

## **How do Dalhousie University's Studley Campus students rate public transportation user experience on the Halifax peninsula?**

**Key Words:** Public transit, transit efficiency, Dalhousie University, Halifax, student perceptions, transit improvements.

ENVS/SUST3502

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## **Abstract**

Public transit can offer many valuable benefits to cities worldwide. However, ridership can often be low due to several different factors that can make it difficult or inconvenient for people to rely on it as a regular mode of transportation. University students who regularly commute to the same locations are prime candidates for understanding barriers and for suggesting possible improvements to public transit.

To better understand the perceived user experience of Halifax public transportation on the Halifax peninsula according to Dalhousie University Studley Campus students, an online survey was made available to Dalhousie students from March 12 to March 23, 2024. This survey was conducted through voluntary participation administered through posters on campus with a QR code link to it. 79 students completed the survey which included 10 Likert-scale questions and 4 open-ended questions. The survey gathered information on three categories related to the transit usership experience which were cleanliness, safety, and efficiency.

The most recommendations coded across all responses were regarding the efficiency of Halifax Transit, accounting for 61% of responses. The most popular recommendations were wanting to see shorter intervals between buses and to have quicker and more efficient routes. Accessibility was the second-most frequently occurring concern, accounting for about 12% of responses. The most common recommendations being more accessible routes to areas less accessible by transit such as places inside Halifax Regional Municipality that are outside the downtown core and better serving the North End of the peninsula. Safety and comfort were also frequently mentioned recommendations, both

accounting for about 8.5% of responses. The most common recommendations included improvements needed for the cleanliness of bus stops and better licensing, training, and overall responsibility of the driver in ensuring passenger safety.

## **Introduction**

Improving public transit is crucial for fostering sustainable urban development and mitigating various environmental and societal challenges (Collins, 2015). Enhanced transit services can make commuting more convenient and efficient, while also improving the sustainability of cities. This is often framed as a critical mechanism to reducing auto dependence and lessening the impact of transportation networks on society and the environment, while also enabling transportation to continue to play a critical role in sustainable development (Miller et al, 2016).

In 2022, the second largest carbon emissions sector in Nova Scotia was transportation at about 30% (Provincial and Territorial Energy Profiles, 2020). With transportation being such a significant contributor to greenhouse gas emissions, the need for more sustainable travel options is evident. Public transportation is known to be a more sustainable alternative to other forms of transportation, such as single occupancy vehicles (SOVs) and it is also known that increased ridership on public transit could help reduce the overall emissions of the transportation sector (Litman, 2021). Despite this, public transportation is often not as efficient as it could be, resulting in poor user experience (Memon & Habib, 2023). Issues such as unreliable service, overcrowding, cleanliness, and safety can deter individuals from utilizing public transit, leading to a preference for SOVs. This can ultimately create a general negative outlook on transit and reduced ridership within the public. Studies have shown that more efficient transportation, and a higher quality user experience both serve to increase usership in public transportation (Memon & Habib, 2023). Improved public

transportation is important for growing cities like Halifax, as the urban density is increasing and the demand for effective and efficient transportation becomes more pressing to support sustainable urban development.

University campuses like Dalhousie within small cities like Halifax are great for developing a transition to sustainable transportation such as public transit. They can play a significant role in establishing not only a more sustainable campus but can also contribute to the overall sustainability of the city (Delmelle & Delmelle, 2012). They can lead by example, demonstrating the benefits of sustainable transportation and the impacts of such initiatives. This small-scale example can eventually extend beyond the campus, contributing to the sustainability of the broader community. In small, compact, university town settings, where the university is the major employer, and where destinations (home, services, stores, workplace) can be reached within a relatively short distance, automobile alternatives are a very plausible solution (Delmelle & Delmelle, 2012). Therefore, identifying any barriers or negative perceptions of public transit is important to address to help incentivize more user ridership.

Studies have outlined the profound impact that enhancements in public transit user experience can have on increasing ridership and, consequently, contribute to significant emissions reductions. In Vancouver, an investigation into the quality of transit services found that perceptions of transit quality greatly influence individuals' decisions to use public transportation. Critical factors influencing these perceptions include the accessibility of transit, safety measures, and the efficiency of services provided (Quality of Transit, 2024). The perceived safety of public transit was a substantial concern impacting ridership. Crime rates and perceived inadequacies in transit safety infrastructure, such as insufficient lighting and visibility at transit stations, are significant deterrents for potential transit users (Quality of Transit, 2024). Improving these aspects can not only enhance its attractiveness of public transit, but also encourage a modal shift away from SOV use and aid in emission reductions.

In a study conducted by Collins & Agarwal (2015), they introduced express transit services in Kingston, Ontario to demonstrate how improvements in public transit can lead to an increase in ridership. The study highlighted a significant increase in transit use among university employees following the introduction of the express route. Successful improvements and introductions of new transit routes can effectively increase ridership within cities, and it is therefore important to understand the perceptions and needs of the public to provide helpful solutions for modal shifts in transportation.

Considering all the above, our research aims to answer the following question: What is the perceived user experience of Halifax public transportation on the Halifax peninsula according to Dalhousie University Studley Campus students? This represents a gap in the current literature, as the Dalhousie commuter survey only collected data on commuter methods, not on the perceived quality of local public transportation (Dalhousie University Commuter Survey, 2020). We seek to understand how the Dalhousie community perceives transit specifically regarding three specific metrics: safety, cleanliness, and efficiency. For the assessment of safety, we focus on whether passenger safety is being prioritized on the bus as well as at the bus stops to understand whether riders are feeling safe throughout their commute, and whether they feel that their safety is a priority to the transit workers. In evaluating cleanliness, we aim to uncover the degree to which public transit is perceived to be clean. Important cleanliness metrics include whether waste is not properly disposed of, or if students feel there are health related risks to taking public transit. Lastly, we want to understand the perceived efficiency of public transit. Here we are trying to find out if buses are arriving on time, if there is a need to include more buses on routes, and if there may even be a need to develop new routes. By understanding these metrics, we can pinpoint what Halifax Transit does well, as well as where there is the potential for improvements. We hypothesize that the current transit system is perceived as inefficient, and that the currently perceived quality of service is low. With this hypothesis, we suggest that the Halifax transit system on the peninsula could benefit from various improvements which would potentially increase ridership and further optimize the transit system.

## **Methods**

The methods for this research include an informal literature review on existing information for bussing on the Halifax Peninsula and Dalhousie Student transportation options, and a survey-based questionnaire (See Appendices 1.1 for the questions) for Dalhousie University students. The subsequent data analysis of the survey results will utilize the provided Results tab on Google Forms, and Excel spreadsheets for the quantitative data, and NVivo to group and visualize the qualitative responses. This project set up will help us determine a possible outcome to our research question: "What is the perceived user experience of Halifax public transportation on the Halifax peninsula according to Dalhousie University Studley Campus students?".

## **Ethics**

Prior to the public release of the questionnaire survey, all group members were required to complete the TCPS 2: CORE-2022 ([Course on Research Ethics](#)), from the Canadian Panel on Research Ethics. The project also required the approval from the Research Ethics Board (REB) and the Department of Earth and Environmental Science. The data collected through the survey will be stored for the study (on the site of collection, Google Forms, and applications for analysis, NVIVO) and destroyed by April 30, 2024. No question will include prompts for personal or identifiable information, and emails will not be recorded, nor linked to responses. The first question that respondents will be asked will include a confirmation of consent, restating that the survey is completely voluntary, and respondents can stop at any time.

## **Research Design**

The study design for this project will use a few different tools to gather, analyze, and present the results of the literature review and survey portions. For sampling, this project

includes a publicly released survey on Google Forms and shared through QR codes and links on posters around Dalhousie Studley Campus. Once responses are collected, the data will be categorized and analyzed through NVIVO software, and be presented through graphs, charts, and tables for easy-to-understand readings.

In the early stages of the project, the research team initially planned to combine both interviews and a questionnaire as research tools, to ensure that our data could be measured both quantitatively, using closed-ended survey questions, and qualitatively, using interviews. Due to the time constraints and availability of researchers, the survey was redesigned to include multiple open-ended questions, to ensure that survey respondents could go into detail on certain topics without being limited by close-ended questions only and ensuring an element of qualitative analysis in the research.

This project included the Studley Campus students – undergraduate and graduate students - that may have seen the posters of the project, to participate in the survey. As this project stemmed from a Dalhousie course, SUST/ENVS3502, it was determined that it would be beneficial to ask a large population of people, on the Halifax Peninsula, that could use the transit system. It was rationalized to exclude the teaching, administration, and custodial staff because more of these individuals live off the Halifax Peninsula than the general student body. Localizing the study's advertising efforts to a concentrated area, Studley Campus, with *many* students travelling each day to reach the campus, may have a beneficial effect in reaching more people for the survey responses.

### Data Collection

The survey questions were designed to uncover student's perceptions and opinions of what were determined, through preliminary research, to be the most important factors to transit riders when deciding to ride the bus. These factors were determined based on prior research in this area of study, for example a study performed by Simon Fraser University analyzing the quality of 1. Safety and 2. Accessibility of Vancouver's Metro Transit System

(Simon Fraser University, n.d.). Another similar study conducted at Qataar University analyzed the following factors in a questionnaire to students about their perceptions of public transit:

- Ease of use
- Shade
- Cleanliness
- Safety
- Level of Crowdedness
- Arrival on time
- Travel time
- Frequency of Busses
- Price
- Complying with traffic laws
- General attitude

(Shaaban & Kim, 2016).

To ensure that the survey would not take longer than 5-10 minutes for respondents to fill out, the most important factors selected to evaluate perceived quality were Safety, Cleanliness, and Efficiency.

Prior to asking participants their perceptions of each factor, the first question of the survey was designed to determine which modes of transportation survey respondents used to travel on the Halifax Peninsula, what percentage of survey respondents take the Halifax transit system busses, as well as what other modes of transportation are regularly used by survey respondents.

### Data Analysis

Each transit quality evaluation factor was broken down into three close-ended questions, all on a Likert scale of “strongly agree” to “strongly disagree.” This will allow for the

quantitative analysis to be simplified into average scores across each factor, with each answer corresponding to a numerical score from 0-4.

Each quality evaluation factor also had one open-ended question to give participants the option to share any positive or negative experiences, feedback, or other considerations pertaining to the question of Safety, Cleanliness, and Efficiency on Halifax Transit. For example: “Do you feel safe using Halifax Transit? Please explain why or why not.”

The last open-ended question not pertaining to a specific aspect of transit quality, was included to determine if there are any general improvements respondents would like to see in order to improve their perception, and resultantly their frequency of use of Halifax Transit: “What improvements to the Halifax bus system would enable/encourage you to travel by bus more frequently?”

In order to encourage proper consideration and thought for each question, and prevent order bias, the survey questions were put in a randomized order, rather than be organized by subject or sequentially.

#### Questionnaire - Survey Questions used.

To analyze the data, as mentioned previously, the [survey questions](#) were divided into qualitative and quantitative data. The close-ended questions with Likert-scale answers were given numerical rankings, to be averaged across responses and given overall scores. The open-ended questions were qualitatively coded for themes using a-posteriori coding, detecting prominent themes after reading the responses to collect an understanding of any common themes and sentiments surrounding each quality factor discussed in the survey. This coding was completed using NVIVO, a qualitative and mixed-method coding software accessed using Dalhousie’s annual license. The research team dedicated two researchers to analyzing the quantitative data, and two researchers to analyzing the qualitative data.

#### **Results**

In total there were 79 respondents. All respondents self-screened as Dalhousie students, posters were exclusively posted within Studley campus therefore all participants were located on Studley campus at the time of accessing the QR code. Each respondent answered all survey questions from the three main categories below.

### Cleanliness

For the Likert-style question: “Halifax transit stops are generally clean (little to no trash, waste or excessive tags/stickers/posters).”, respondents answered slightly on the side of disagreement. After converting the responses to a number score (“Strongly Disagree” = 0, “Disagree” = 1, “Neutral” = 2, “Agree” = 3, “Strongly Agree” = 4) this question’s response score was 1.9 ( $n=79$ ). This indicates that on average, respondents were slightly dissatisfied with the cleanliness of the transit stops.

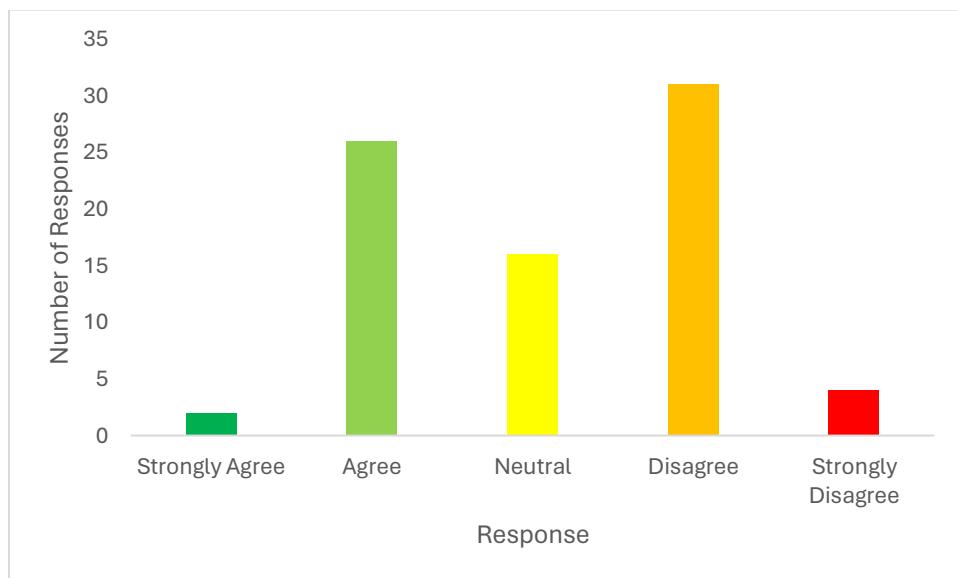


Figure 1: Responses with a sample size of 79 ( $n=79$ ), to “Halifax transit stops are generally clean (little to no trash, waste, or excessive tags/stickers/posters).”

For the Likert-style question: “Halifax transit is generally or overall clean and tidy (little to no dirt/stains/residue/trash/slush/etc.)”, respondents answered largely on the side of disagreement. After converting the responses to a number score (“Strongly Disagree” = 0, “Disagree” = 1, “Neutral” = 2, “Agree” = 3, “Strongly Agree” = 4) this question’s response

score was 1.6 (n=79). This indicates that on average, respondents were dissatisfied with the cleanliness of transit in general.

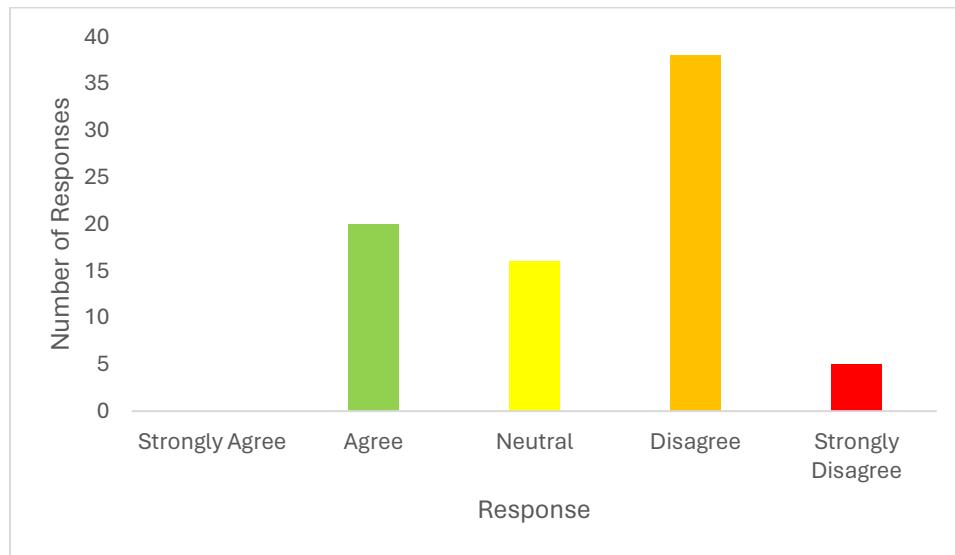


Figure 2: Responses with a sample size of 79 (n=79) to “*Halifax Transit is generally or overall clean and tidy (little to no dirt/stains/residue/trash/slush/etc.).*”

For the Likert-style question: “I feel like I am exposing myself to health-related risks while using Halifax Transit”, respondents answered nearly perfectly neutrally. After converting the responses to a number score (“Strongly Disagree” = 0, “Disagree” = 1, “Neutral” = 2, “Agree” = 3, “Strongly Agree” = 4) this question’s response score was 2.0 (n=79). This indicates that on average, respondents were conflicted in their opinions of the health risk present on Halifax transit.

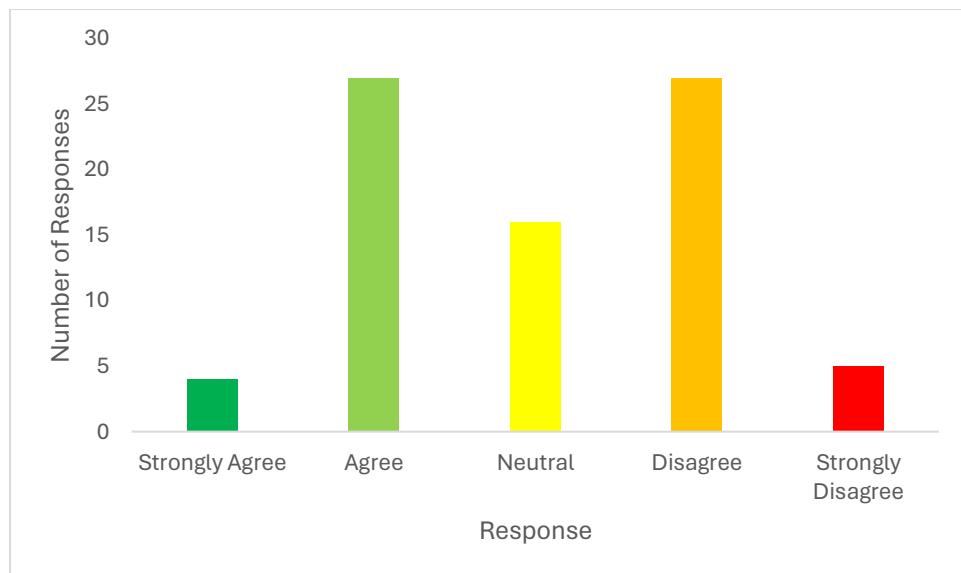


Figure 3: Responses with a sample size of 79 ( $n=79$ ) to "I feel like I am exposing myself to health-related risks when using Halifax Transit."

#### **Open Ended Question: “Do you believe that Halifax Transit presents health-related risks?”**

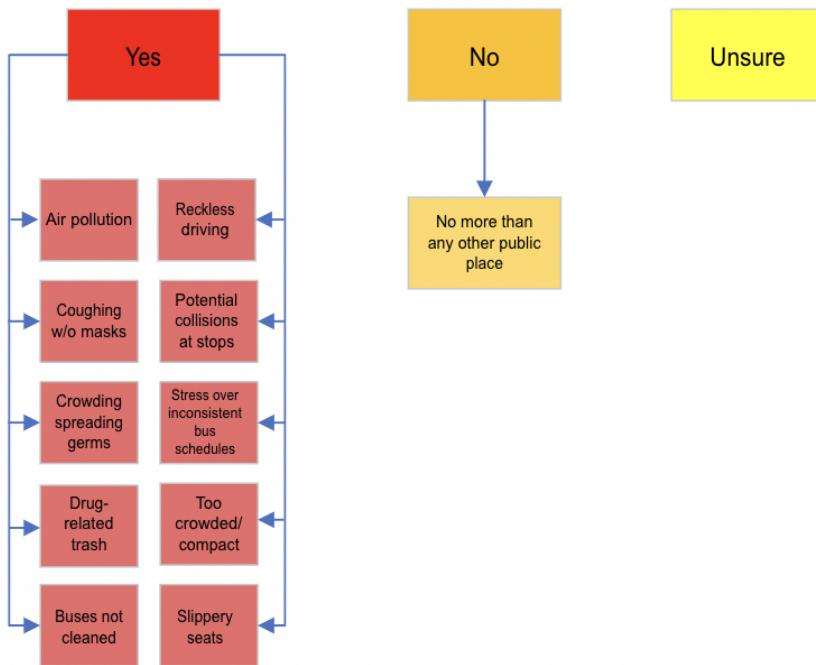


Figure 4: Coding Tree for the open-ended question: “Do you believe that Halifax Transit presents health-related risks?

The overall responses to this question were grouped into main 3 codes:

- Yes,
- No, and
- Unsure.

The highest number of responses were very close (1 response difference) between “No” and “Yes”, with “No” having the highest responses (49%). 75% of responses did not give any further explanations, and 25% said “No more than any other public space”.

The second highest number of responses was “Yes”, which accounted for about 48% of responses. Most of these responses were under “Crowding Spreading Germs”, meaning the respondents believed that large amount of people on buses causes germs to spread to one another (25%), followed by “Coughing Without Masks” with about 19% of responses, followed by 17% of responses providing no further explanations, followed by “Not Cleaned”, meaning respondents thought the busses and terminals were not cleaned often enough (15%), followed by “Potential Collisions at Stops”, meaning respondents were concerned about being hit by busses or cars at stops (9%), followed by “Reckless Driving”, meaning respondents felt uneasy from reckless drivers (4%), followed by “Drug-related Trash”, meaning respondents felt that the drug-related trash left on buses posed health risks (4%), followed by “Air Pollution” at 2%, “Stress From Inconsistent Bus Schedules” at 2%, and “Slippery Seats”, meaning the respondents thought the seats on busses could lead to sliding off and have a risk of injury (2%).

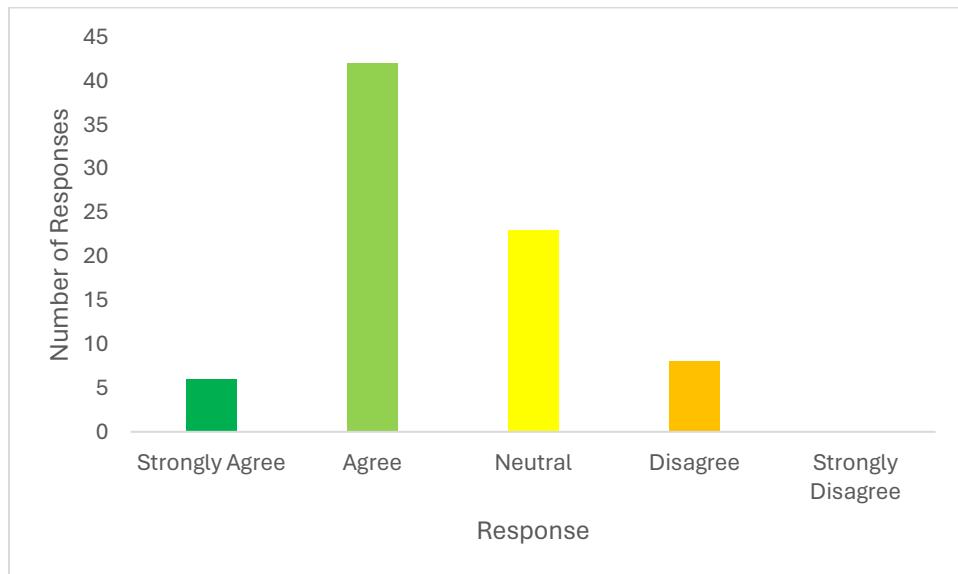
“Almost no one masks voluntarily anymore, and since buses have stopped requiring masks, it's scary to be immunocompromised on transit. Much like planes, buses are also a whole bunch of people in a small space, with only some ventilation. This makes them a vector for the spread of diseases, from covid to the flu.”

- Anonymous survey participant.

Lastly, about 2% of respondents said they were unsure without any further clarification.

## **Safety**

For the Likert-style question: “I feel safe when riding the bus in Halifax”, respondents answered very positively. After converting the responses to a number score (“Strongly Disagree” = 0, “Disagree” = 1, “Neutral” = 2, “Agree” = 3, “Strongly Agree” = 4) this question’s response score was 2.6 (n=79). This indicates that on average, respondents were very satisfied with their overall safety when they are actually on the bus.



*Figure 5: Responses with a sample size of 79 (n=79) to "I feel safe when riding the bus in Halifax."*

For the Likert-style question: “I feel like Halifax bus drivers prioritize passenger safety”, respondents answered somewhat positively. After converting the responses to a number score (“Strongly Disagree” = 0, “Disagree” = 1, “Neutral” = 2, “Agree” = 3, “Strongly Agree”

= 4) this question's response score was 2.4 (n=79). This indicates that on average, respondents were reasonably satisfied with the bus drivers' attitude towards safety.

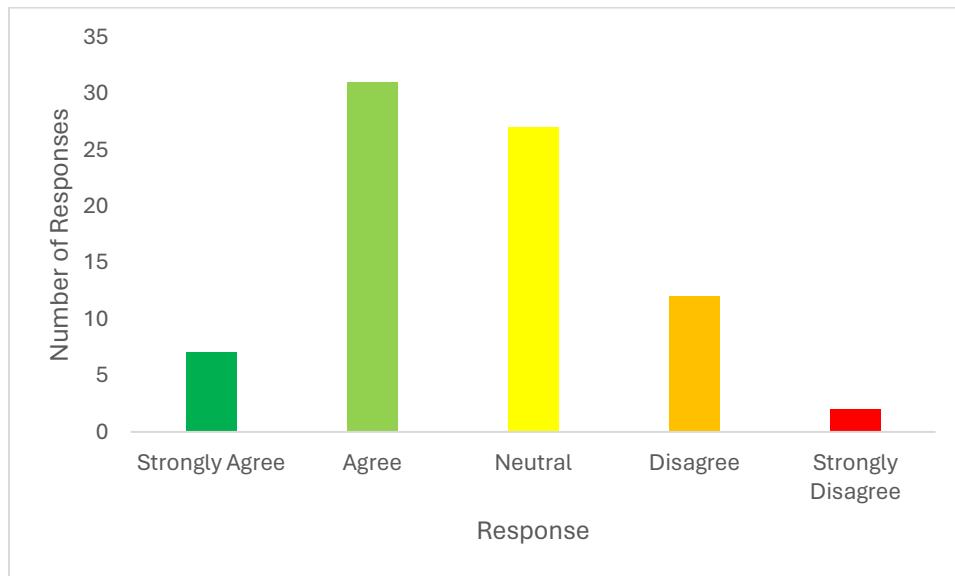


Figure 6: Responses with a sample size of 79 (n=79) to "I feel like Halifax bus drivers prioritize passenger's safety."

For the Likert-style question: "I feel safe when waiting at the bus stops in Halifax.", respondents answered slightly positively. After converting the responses to a number score ("Strongly Disagree" = 0, "Disagree" = 1, "Neutral" = 2, "Agree" = 3, "Strongly Agree" = 4) this question's response score was 2.2 (n=79). This indicates that on average, respondents were marginally satisfied with the level of safety at the bus stops.

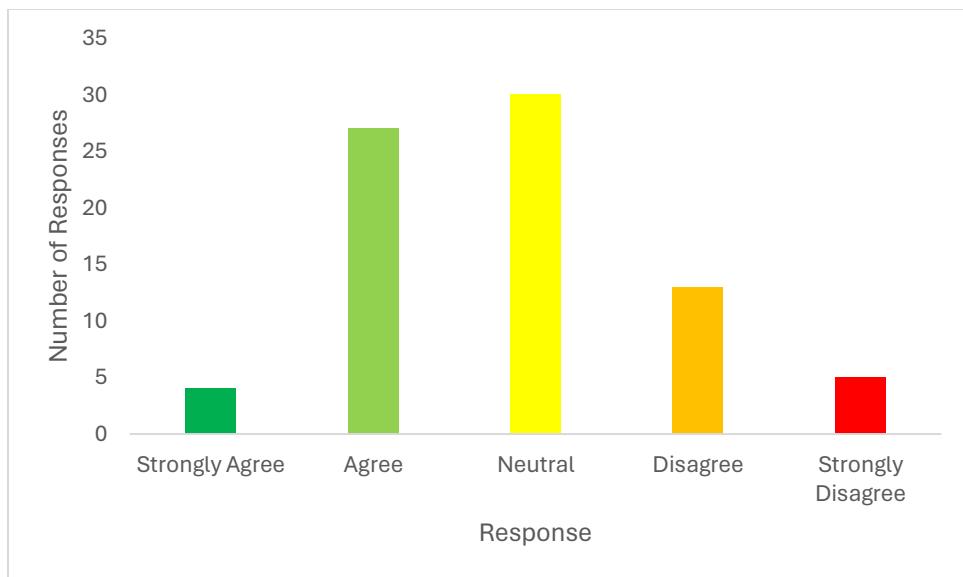


Figure 7: Responses with a sample size of 79 (n=79) to: "I feel safe when waiting at the bus stops in Halifax"

### Open Ended Question: Do you feel safe using Halifax Transit? Please explain why or why not.

The overall responses to this question were grouped into 3 codes:

- Yes,
- Occasional Bad Encounters, and
- No.

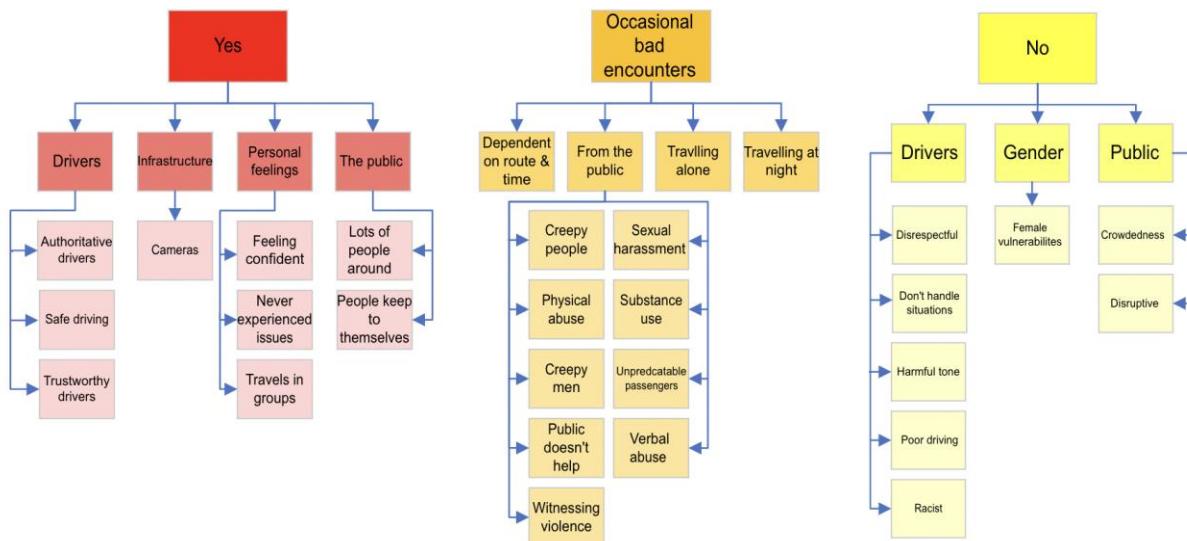


Figure 8: The Coding Tree for the open-ended question: "Do you feel safe using Halifax Transit? Please explain why or why not".

The highest number of responses was “Yes” which accounted for about 48% of responses. Most of these respondents said yes without any further explanation (32%), followed by “The Public”, meaning they felt safe due to the presence of others (25%), followed by “Personal Feelings”, meaning they personally feel confident either with themselves or in groups (23%), followed by “Drivers”, meaning the driver’s behaviours and skills makes them feel safe (17%), and lastly “Infrastructure”, things such as having camera on busses made riders feel safer (2%).

“Yes! I’ve never felt unsafe in a bus because the drivers are there and it’s a relatively public space - people tend to stick to themselves.”

-Anonymous survey participant.

The second highest number of responses were “Occasional Bad Encounters” which accounted for about 32% of responses. Most of these responses were “From the Public”, meaning they experienced occasional bad encounters with the public (74%), followed by “Dependent on Route and Time” with about (15%), followed by about 6% who did not provide further explanations.

“More often than not I feel safe on the bus, however, I take it every day, and it is not uncommon for a situation in which I don’t feel safe to occur, almost always because another passenger, or someone at a stop, is being aggressive and belligerent either to myself, other passengers, or the bus driver. Because of this I try to avoid taking the bus at night in particular, especially around Spring Garden.”

-Anonymous survey participant.

Lastly, about 23% of responses were “No”, with most responses under “Drivers”, meaning the behaviours of the drivers made them feel unsafe (58%), followed by “Gender”, meaning

vulnerabilities due to gender (25%), followed by “Public”, meaning they felt unsafe due to the behaviours of the public (12%), and lastly 4% did not provide further explanations.

“I don’t feel safe using Halifax Transit. Other passengers occasionally have violent outbursts and drivers do not step in to stop them. Drivers occasionally drive poorly or are harmful in tone. Drivers are not provided with adequate support to deal with issues.”

-Anonymous survey participant

### Efficiency

For the Likert-style question: “When I take the bus, I am satisfied with the time it takes to get to my destination.”, respondents answered slightly negatively. After converting the responses to a number score (“Strongly Disagree” = 0, “Disagree” = 1, “Neutral” = 2, “Agree” = 3, “Strongly Agree” = 4) this question’s response score was 1.7 (n=79). This indicates that on average, respondents were dissatisfied with the transit system’s overall timeliness.



Figure 9: Responses with a sample size of 79 (n=79) to: “When I take the bus, I am satisfied with the time it takes to get to my destination.”

For the Likert-style question: “In my experience, Halifax buses are rarely late”, respondents answered extremely negatively. After converting the responses to a number score (“Strongly Disagree” = 0, “Disagree” = 1, “Neutral” = 2, “Agree” = 3, “Strongly Agree”

= 4) this question's response score was 0.9 (n=79). This was the only question to receive a score more than 1 point above or below 2 (neutral). This indicates that on average, respondents were dissatisfied with the punctuality of the buses and often found they were late.

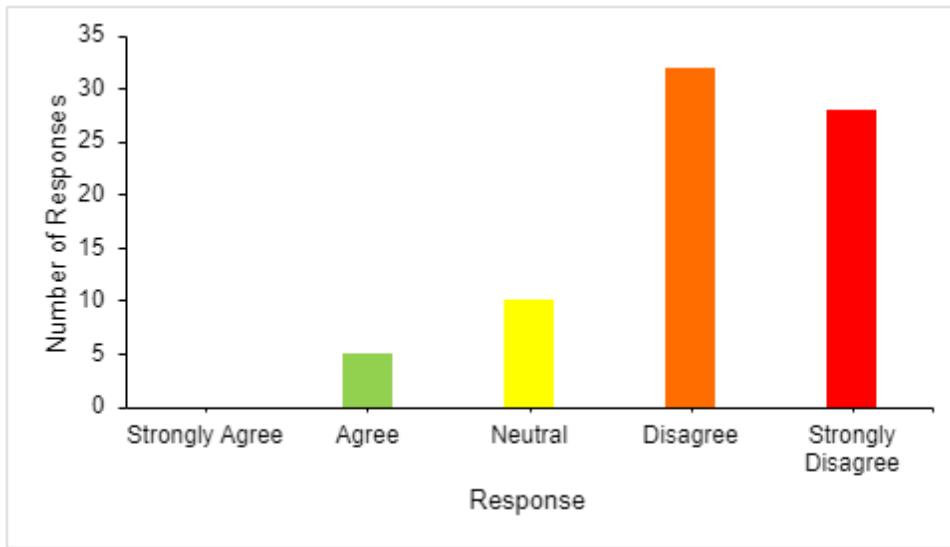


Figure 10: Responses with a sample size of 79 (n=79) to: "In my experience, Halifax buses are rarely late."

For the Likert-style question: "The Halifax Transit schedule is reliable and/or accurate.", respondents answered negatively. After converting the responses to a number score ("Strongly Disagree" = 0, "Disagree" = 1, "Neutral" = 2, "Agree" = 3, "Strongly Agree" = 4) this question's response score was 1.2 (n=79). This indicates that on average, respondents did not find that the Halifax transit schedule was accurate or reliable.

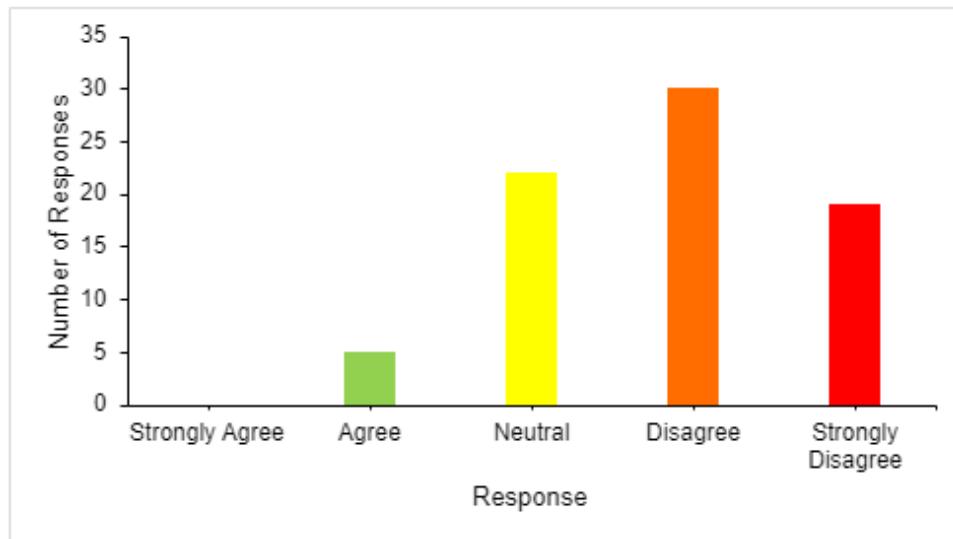


Figure 11: Responses with a sample size of 79 ( $n=79$ ) to: "The Halifax Transit schedule is reliable and/or accurate."

For the Likert-style question: "I feel as though there are enough buses/bus routes in Halifax", respondents answered slightly negatively. After converting the responses to a number score ("Strongly Disagree" = 0, "Disagree" = 1, "Neutral" = 2, "Agree" = 3, "Strongly Agree" = 4) this question's response score was 1.1 ( $n=79$ ). This indicates that on average, respondents did not feel that there were enough buses or bus routes.

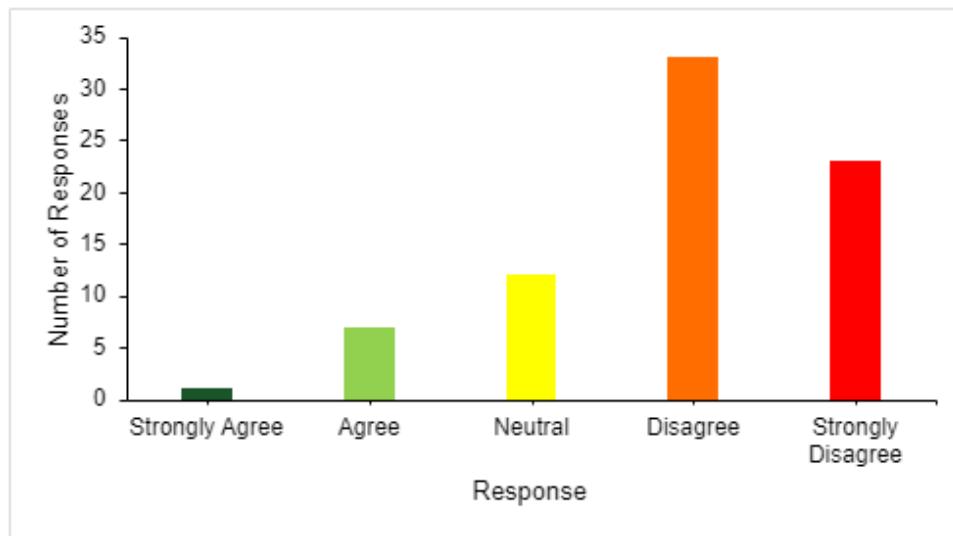


Figure 12: Responses with a sample size of 79 ( $n=79$ ) to "I feel as though there are enough buses/bus routes in Halifax."

**Open-ended Question: "Do you believe that buses on the Halifax peninsula are punctual?"**

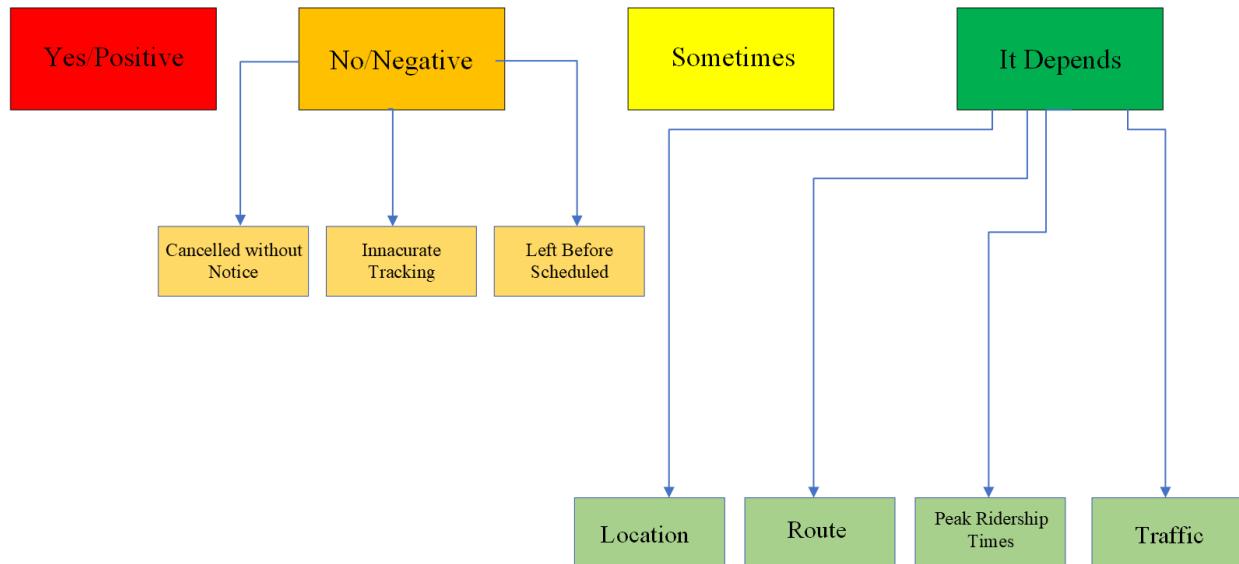


Figure 13: Coding Tree for the open-ended question: "Do you believe that busses the Halifax Peninsula are punctual?"

Of the total 79 responses:

(19.0%) responded positively/answered Yes, buses are mostly punctual.

(59.5%) responded negatively/answered No, buses are mostly not punctual.

(11.4%) responded “Sometimes”

(7.6%) responded that the punctuality “Depends”

(2 respondents (2.5%) refused to answer)

33 of the 47 negative responses were one-worded answers such as “No” or “ Nope” while the remaining 9 included context or examples in their answer. For example,

“Not at all. I have repeatedly missed buses or been late for classes, work, and events because the bus comes early or late. I try to use the app to track the bus to get around it not following the schedule, but the tracking is wholly inaccurate, too.”

-Anonymous survey participant.

4 of the “Yes” coded answers contained similar answers (example below), while the remaining 11 consisted of simple “Yes’s” or “Mostly.”

“Generally, yes. I would prefer it if they were to come more frequently at peak hours though, I don’t think the drivers can always control their punctuality due to how infrastructure is set up in this very old and sometimes convoluted city”

-Anonymous survey participant.

6.4% of negative responses mentioned cases where buses had been canceled without notice, and 8.5% mentioned cases where the bus had departed the stop before it was scheduled to, including stops at the very start of the route. 8.5% of negative responses mentioned inaccuracies of various schedule/bus tracking methods including: the Transit app, Google maps, the Moovit App, and Apple maps.

15% of all responses mentioned that their answer to the question ‘Depends’ on a variety of factors, such as Stop Location-16.6%, Peak ridership times-8.3%, the Route-33.3%, and Traffic-25%.

#### **Overall Category Scores and Survey Participant Recommendations:**

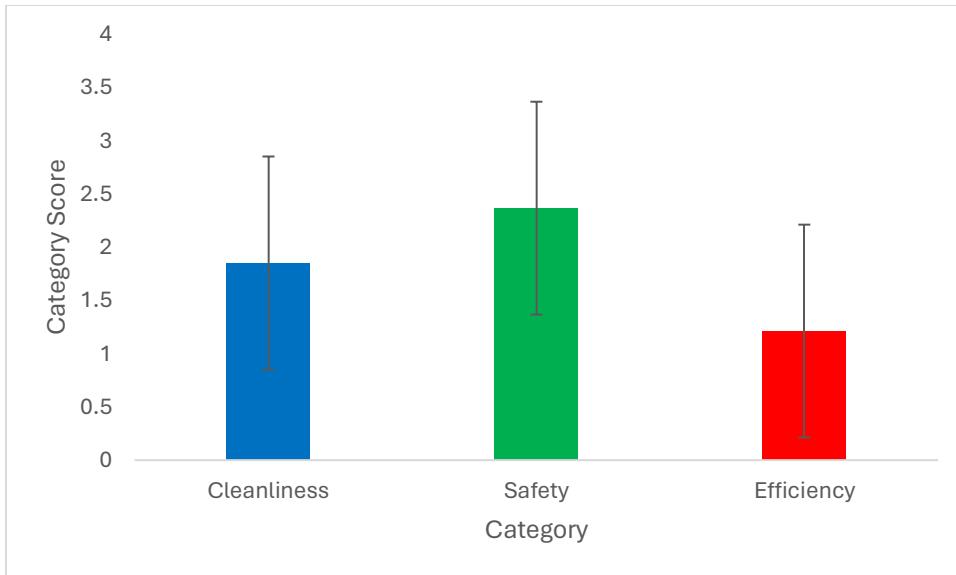


Figure 14: Transit user satisfaction score by category. 0 represents “Strongly Disagree”, 2 represents “Neutral” and 4 represents “Strongly Agree”. Users were on average slightly dissatisfied with cleanliness, slightly satisfied with safety, and dissatisfied with efficiency.

**Open-Ended Question: “What improvements to the Halifax bus system would enable/encourage you to travel by bus more frequently?”**

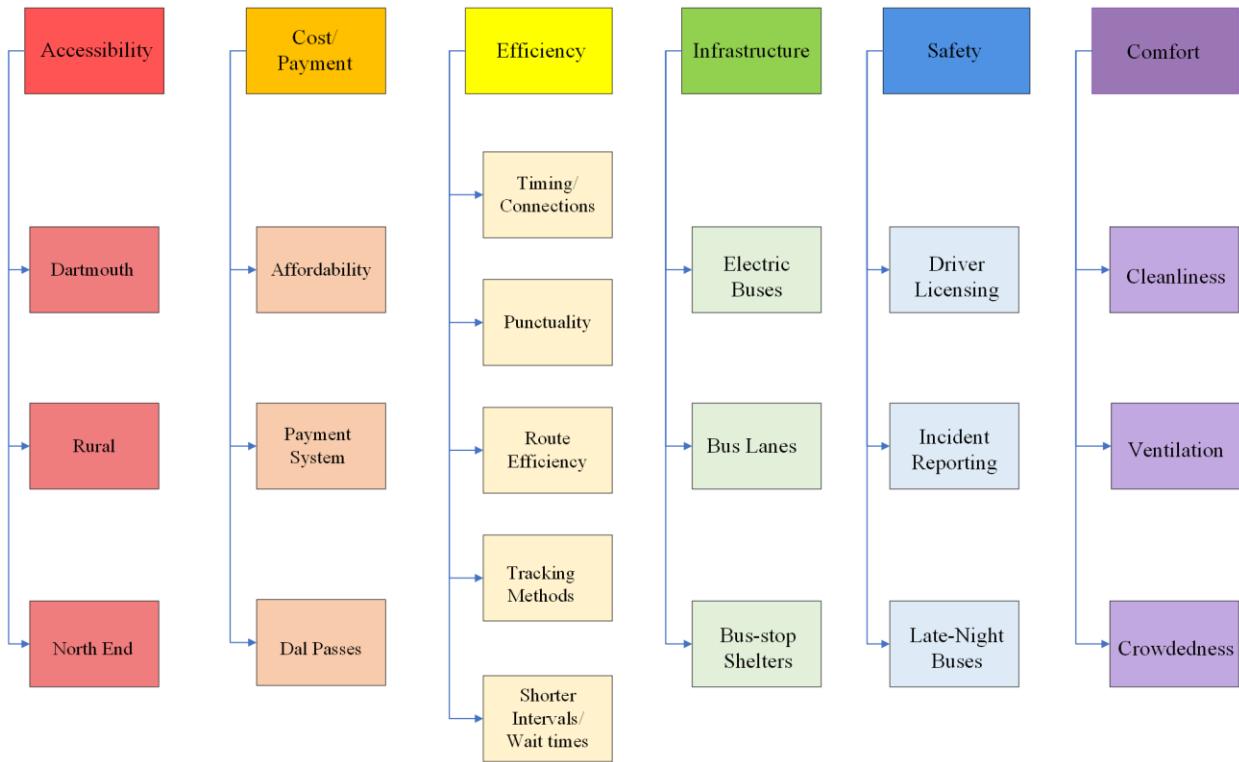


Figure 15: Coding Tree for the open-ended question: "What improvements to the Halifax bus system would enable/encourage you to travel by bus more frequently?"

The general recommendations from respondents to this question were separated into 6 main thematic codes:

- Accessibility,
- Comfort,
- Efficiency,
- Safety,
- Infrastructure, and
- Cost/Payment.

The most recommendations coded across all responses were regarding the Efficiency of Halifax Transit, which accounted for 61% of all the answers to this question. The most popular recommendation or change that respondents mentioned wanting to see were Shorter Intervals Between Buses- 27.8% followed by Quicker (more efficient) Routes- 23.6% and More Effective Tracking Methods-20.8%. These recommendations were

followed by answers suggesting Transit could be More Punctual- 12.5%, have More Buses per Route- 11.1%, and More Consistent Timing/Scheduling (throughout the week)- 4.2%.

Accessibility was the second-most frequently occurring concern of respondents, accounting for 11.9% of all answers. These answers were respondents recommending more accessible routes/routes to areas less accessible by Transit. The most common recommendations were more general, requesting more routes and access to Transit to places in the HRM outside of the downtown-core (71.4%) or peninsula that may be considered more rural. Other recommendations included more routes servicing the North end of Halifax (14.4%), to Dartmouth (7.1%), and seasonal routes to HRM's outdoor spaces such as beaches, in the warmer months (7.1%).

Comfort accounted for 8.5% of all recommendations, consisting of 50.0% making recommendations to improve the Overall Cleanliness of buses and bus stops, 30.0% suggesting that they would prefer buses to be Less Crowded, and 20.0% recommending increased Ventilation on buses.

With the same percentage of responses as Comfort, 8.5% of answers made recommendations to improve the overall Safety of riding Transit. 70.0% of these recommendations pertained to the licensing, training, and overall responsibility of the driver in ensuring passenger safety. For example,

“Providing bus drivers with de-escalation, self-defense, and conflict management training. Providing bus passengers with more information on who to call if a dangerous or otherwise unpleasant incident occurs (i.e. having the 311 number posted more, among other things).”

-Anonymous survey participant.

Other recommendations included incident reporting methods for passengers feeling unsafe 20.0% as well as route options that would run Late Nights 10.0%.

Answers referring to improving the ‘Cost or Payment’ methods of transit accounted for 6.8% of all responses, with 50% of the cost/payment focused answers recommending a more efficient payment system than the current method of paying for Transit. 37.5% suggested that Transit should be made more affordable, and that the current fare price should be lowered. 12.5% recommended that Dalhousie and other University student Bus passes should be valid in between spring and summer semesters. Here is a quote from a survey participant regarding bus fares:

“Many bus drivers are rude in my experience. Primarily when people don’t pay enough money. The bus fare is overpriced. I am fortunate enough to have a bus pass, but many people don’t. A lot of people are also unaware of the cost of bus fare and often get scolded when they don’t pay enough.”

-Anonymous survey participant.

Recommendations referencing improvements to ‘Infrastructure’ were the least frequent answers coded, at only 3.4% of all responses. Of the 3.4% making recommendations for changes in Infrastructure, 50% recommended the city allocate more Dedicated Bus Lanes for buses to pass through and avoid traffic, 25% recommended more shelters at bus stops, and the remaining 25% mentioned the potential for electric buses.

## **Discussion**

This survey project initiated the gathering of Dalhousie University Student's perception of the current Halifax Transit System, as there is a limited pool of resources discussing transit users' opinions in a research setting. With this survey, 79 respondents provided their opinion, input, and ranking of the current Halifax Transit Bussing Systems by answering the provided survey prompts. All questions received equal responses, and all respondents remained anonymous via unidentifiable questions. There was a definitive trend of responses depending on the topics (i.e., Efficiency, Cleanliness, and Safety), and with them, quantitative and qualitative data could be collected. Responses on bus efficiency and cleanliness provided an overall trend of respondents not agreeing that Halifax Transit met those terms, but for Safety, respondents did agree that Halifax Transit met the term. These categories will be discussed in more depth below.

### **Cleanliness**

The survey's Cleanliness results provide an almost equally split indecision of respondents agreeing with and disagreeing with the statement of Halifax Transit stops being generally clean (Figure 1). There are slightly more respondents disagreeing with this statement than agreeing, so it may be beneficial for the transit system to incorporate more bus stop cleaning services to mitigate trash, waste, or excessive tags/stickers/posters in and around bus stops on the Peninsula.

There was a clearer response of the survey respondents for the statement, "Halifax Transit is generally or overall clean and tidy (little to no dirt, stains/residue/trash/etc.)" (Figure 2). The transit vehicles themselves may require more frequent cleaning periods and may also benefit from transit users being provided with a small trash receptacle to mitigate some of the overall disagreements of respondent users' perceptions of the transit not being clean and tidy.

The survey responses to the statement, “I feel like I am exposing myself to health-related risks when using Halifax Transit” were even more split between agreeing and disagreeing than the responses from Figure 1 (Figure 3). There was a slight bit more respondents strongly disagreeing with the statement than agreeing to it. To possibly improve the responses from agreeing, to disagreeing with the statement, a suggestion could be for transit vehicles to provide wipes and hand sanitizer dispensers at the entrances of the buses for users to use if they wish. Maybe there could be a continued posting of proper mask-wearing etiquette as well.

For the Cleanliness Open-ended Question, “Do you believe that Halifax Transit presents health-related risks?” the highest response (by one response) was “no”, at 49% of respondents. The other responses for “yes” by 48% of respondents. The “yes” responses had included reasonings, such as crowd concerns for germ spreading, coughing without a mask, or in general, “not cleaned.” There were also concerns about health/safety risks of being hit by cars, reckless driving, air pollution, and stress from inconsistent bus schedules. All these concerns brought up by respondents in their response to the open-ended question should be investigated further to see where exactly improvements could be made to mitigate the various and wide variety of health-related risks that taking Halifax Transit could cause. Maybe Halifax Transit could incorporate face-mask dispensers at the entrances of the buses, as well. The concerns of respondents, about the risks of being hit by other vehicles and of reckless driving, these may be mitigated, or reduced, with the suggestion of larger indicator lights, stop signs similar to the Public School Bus styles, or even incorporating a system of Halifax Transit bus stops being more visible (i.e., reflective tape along the edges of any bus shelter, bench, or electricity/telephone poles, or for bus users themselves to incorporate a more visible and reflective outer-shell garment to increase visibility to vehicles passing by. As for the vehicle users themselves, drivers could increase their awareness and attention to pedestrians and bus users by putting all distractions away (i.e., phone in a compartment or pocket, so any incoming alerts will not illuminate the cab of the vehicle, and for all audio media to be listened through the vehicle

speaker system, and not personal ear buds/head phones to increase external cue awareness. As for the air pollution concerns, it has recently been announced that Halifax Transit is expanding its bus fleet with electric buses, which would mitigate the air pollution that comes from the exhaust of the regular diesel buses (Halifax Transit, n.d.).

### Safety

The safety results from this project's survey had provided a generally, or overall positive outlook to the current Halifax Transit user's opinion on safety. In Figure 5 and Figure 6, most of the survey respondents agreed with the statements of, "I feel safe when riding the bus in Halifax" and "I feel like Halifax bus drivers prioritize passenger's safety" respectively. These results may show how the current transit system in Halifax is considered safe to use, according to the survey respondents. In Figure 7, the majority of survey respondents responded "neutral," and the second most common response was "agree" to the statement, "I feel safe when waiting at the bus stops in Halifax." This survey question may indicate that the perceived safety of the bus stops is not as common as the perceived safety of the actual transit vehicles and those hired to operate them. Increasing the perceived safety of Halifax Transit stops may be improved if the stops are adequately lit at night, have shelters and benches located in high visible/ high (people) traffic areas, and have important contacts listed for help centers, shelters, and emergency lines posted.

For the open-ended question "Do you feel safe using Halifax Transit. Please explain why or why not?," the highest number of responses was "Yes" (48% of responses) followed by "Occasional Bad Encounters" (32% of responses) and "No" (. Many of those who responded "Yes" attributed their feelings of safety to the presence of others as they felt more confident that if any issues were to arise, then the public would be of service. Respondents also mentioned that most passengers keep to themselves presenting little to

no threats, signifying that most commuters have not encountered negative experiences regarding their safety in relation to the public.

Although most respondents said they felt safe taking Halifax Transit, those that had negative experiences in the past or responded to not feeling safe had important insights. Many respondents who self-identified as women often felt uncomfortable due to the behaviours of other men towards them on the bus. Some would sit too close or give them creepy feelings due to giving them weird looks or catcalling. This could mean that better incident reporting is needed for women to feel safer and have those who are purposefully making women uncomfortable during their commutes be held accountable and hopefully be less likely to continue that behavior in the future. Many women also said that they felt unsafe travelling alone at night, either being on the bus or waiting at the bus stop. It could be helpful to advertise the “Request a Stop” service where unaccompanied persons travelling on conventional service buses after dusk can request a stop along the route other than the regular bus stops. It appears some women are not aware of this choice and could feel safer utilizing this option. It could be advertised on the buses through posters so that passengers become aware of it. For waiting at bus stops, it could be beneficial to have more lighting and an emergency operator button in case of serious situations which may contribute to overall feelings of safety not only for women but other passengers who feel vulnerable travelling at night.

Some other significant responses of negative feelings of safety were regarding the bus drivers and the public. Some respondents mentioned that passengers could be violent, and the bus drivers would not step in to assist in the situation. This could be because drivers do not have adequate support or training to handle these situations. It could be beneficial for Halifax bus drivers to go through more rigorous training regarding how to handle violent situations that could occur on the bus.

## Efficiency

The survey's Efficiency results provide a visual on the overall disagreement in respondents of Buses efficient (Figure 14). The results also show the only prompt from the Efficiency topic, in a more agreeable manner than the others, as the majority of respondents agreed (light green) or remained neutral (yellow) when answering the prompt "When I take the bus, I am satisfied with the time it takes to get to my destination" (Figure 9). This outcome suggests that the Bus system for Halifax Transit (for those that responded) is relatively efficient in getting from point-to-point across the peninsula, once the respondents get onto the bus. The rest of the prompts relating to Efficiency though, reflected a more disagreeable response to the Transit system. In the respondent's experiences, Halifax Buses are NOT rarely late, as the majority of the responses included "disagree" or "strongly disagree" to the statement, "In my experience, Halifax buses are rarely late," out of any other Efficiency prompt for this project (Figure 10). This is significant in the results, as ensuring a timely mode of transportation for the Peninsula is imperative for residents, students, and workers alike to be punctual in their commitments. The results also provided insight into transit reliability and accuracy for the respondents' transit schedules. The majority of respondents disagreed, remained neutral, or strongly disagreed with the statement, "The Halifax Transit schedule is reliable and/or accurate" and "I feel as though there are enough buses/bus routes in Halifax," as they had the most responses from the disagree, and strongly disagreed choices (Figure 11, 12). These show that the current Transit schedule is not viewed as a reliable or accurate form of transportation, and that there are not enough buses and/or bus routes in Halifax for those that responded to the survey (Figure 11).

Nearly 60% of respondents responded "No" or negatively when asked "Do you believe that the buses on the Halifax peninsula are punctual?" While less than 20% responded "Yes" or positively (Figure 13, thematic analysis). This may indicate that most Dalhousie students perceive the bus system to be inefficient, and that most of the time from students' perspectives, the buses are most often behind schedule. The two most prominent issues mentioned in answers discussing the lack of punctuality among buses were leaving stops

before they are scheduled to depart, and the inaccurate tracking of arrival/departures from tracking apps.

This suggests that the two most important considerations regarding improving efficiency should be ensuring accurate tracking of bus schedules on at least one of the platforms commonly used by riders, as well as ensuring that drivers make an effort to not leave stops earlier than scheduled, especially at the start of each route.

Revisiting our hypothesis, “the current transit system is perceived as inefficient, and that the currently perceived quality of service is low”, the data collected showed that this was the case for the average respondent. With this hypothesis, it was suggested that the Halifax transit system on the peninsula could benefit from various improvements which would potentially increase ridership and further optimize the transit system

#### Combined Categories

Overall, Efficiency was the most frequently occurring quality factor mentioned in the open-ended question: “What improvements to the Halifax bus system would enable/encourage you to travel by bus more frequently?”, at 61% of all recommendations pertaining to improvements of overall efficiency (Figure 15, thematic analysis).

The three changes most frequently recommended by survey respondents regarding efficiency were: shorter intervals between buses, more efficient routes, and more effective tracking methods.

In order of most to least “important” (or most frequently occurring to least frequently occurring) issues from respondents, the order was as follows: Efficiency, Accessibility, Comfort/Safety, Cost/Payment, and Infrastructure.

The final, overall results of the project’s survey highlighted the three main categories’ standing in the respondent’s opinion on Halifax Transit. The efficiency category received the lowest score, and the safety category received the highest score from the survey respondents (Figure 14).

Future research could include increasing the survey response sample size to better reflect a proportional group of the Dalhousie University population, or possibly collaborate with Halifax Transit to develop a user-based system for optimal routes, stops, and timing to potentially increase the benefits of individuals using public transit on the Peninsula.

### **Limitations**

Some limitations to this project could include the small number of respondents. The target sample size, given the average population size of Dalhousie Studley Campus students, was 376 responses. But, with the quick turnaround from opening the survey, advertising, and then closing the survey could have stopped the desired sample size from being reached. Also, there may have been people who have seen the posters, and wanted to fill the survey out, but may not have access to the technology or internet resources to fill it out.

### **Conclusion**

In conclusion, the results of the survey were consistent with the hypothesis that the Halifax transit system would be perceived as inefficient, and the overall perception of the transit system would be considered low-quality. In considering what aspects of the transit system's efficiency should be prioritized, punctuality should be improved and frequency of buses per route increased, to meet the most common expectations of Dalhousie's Studley campus transit riders.

Because the sample size only comprised of 79 respondents, further research should be conducted with a larger sample size. Currently, there is no publicly available data expounding riders' opinions on the quality of transit in Halifax. However, there are local advocacy groups such as "It's More Than Buses" conducting independent research on the topic using surveys and feedback mechanisms for public input- advocating for improvements to Halifax's transit system (Ryan, 2023). Additionally, this topic of research could benefit from a diversified sampling pool- including respondents such as other non-

student transit riders, and bus drivers- to ensure that any recommendations and changes implemented would represent the needs of a diverse population. Further public engagement such as interviews, public consultations, or focus groups could be employed to gain deeper insights into transit rider experiences as well as what factors may influence non-transit users to begin utilizing Halifax transit. Further research should be conducted to determine how to realize the needs and expectations of transit users, including the roles of governments and policies, infrastructural improvements, as well as small-scale improvements including driver-training and community outreach.

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## **Appendices**

### **1. Questionnaire – Survey Questions Used:**

- Of the following modes of transportation, which do you use to travel on the Halifax peninsula? Select all that apply.

- Walk
- Bike
- Skateboard
- Scooter
- Personal Vehicle (Single Occupancy Vehicle)
- Personal Vehicle (Car-Pool/Multi-Occupant Vehicle)
- Bus

- Cleanliness

1. Halifax Transit bus stops are generally clean (little to no trash, waste, or excessive tags/stickers/posters).

1- Strongly Disagree, 2- Disagree, 3- Neutral/unsure, 4- Agree, 5- Strongly Agree.

2. Halifax Transit buses are generally clean and tidy (little to no dirt/ stains/ residue/ trash/ slush/ etc.).

1- Strongly Disagree, 2- Disagree, 3- Neutral/unsure, 4-Agree, 5- Strongly Agree.

3. I feel like I am exposing myself to health-related risks when using Halifax Transit bus transportation.

1- None of the Time, 2- Some of the Time, 3- Neutral/unsure, 4-Most of the Time,  
5- All of the Time.

4. Open-ended: Do you believe that Halifax Transit buses present health-related risks

- Efficiency

1. In my experience, Halifax buses are rarely late.

1- Strongly Disagree, 2- Disagree, 3- Neutral/unsure, 4- Agree, 5- Strongly Agree.

2. When I take Halifax Transit buses, I am satisfied with the time it takes to get to my destination.

1- Strongly Disagree, 2- Disagree, 3- Neutral/unsure, 4- Agree, 5- Strongly Agree.

3. The Halifax Transit bus schedule is reliable and/or accurate.

1- Strongly Disagree, 2- Disagree, 3- Neutral/unsure, 4- Agree, 5- Strongly Agree.

4. I feel as though there are enough buses/bus routes in Halifax.

1- Strongly Disagree, 2- Disagree, 3- Neutral/unsure, 4- Agree, 5- Strongly Agree.

5. Open-ended: Do you believe that Halifax Transit buses on the Halifax peninsula are punctual?

- Safety

1. I feel safe when riding the bus in Halifax.

1. All of the time 2. Most of the time 3. Neutral/Unsure 4. Some of the time 5.

None of the time

2. I feel like Halifax bus drivers prioritize passenger's safety.

1. Strongly Agree 2. Agree 3. Neutral/Unsure 4. Disagree 5. Strongly Disagree

3. I feel safe when waiting at the bus stops in Halifax.

1. All of the time 2. Most of the time 3. Neutral/Unsure 4. Some of the time 5.

None of the time

5. Open-ended: Do you feel safe using Halifax Transit? Please explain why or why not.

6. Open-ended: What improvements to the Halifax bus system would

enable/encourage you to travel by bus more frequently?

## 2. Poster

**Do you think Halifax buses could be improved?**

Complete our survey - have your voice heard!

**We want your opinion!**

Are you:

- A Dalhousie student?
- Primarily on Studley Campus?



**The survey:**

We are trying to determine whether or not Halifax Transit could be improved. If you have an opinion about Halifax Transit that you would like to be heard, please answer our survey!

- Approximately 5-10 minutes
- All answers are anonymous

Survey link here →



<https://forms.gle/rD1xz4nDpDHvN5Cs9>

3. Link to Excel Workbook containing raw data:

[https://dalu.sharepoint.com/:x/t/Moles/EUI-eB\\_fgv5MlyJVQecZdQBOseBm5xXZy\\_f8wYjxdVVgg?e=M6UQk6](https://dalu.sharepoint.com/:x/t/Moles/EUI-eB_fgv5MlyJVQecZdQBOseBm5xXZy_f8wYjxdVVgg?e=M6UQk6)