University of Winnipeg

# Winnipeg Transit: Digi-Pass

Team Kreacher – Milestone 1

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ACS 3916-001: Human Computer Interaction

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November 2, 2020

# 1. Description of Project Idea

## Problem Description

Minimization of contact is vital during this pandemic, but people still need to get around Winnipeg. Not everyone has personal transport so public transport is considered essential. Unfortunately, when boarding the bus, the user must contact the ticket machine to scan their Peggo card or deposit their coins. Being that hundreds of users ride public transit daily; this machine gets contaminated frequently. In this time of technological innovation this is an unnecessary contact point. Furthermore, it is very easy to forget your Peggo card or the coins necessary to board the bus, to which there is no convenient way to solve this putting the user through avoidable stress.

## Design Direction

We want to minimize the unnecessary contact that is present within the transport system, as well as the loss or forgetting of bus admittance. We will accomplish this by appending the Winnipeg transit app with a “Digi-Pass” interface. This interface will allow the user to board the bus without having to contact the ticket machine and will take the charge from their account. This will help minimize the spread of COVID-19 by minimizing necessary contact within public transport and it will make it harder for users to forget their bus admittance by storing in within their phone.

# 2. Stakeholders

## External

- **The community of Winnipeg**, our users. These are the people we are designing for.
- **University of Winnipeg**, our partner for integrating U-Pass into our system
- **Winnipeg Transit Department**, working with us to integrate DigiPass into their system.

## Internal

- **Team Kreacher**, the designers who are creating this project.

# 3. Discussion of the research methods used

### Intro

Since our project involves mostly people residing in Winnipeg who often use the Winnipeg Transit bus pass, we decided to use two different methods of data collection: interviews and questionnaires.

### Interview

To collect most of our qualitative data for analysis, we used an unstructured interview style on our audience. We also used a closed-question type of interview questions to ascertain an easy analysis of our interviewee's answers. Since we are all practising social distancing, we couldn't do in person one-onone interviews, so instead we used mobile phone calls, email, and the Facetime app to conduct our interviews. This turned out to be amazing. To maintain personal privacy policy, we did not record or document any personal information from our interviewees during all our facetime sections, mobile phone call section.

### Questionnaire

To gather qualitative and quantitative data we used an online based questionnaire on a google form. Google form is an amazing tool to collect data from users in the form of a questionnaire. Using this tool, we were able to reach many audiences without hassle. Our questionnaire was unstructured with closed questions, and our format included *checkboxes ranges, and rating scales.*

### Overall

We could say that our experiences in using the questionnaire and interview are fascinating; we as a group had different experiences, but in general, we all agree that the interviews that were conducted using the Facetime app were the most productive and engaging because we were able to read their facial expressions, body language and other reactions while they responded to our questions. However, the interview is more time-consuming and sometimes interviewees are not as willing to give as honest answers when speaking directly with a person. On the other hand, our experience with using questionnaires was exceptional, most especially using online methods such as the google form. We were able to send out links to our questionnaire and the response was very high, people were able to respond quickly. Furthermore, the google tool itself gave us total graphic visualization of all the data we collected which helped us with easy efficient analysis. We agree that everything (interview, questionnaire, etc.) went well as we planned and expected. If we were to do something different in the future, we would seek out a broader audience by conducting interviews with people at bus stations and bus stands. This of course, would only be possible when not during a pandemic when social distancing is in effect.

# 4. Team Kreacher Research Analysis

## Introduction

Public transportation is a blessing, but during a pandemic, it is an easy way to spread disease. Team Kreacher is a group made of five human computer interaction students working towards the goal of

creating a safer, more convenient public transport. We hope to achieve this through adding a contactless payment interface," DigiPass", onto the Winnipeg Bus Live app.

The purpose of this study is twofold; First, to understand bus user's perspective on public transport during the COVID-19 pandemic. Second, to introduce and gage interest in a contactless payment method for public transport.

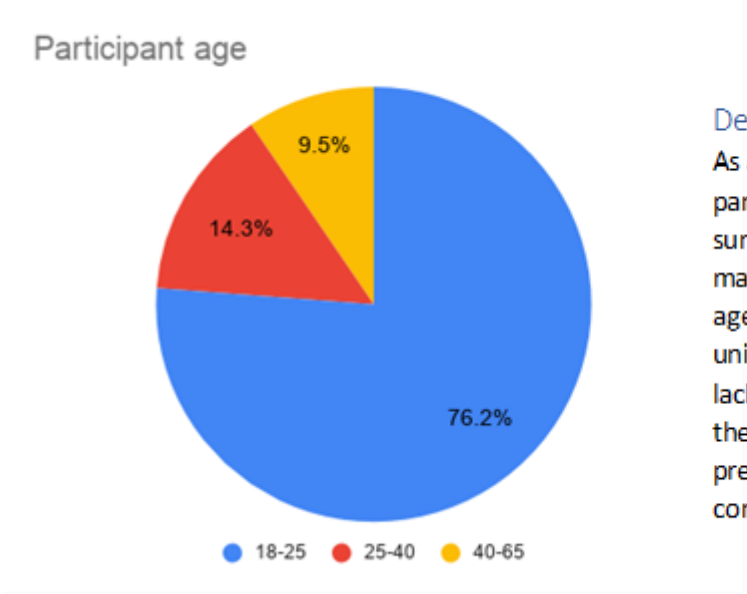
We utilized person-to-person interviews as well as online questionnaires to collect our data. Due to limitations, our sample population consists mostly of university students and family.

We interviewed 7 people and received 14 responses to our questionnaire.

# Data analysis

Descriptive statistics was used in this study. Due to the limited sample size, simple analysis techniques (i.e. averages and pattern checking) were used on both quantitative and qualitative data types.

# Findings

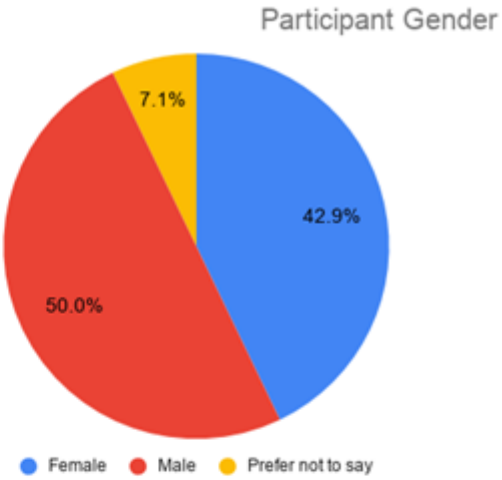



## Demographic

As age is the first inquiry of each of our participants, the figure to the left is a summation of both research methods. A majority of our participants fell within the age range of 18-25, the typical age of university students. Unfortunately, our data lacks input from 65+ participants which are the primary concern regarding COVID prevention. We will take this into consideration throughout the project

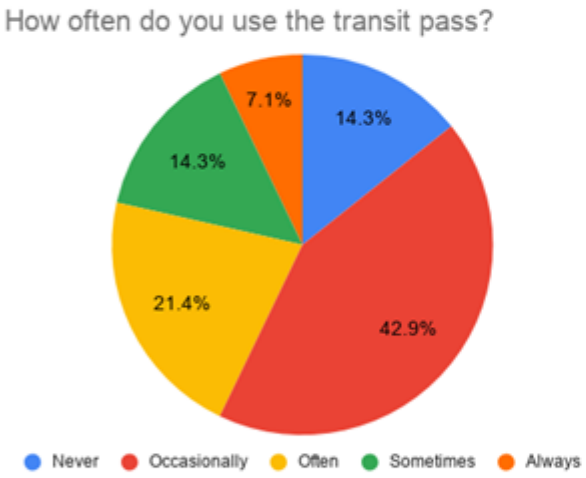
### Demographic Cont.

There was a very even spread of male to female participants within this study. Although this is a very small sample, the percentages reflect those of the population. This means our data will be more reflective of the population.




## Questionnaire

Our questionnaire consists of 1 question curated from each out us (5 total) about the state of public transport in general, its state with regard to COVID-19, as well as, perceived effectiveness of our implementation of contactless payment. We received 14 responses.

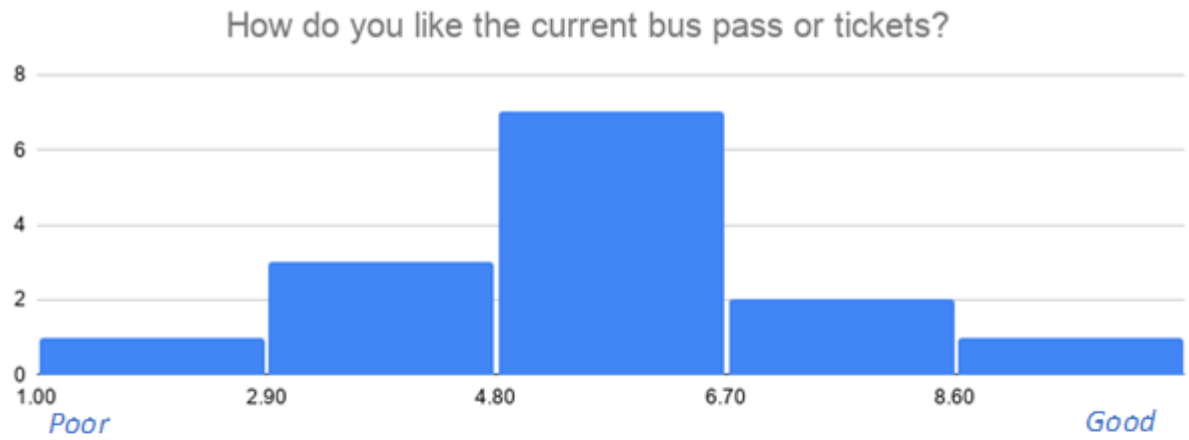



### Q1: Use of Transit Pass

A majority of our participants only 'occasionally' use transit. However, if we take the average, they use it a bit more ('sometimes'). This is an indication that our participants do use transit and can answer the following questions accurately.

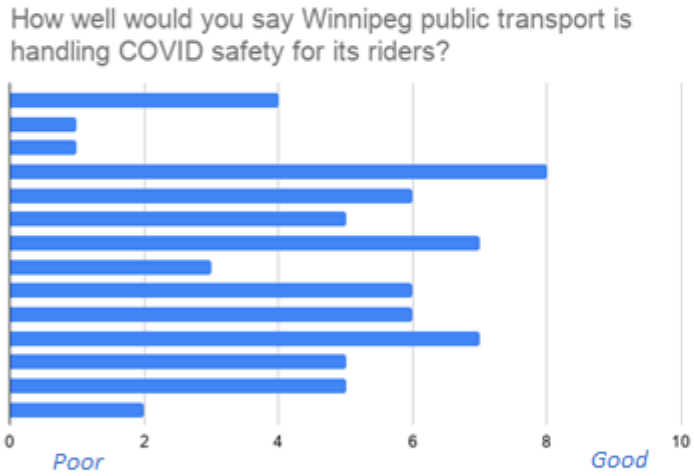
### Q2: User Experience with Transit

From the bar graph to the right, we can see that most users have a slightly positive outlook on transit. On average, they gave transit a 6.2 of 10. This tells us there is room for improvement.




## Q3: Users' Take on Current Payment

From the histogram above, we see that a majority of our participants gave a neutral rating to the current bus pass/tickets. On average, they rated it 5.2 of 10. As one can see, there is a plenty of room for improvement regarding this aspect of transit. However, because the answers are so neutral, it leads me to believe our participants may accept the current system as a cultural norm and could potentially resist if we were to change this system substantially. We can address this by leaving the normal system untouched, only adding ours on.




## Q4: Winnipeg Transit and COVID

From the bar graph on the left, we see that the participants do not think transit did an exceptional job handling COVID-19. On average, they rated it 4.7 of 10. From this we see that there is certainly a market for increasing the COVID-19 safety measures on transit.

## Q5: Contactless Payment and COVID

From the chart on the right we see 64.3% of our participants believe that contactless payment would help flatten the curve. This data tells us that our interface is likely to be viewed as a positive change regarding public transportation during the pandemic.

## Interview

Our interview consist of 1 question curated from each out us (5 total) about bus tickets, perspective of transit during this pandemic, fare expense, and implementation of contactless payment. We received 7 responses.

### Q1) Have you ever encountered a problem when using the bas pass or tickets?

4 of 7 participants had problems with bus passes and 3 of them specifically mentioned passes not scanning properly causing the line to back up and make people late. This tells us the importance to make our interface quick and easy to use to minimize backups.

### Q2) How has COVID-19 effected your perspective of public transportation?

Most participants are now hesitant to ride the bus due to improper social distancing and the uncertainty that people around you may be sick. This tells me we need to look into solutions to help encourage social distancing and maybe integration with a COVID tracker to see if anyone infected has ridden.

### Q3) Is the transit fare too expensive for the length a transfer is valid for? If yes do you think Digi-pass is a better alternative?

As expected, most people would like the transit fare to be cheaper or have the duration extended. Most people do not think DigiPass will solve this. A comment that stood out was to have a ticket duration specified by user. This tells me we need to investigate if we can make a variable duration ticket option that is cheaper or more expensive respectively.

### Q4) In this pandemic do you think that contactless payment on the transit would help enforce safety measures?

Of 7 participants, 4 did not think contactless payment would help enforce safety measures. Considering responses to a similar question within the questionnaire suggested otherwise, I am led to believe the wording of this question was flawed. However, we will take this into consideration and brainstorm how else we can encourage safety.

### Q5) Do you have an idea or have used any contactless payment app before? If yes how was your experience with it?

Almost all participants have used some form of contactless payment before. All of them enjoyed it for its speed, convenience, and simplicity. This reinforces that our interface must have these traits.

## Data Triangulation

We found that across all research platforms, our participants were most likely to be 18-25 (university age). Almost all of our participants have had experience riding public transport. A majority of our participant have used contactless payments before, but between methods there is conflicting data regarding participants perception of contactless payment's effect on COVID-19. The interviewees did not believe it would help enforce safety measures, whereas the questionnaires believed it would help flatten the curve.

## Hypothetical Implementation

If our DigiPass interface was implemented as is, we would see some major issues, specifically with perceived effect on COVID. However, with the data gathered from this study we can take effective steps to solve that issue and know that our interface needs to be quick, convenient, and easy to use. After implementation of these features, we will be on the right track for success and one step closer to creating a safer public transport environment for Winnipeg.

## Summary

In summary, our user demographic is made mostly of university students who have used contactless payment before. There is plenty of room for public transit to grow specifically with regards to tickets and payment, and DigiPass is just the first step. Having received conflicting results for its perceived effect during the pandemic, we will look to add more features that will target flattening the curve directly (like COVID tracker integration).

## Conclusion

In conclusion, we have a lot of data to grow from and have found some key features we need to implement. With this new perspective, we will find a larger effect on flattening the curve. Big thanks to our participants for their effort and support. We look forward to creating a quicker, safer, payment solution for public transport.

# 4.1 System Requirements

## Functional

- Pay fare with card/credits
- Buy credits
- Act as Peggo/U-pass
- View activity log (payments and history)

## Data

- Stored in Secure Database o Username o Password o Bank/Card info o Past payments o Past rides o User credits/balance o U-Pass credentials o Ticket time remaining

## Environmental

- Physical: o Crowded, noisy, rushed
- Social: o Need privacy for user's card info
- Organizational: o 24/7 user support
- Technical:
  - o Must work on all NFC compatible smart phones

## Users

- University students of all backgrounds o i.e. Danielle Whitmore (persona)
- Commuters of all backgrounds

## Usability

- Speed is a need
- Must be convenient
- Must be simple to set up and use
- Should be satisfying

# 5. Task Descriptions

## Description

Digi-Pass is a mobile ticketing app, that allows the user (i.e. Danielle Whitmore) to purchase and use Winnipeg Transit fare products such as single ride tickets, regular monthly and day passes, including low income, seniors, and U-Passes directly from your mobile device. These are some of its tasks:

- Create Account
- Tap&Ride Payment
- Pre - Payment
- Virtual Card
- View Activity Log
- View Balance

The user will have an option to save their credit card details in the Digi-Pass app for future transactions, after downloading Digi-Pass, you either create an account or continue as a guest, then select the product they wish to purchase, the user enters their credit card payment information, and confirms the transaction. The purchased product/s will be electronically delivered to your Digi-pass ticket wallet as a virtual card, which will also display your available balance and a receipt for your purchase will automatically be sent to your email address. Another feature that is available to users (Tap&Ride) allows the user/s to just tap their smartphone on the NFC reader and it automatically bills their credit/debit cards the base fare
(the cost of one ride).

## Scenario

Danielle Whitmore needs to take the bus in order to make it for a job interview, she always takes the bus, however she lost her pass and forgot to get a new one, or though she has other options, which are to either use tickets or coins, but she has no tickets and has no coins on her either and without any of those she can’t board the bus, which means she will have to either be late or miss her interview. On the bright side she always has her smartphone with her, as it’s an essential tool for her scheduling and daily commute. Even without having to signup, she can use her smartphone to purchase a pass or ticket, have it saved in the app, to be used just by tapping her phone on the reader.

# 6. Persona

## Danielle I. Whitmore

*"I sometimes forget everything but never my phone."*

**Age:** 21
**Work**: Student
**Family:** SIngle
**Location:** Winnipeg, MB

Outgoing | Forgetful | Hard-working | Clean freak

### Goals

- Use public transportation to attend university courses.
- Looks for the most affordable means of transportation.
- Don't forget her bus pass.

### Frustrations

- Not holding up the line when scanning the bus pass.
- The bus pass is too expensive for students and out of her budget.
- Does not like the dirty payment machine.

### Personality

| | |
|---|---|
| Introvert | Extrovert |
| Thinking | Feeling |
| Sensing | Intuition |
| Judging | Perceiving |

### Bio

Danielle has recently moved to Winnipeg from Toronto and she's unfamiliar with using the transportation in Winnipeg. She was used to taking the train to go to school and other areas while in Toronto.

She walks 20 mins to get to her courses during the summer-fall season and occasionally uses the bus when it gets late with the help of her classmates but she now needs to take the bus during the winter and she now needs to use it frequently for her new part-time job.

Danielle is a forgetful person so she often forgets her bus pass at home then needs to buy tickets instead. She struggles when paying in cash because they don't accept all types of payment and she doesn't like touching dirty surfaces.

Danielle uses her phone for everything from watching Netflix, searching for information on Google, scrolling on social media, using it for payment and she never fails to remember to bring it with her everywhere.

### Motivation

- Saves time.
- Uses the bus to go to different areas in the city.
- Less contact with the machine.

### Brands