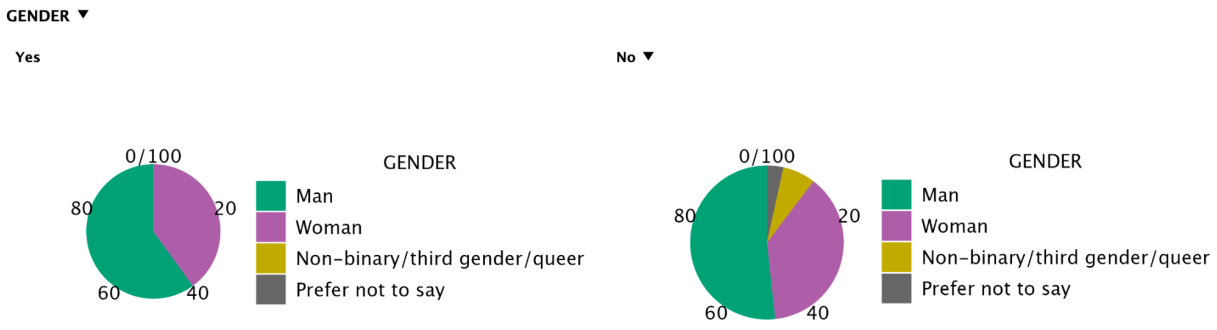


Figure 4: Gender Identification of HOPR users and Non-Users

AGE	USED HOPR		Total
	No	Yes	
16–20	6	5	11
21–25	19	4	23
26–30	4	1	5
Total	29	10	39

	Value	df	p
X^2	3.169	2	0.205
N	39		

Figure 5: Frequencies for Age Group of HOPR Users and Non-Users

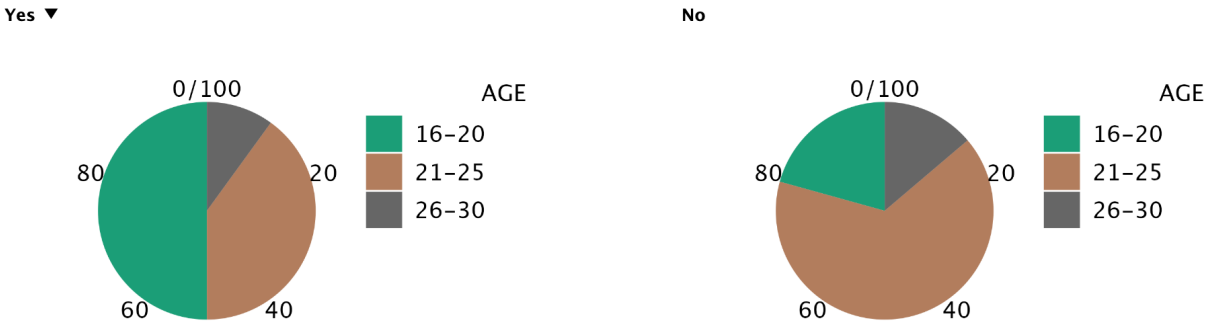


Figure 6: Age Group of HOPR Users and Non-Users

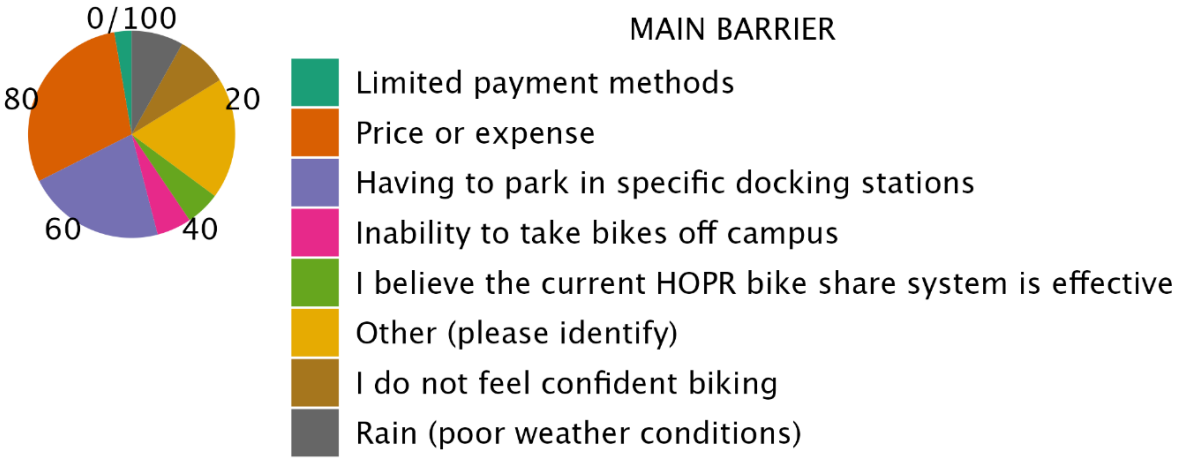


Figure 7: Barriers to HOPR use

MAIN BARRIER	USED HOPR		Total
	No	Yes	
Limited payment methods	1	0	1
Price or expense	8	3	11
Having to park in specific docking stations	3	5	8
Inability to take bikes off campus	2	0	2
I believe the current HOPR bike share system is effective	1	1	2
Other (please identify)	7	0	7
I do not feel confident biking	3	0	3
Rain (poor weather conditions)	2	1	3
Total	27	10	37

Chi-Squared Tests ▼

	Value	df	p
X^2	10.515	7	0.161
N	37		

Descriptive Statistics

	MAIN BARRIER
Valid	37
Missing	2
Mean	8.351
Std. Deviation	2.595
Minimum	5.000
Maximum	14.000

Figure 8: Frequencies for Barriers to HOPR use

MAIN BARRIER: OTHER	USED HOPR		Total
	No	Yes	
I didn't know about HOPR	1	0	1
I dont bike	1	0	1
I prefer walking	1	0	1
My own bike	1	0	1
Not interested/no need to use it	1	0	1
Total	5	0	5

Figure 9: Main Barrier: Other Responses

Frequencies for TO CAMPUS

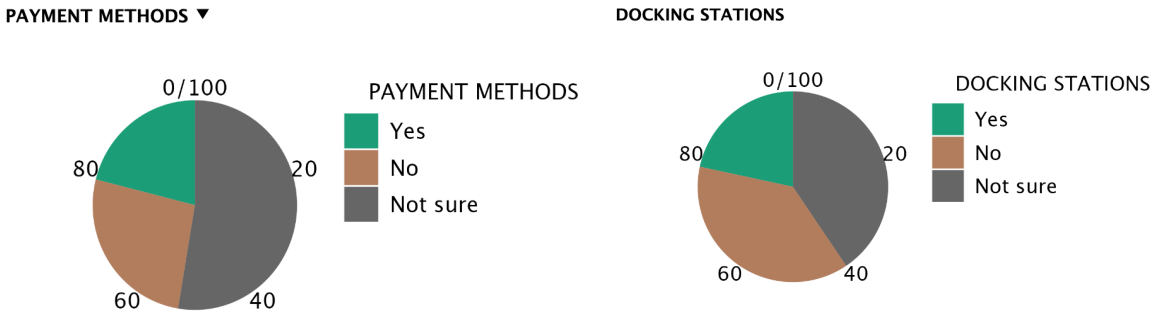
TO CAMPUS	Frequency	Percent
I reside on campus	10	25.641
Bus	15	38.462
Personal car	8	20.513
Biking	1	2.564
Walking/running	1	2.564
Electric scooter	2	5.128
Skateboard	1	2.564
Missing	1	2.564
Total	39	100.000

Figure 10: Frequencies for Modality of Transportation to Campus

Frequencies for ON CAMPUS

ON CAMPUS	Frequency	Percent
Personal car	2	5.128
Biking	9	23.077
Walking or running	22	56.410
Electric scooter	4	10.256
Skateboard	2	5.128
Missing	0	0.000
Total	39	100.000

Figure 11: Frequencies for Modality of Transportation on Campus



WEATHER ▼

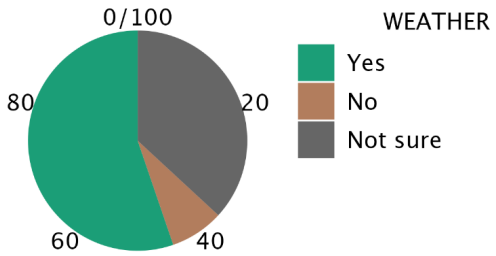


Figure 12: Distribution of Responses to Barriers

Frequencies for SOLUTIONS TO ENCOURAGE USAGE ▼

SOLUTIONS TO ENCOURAGE USAGE	Frequency	Percent
Colourful bikes	1	2.564
Discount rates for students	1	2.564
Im not sure I don't usually use it.	1	2.564
Increased advertising and dockless bikes	1	2.564
Make them more accessible (more bike concentration on campus, decrease price)	1	2.564
More advertising to say what it is since I am not that familiar with it.	1	2.564
Not sure very unfamiliar with them	1	2.564
Purchasing better bike models	1	2.564
awareness	1	2.564
make it cheaper	1	2.564
Missing	29	74.359
Total	39	100.000

Figure 13: Frequencies for Solutions to Encourage HOPR use

	USED HOPR		
HOPR FREQUENCY	No	Yes	Total
I have not used the program	23	0	23
Once or twice a year	0	7	7
Once or twice a month	1	1	2
Once or twice a week	3	1	4
Several times a week	0	1	1
Total	27	10	37

Figure 14: Frequencies for HOPR use Frequency

HOPR FREQUENCY

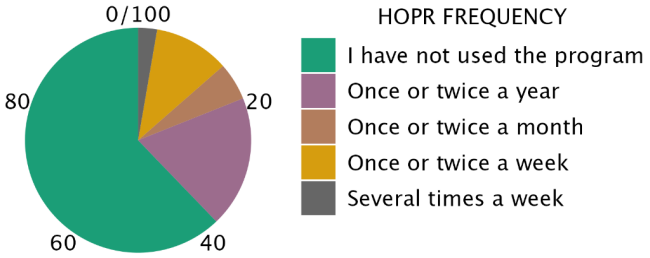


Figure 15: HOPR use Frequency

Contingency Tables

USED HOPR		PAYMENT METHODS Yes	No	Not sure	Total
Yes	Count	4.000	4.000	2.000	10.000
	% of total	10.526%	10.526%	5.263%	26.316%
No	Count	4.000	6.000	18.000	28.000
	% of total	10.526%	15.789%	47.368%	73.684%
Total	Count	8.000	10.000	20.000	38.000
	% of total	21.053%	26.316%	52.632%	100.000%

Chi-Squared Tests ▼

	Value	df	p
X^2	6.026	2	0.049
N	38		

Figure 16: HOPR User's Opinions on Payment Methods

Frequencies for DEPARTMENT

DEPARTMENT	Frequency	Percent	Valid Percent	Cumulative Percent
Applied science	2	5.128	5.128	5.128
Science	4	10.256	10.256	15.385
Arts	10	25.641	25.641	41.026
Commerce	4	10.256	10.256	51.282
Education	2	5.128	5.128	56.410
Kinesiology	14	35.897	35.897	92.308
Forestry	2	5.128	5.128	97.436
Economics	1	2.564	2.564	100.000
Missing	0	0.000		
Total	39	100.000		

Figure 17: Frequencies for Survey Participants by Faculty