

# Perceptions of Public Transportation Infrastructure

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Individual Report by Austin Leslie

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## **Introduction**

Imagine for a moment a world without public transportation. It would quickly become apparent how public transit is a necessity for society. In this study, I examine the public transportation infrastructure in place at the University of Michigan. With over 40,000 students, I knew my scope could be overwhelmingly large. Therefore, I narrowed down my study to how students navigate getting to and from North and Central campuses and how technology assists in this (if at all). More specifically, navigating the Blue Bus system the university provides for students. I interviewed three different people and based the interview around two research questions: how do you navigate the Blue Bus system? How has technology played a role in this, if at all?

These research questions are important because arriving to obligations in a timely manner are integral to the success of any student. It is incumbent upon a university to provide the necessary resources for students to be successful. This study will shed light on if the University of Michigan is succeeding in this avenue. I was pleased to conduct this study because the off-campus apartment I live in provides a shuttle for us to get to campus. As a result, my experience with the Blue Buses is limited - I was curious myself to know how the university is performing.

## **Methods**

The methods conducted in this study were as follows: interview three people and ask them 15 questions based on the aforementioned research questions. At first, it seemed simple. But we quickly realized that our questions would have to be continuously tailored to bring forth the best results. We found that we were invoking bias in our original questions by assuming our participants in the study used DoubleMap to aid in their

navigation of the Blue Bus system. Furthermore, we were asking questions that assumed there going-ons were primarily on North Campus. Without fixing these biases, our study would produce an inaccurate and incomplete portrayal of how students actually navigate the Blue Buses. Because of the straightforwardness of many of our questions, interviews were not as long as we had anticipated.

When constructing our *General Experience* questions, we decided to ask open-ended questions to limit participants feeling they had to answer in any particular way. Asking “What’s been your general experience with the Blue Buses?” led to a wide range of responses. Some answered with a nod of approval, a few sentences, or went into great detail about their experiences. Sometimes, ad nauseum. This led to incomplete or overly diluted answers. Therefore, it was vital to clarify by asking straightforward follow-up questions of their likes and dislikes of the Blue Buses. This allowed me to construct a clear picture of what each user valued.

The *Current Bussing situation* questions required a lot of tailoring. We did not want to assume the frequency of navigating to and from the two campuses. Therefore, we made sure we asked them to differentiate how often they use the Blue Buses on the week versus the weekend. To complement their answers, we asked which stops they frequent the most on both campuses. This would allow us to examine if location plays a role in impacting their experience. To conclude this topic of questions, we asked them to compare their experiences of using the Blue Buses during the week versus weekend. Their answer to this question would be crucial in ascertaining how they perceived the bus system and would allow us to propose recommendations easily later on.

To segue into how technology plays a role in their navigation of the bus system, we asked them to take us step-by-step how they get to a desired location on campus via the Blue Bus system. This would allow us to see the extent technology plays for this particular user. We decided to ask straightforward follow-up questions to distinguish between the Blue Buses and technology experience. Although they go hand-in-hand, we found it was beneficial to examine them asynchronously to get a clearer understanding of the role technology actually plays. We would examine them synchronously later. We asked them to distinguish between what functionality of their app of choice they *liked* and *used* the most. We saw this as an opportunity to allow us to understand the value technology provides in their experience and to craft recommendations later on.

In terms of recruitment, we had to recruit people who we knew had their time split between the two campuses. However, we aimed to construct a diverse array of participants. We wanted to stay away from the same demographic of living, working, and having classes on North Campus. Otherwise, we would be getting a snapshot of only one niched group. We agreed to recruit a target population of people who have business on both campuses but made sure to stay away from all the same demographics in our participants. My first participant lived on Central campus but had classes and work on North campus. My second participant lived on North campus but had classes and work split between the two campuses. My last participant lived on North campus, but the bulk of her extracurricular activities were on Central campus. We decided to preface all of our interviews with outlining the purpose of the interview and acquiring their consent of an audio recording.

## Findings

In total, our study had 15 participants. By constructing an affinity diagram, we were able to analyze and synthesize our data to construct a reasonably clear idea of how users are perceiving, engaging, and navigating the Blue Bus system and the technology that accompanies it. Let us start with our positive findings on the Blue Bus system. We found that the majority of users believe they can rely on the Blue Bus system to get them to their desired location. It's as simple as P7's comment of "It gets me where I need to go." Reference Appendix A, line 12. This is important because otherwise all else would be lost. If users don't have the perception of the bus doing its job, it would forfeit its purpose.

This confidence is reflected in all the personas I have constructed. Specifically, my user personas of Valerie Johnson and Amal Khan. Valerie is an ambitious upperclassman that lives on Central Campus with regular commitments on North. She knows what she likes and juggles many hats. She relies firmly on the buses to get her to all of her commitments. This is evident in her primary goal of getting from Point A to Point B. Valerie has frustrations that would come across as minor to a design team. Many of her preferences are luxuries that a public transportation system would not aim to provide. However, she prefers a reliable, simple interface which is a goal a design team would deem important. Reference Appendix A. Amal Khan is a graduate student that lives on North Campus. Her work and classes require her to split her time evenly between the two campuses. She is practical and naturally values being able to rely on the buses to get her to places. She doesn't really fret over the technological capabilities failing because she knows the buses are ultimately reliable. Her goal of enjoying reliable transportation is fulfilled. This would be another main focus of a design team. Reference Appendix B.

Another positive perception we found is that users believe the buses run frequently. P5 hits the nail on the head with the comment, “I know many routes come between three to four times an hour.” This is important because even if the technology fails to reflect accurate information regarding the bus (which we found was the case), they know their wait won’t be unreasonably long. This perception is reflected in my user persona of MacKenzie Walters. MacKenzie is a forgetful freshman that lives on North Campus that hasn’t yet gotten a handle on the Blue Buses. She frequently misses the bus due to her inability to clearly read the map and many app features failing to give accurate information. She dislikes that she has to go to multiple apps to get different bits of information regarding the bus. She wishes all her desired features be contained in one app. And as a result, struggles to have her goal of not being overwhelmed by the interface fulfilled. A great goal for a design team to continually ensure is being met. Despite all of this, she hasn’t given up using the Blue Buses because she knows if she misses the bus, another one is soon to come. The frequency of the routes keeps her sane. Reference Appendix C.

We found that the Blue Buses did not come without fault. Users overwhelmingly feel that the Blue Bus system could add more routes. This perception leads to their feeling of the bus being overcrowded as well. My P7 felt that due to her location she was neglected by the Blue Bus routes. Reference Appendix D, lines 12-14. I depict this feeling in the scenario of Valerie Johnson. She has to allot an exorbitant amount of time to track the buses because she doesn’t really know what time the buses will come because the routes are inconsistent where she lives. She would appreciate the addition of more routes to alleviate the stress of when the bus will show up. This attitude is further reflected in all of my personas in the attitudes section. Reference Appendices A-C.

Analyzing the technological component of navigating the Blue Buses uncovered a lot of findings. In typical fashion, we will start off on a positive note. All users agree that the real-time map on DoubleMap is a great addition. This is shown across all personas in the attitudes section. To really illustrate this feeling, I include it in my scenario for MacKenzie Walters. Her goal of real-time tracking the bus is fulfilled by way of DoubleMap. The bus is running late, and she gets nervous it is not coming. She is relieved when she remembers she can track the bus. She is able to do so and successfully boards. Reference Appendix B.

Upon analyzing our data, the pitfalls of the technological components are quickly found. Most users find that the ETA and tracking on the apps are inaccurate and inconsistent. The scenario of Amal Khan drives home how important it is to make sure the buses are providing a reliable service by way of their apps. Amal has the primary goal of enjoying a reliable service. She usually chooses to forego using the apps because she knows it is always inaccurate. It is unfortunate a user is missing out on the technological component due to how inaccurate it always is. Due to her laid-back nature, she accepts that the apps will be inaccurate but that is not the case for every user. We can see in the scenario of MacKenzie Walters that the inaccurate apps cause her much frustration. Reference Appendices A-B.

Furthermore, the lack of being able to see your location on the map, locate where the bus stops are, and drivers failing to turn on their tracker were common pain points for users. All of these frustrations are reflected throughout my user personas. One of MacKenzie Walters' goals is to not be overwhelmed by the interfaces. The constant frustration that apps provide to her cause her to feel overwhelmed. Valerie strives to enjoy a simple interface. The inconsistency the apps provide make the interface complicated for

her. She prefers everything to run seamlessly. Lastly, in Amal's scenario, she should be able to use the apps and trust they will work. Reference Appendices A-C.

## **Recommendations**

The thorough analysis of our interview data allows us to get a solid understanding of the positive and negative perceptions of the Blue Bus system as well as the technology that accompanies it. I found that with something as vital as public transit, technology affects the overall perception of the system but does not necessarily impact its use. Even with the many negative perceptions users had, nobody abandoned using the buses. Therefore, I do not recommend a design team pooling their time, energy, and resources in fixing the Blue Bus system itself. It is reliable and generally frequent enough where they will always maintain a strong base of users. If anything, focus on keeping it reliable. And if anything were to be added, I recommend it be incremental improvements on the amount of bus routes. Adding more routes would satisfy most users as this was a common desire found.

I propose using the user personas I constructed as a blueprint for design thinking. Keeping in mind the diverse array of personalities, attitudes, and goals of users is important. It eliminates bias by only designing for one type of user. Instead, you are continually reminded to accommodate *all* types of users and their needs.

I recommend focusing on making improvements with the digital technology that accompanies the Blue Bus system. After analyzing our data and constructing the user personas, we see that all users engage with technology to assist in the navigation of the bus system even if it is minimal. We can clearly observe the impact technology has on their experiences. I recommend the expansion of this study to focus on the technology itself.



Comparing and contrasting the four apps that are most commonly used by users will allow us to get a better understanding of the desired features and pain points users experience. I then recommend we take the information that we gather from this expanded study along with the information from the previous study to aggregate all the desired features of users into DoubleMap. I suggest DoubleMap because this was the app and interface that was most desired by all users. This will allow all aspects of the user personas to be improved upon and satisfied. With a reliable bus system and great digital experience, would the Blue Buses hit on all cylinders for providing value to users? That is a question I hope we can answer

## **Conclusion**

My analysis of the Blue Bus system found that technology plays a significant role in the overall experience for a user even if the service itself is good. This is serious food for thought for BSI majors. We are at the frontier of such a powerful field. We can now look to technology as the answer for how happy our users are. What will we do with this information? User research allows us to really delve and understand users. It behooves us to take the research process seriously. We learned from this study that the University of Michigan is doing a good job in providing a reliable public transit service for students. However, their technology could be majorly improved upon - seemingly calling for any SI student to take on the challenge.

## Appendix A

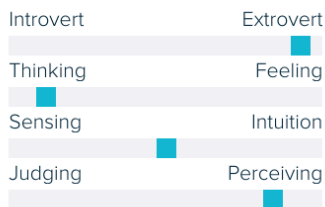
### Valerie Johnson



Age: 19  
Major: Industrial & Operations  
Engineering with Ross minor  
Year: Junior  
Location: Central Campus  
Work: Front Desk Associate

*"Corporate America better  
get ready."*

#### Personality



Organized

Focused

Type A

Ambitious

#### Goals

- Get from Point A to Point B reliably
- Real-time track the buses
- Enjoy a simple interface

#### Frustrations

- Bus stops are hard to locate in less-populated areas of campus
- Bus driver forgets to turn on their tracker
- Buses run infrequently on weekends

#### Scenario

Being a perfectionist isn't easy - Valerie is the model Michigan student. The type where commitments, engagements, and plans all have different meanings to her. This girl doesn't have time to waste. She appreciates the Blue Buses get her to where she needs to be - save when they are late.

Valerie always allots 30 minutes to take the Blue Buses to get to class. If her class begins at 8:00am, best believe her eyes are glued to her phone at 7:10am to real-time track the bus on DoubleMap because she knows the routes are always inconsistent around where she lives. Thank God the driver remembered to turn on the tracker! She loves DoubleMap because it clearly depicts where all the buses are with a simple bus icon at any given point in time. She further loves the feature to filter out routes that she doesn't use so the interface becomes more relevant for her. The bus better be here by 7:30am or this day will already be off to a rough start. She always has this fear as the bus routes tend to be late in her neck of the woods. She starts walking to the bus stop from waiting inside the warmth of her apartment at 7:20am. She's got it down to a science how far the bus will be based on the proximity of the tracker. DoubleMap makes reading maps a breeze to her! And just in the nick of time, the bus pulls up, and she gets on. She thinks to herself, "Why can't every route be this predictable?"

#### Attitudes

I can generally rely on the Blue Buses to get me to my desired destination

DoubleMap's real-time map is a great feature

For the most part, the Blue Buses run consistently

I would prefer more bus routes

I would like to see many improvements in the Blue Bus system

#### Brands & Influencers



#### App usage

DoubleMap

Michigan App

Google Maps

Transit

## Appendix B

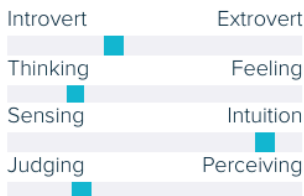
### MacKenzie Walters



*"Most likely to be late to my own funeral."*

Age: 18  
Major: BFA - Musical Theatre  
Year: Freshman  
Location: North Campus  
Work: Understudy

#### Personality



Klutz

Optimistic

Forgetful

Theatrical

#### Goals

- Locate which bus to take
- Be able to track the bus to ensure bus is not missed
- Not be overwhelmed by the interface

#### Frustrations

- The tracker and ETA are almost never accurate
- Hard to locate which bus stop to use
- Unable to read map sometimes

#### Scenario

MacKenzie Walters always means well - but she just can't seem to show up on time to well....anything. Although this might be a fault of her own, the Blue Buses and apps that accompany it don't make it any easier for her sometimes. She is all over the place when navigating the bus system. If there was one app that could incorporate all the features she desires, she'd be golden.

It's 6:00pm on a Saturday and MacKenzie needs to get down to the State theatre. She always dreads going down to Central Campus because she still hasn't gotten a handle on the Blue Bus system and the technology that comes with it. Should she use Transit? She decides against it as it's dark and she wants to feel safe on the bus. She opts for the Michigan app to see if there's a route to State Street. She struggles to navigate the interface as there is too much going on. She quickly exits out of it. She decides to try Google Maps as it is simpler to read. She types in bus directions to State theatre. It says there is a bus route coming in 12 minutes that will drop her off at the CCTC. Now, she must figure out which bus stop to wait at. She reads Google Maps carefully as it tells her to wait near the Pierpont Commons entrance. She reasons cars drive on the right so she waits on the right side of the road coming from Central. She hedges her bet that she is right but wishes the map would indicate where the bus stop is. 15 minutes passes and she feels like the bus should have been here by now. She remembers her friend telling her that DoubleMap real-time tracks the buses. She opens the app and watches the bus get closer and closer and smiles that at least this time she didn't miss the bus.

#### Attitudes

I can generally rely on the Blue Buses to get me to my desired destination

DoubleMap's real-time map is a great feature

For the most part, the Blue Buses run consistently

I would prefer more bus routes

I would like to see many improvements in the Blue Bus system

#### Brands & Influencers



#### App Usage

DoubleMap

Michigan App

Google Maps

Transit

## Appendix C

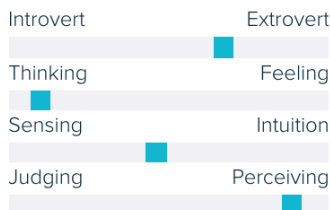
# Amal Khan



"Health is wealth."

Age: 22  
Major: College of Pharmacy  
Year: 2nd year grad student  
Location: Central & North Campus  
Work: Michigan Medicine intern

## Personality



Laid-back

Practical

Healthy

Determined

## Goals

- Not be late to work because of the buses
- Find a consistent route to use
- Enjoy a reliable transportation system

## Frustrations

- ETA can be inconsistent
- Bus can be overcrowded

## Scenario

Practical might as well be Amal's middle name. She realizes that because her schedule is split evenly on both campuses - her transportation methods needs to be on lock! She values the Blue Bus system because she knows it will ultimately get her to where she needs to be. There are improvements that can be made but she is overall pleased.

It is 2:15pm. After a long day of classes on North, Amal is getting ready to start her shift at Michigan Medicine. She doesn't need to check Google Maps or Double Map (the apps she primarily uses to ride the Blue Buses) because she knows the bus to the Medical Campus arrives at the bus stop around the same time every weekday give or take 5 minutes. The ETA is never accurate anyways. She notices the bus coming and sees it is almost full. She gets on and takes it to her work. The experience is nothing stressful to her as she is used to this consistent route.

## Attitude

I can generally rely on the Blue Buses to get me to my desired destination

DoubleMap's real-time map is a great feature

For the most part, the Blue Buses run consistently

I would prefer more bus routes

I would like to see many improvements in the Blue Bus system

## Brands & Influencers



## App usage

DoubleMap

Michigan App

Google Maps

Transit

## Appendix D

### *P7 Interview Transcript*

1. I: Thanks for taking your time to let me interview you. As we discussed before, the purpose of this interview is to get a better understanding of how students navigate getting to and from North and Central campuses via the Blue Bus System. Specifically, how technology (DoubleMap) assists in this navigation. I want to preface this by saying this interview will be audio recorded and we will be keeping your information confidential.
2. P7: I am aware of this.
3. I: Alright, if at any time you'd like to stop, just let me know.
4. P7: Okay.
5. I: So, let's get started! What's your first and last name?
6. P7: [Redacted]
7. I: What's your major and year?
8. P7: IOE and sophomore.
9. I: Where do you live approximately? You don't have to give your address. Just like North or Central campus?
10. P7: I live on Central Campus but kind of far on the southside of Central Campus. So I would say around the West Quad/South Quad area.
11. I: What's been your general experience with the Blue Bus System?
12. P7: It gets me where I need to go but I haven't always had a good experience because the routes aren't consistent. I lived on a lot of different places on campus and when I lived in the Hill area, I had a better experience with the bus because literally all the bus routes run there. But living by West Quad has been a terrible time because the only buses that really come down there are Oxford Shuttle, Commuter South, and Commuter North. And Commuter South and Commuter North has some of the longest routes out of all the bus routes in the bus system. So, if you need to get to Point A to Point B, you might get there on the bus, but you won't get there for 15-30 minutes. Also, they have the longest wait times. The buses run every 15-20 minutes. So, I haven't had a good experience this year because I live closer to South Campus and not the central area.
13. I: Why do you think the bus routes are better around Hill but not the area you live?

14. P7: I think it's like that because when you think about who gets on and takes the bus its people who live on North Campus. They assume it's primarily those who stay in Northwood and Bursley-Baits and engineering and SMTD students. It wouldn't make sense for that demographic to live where I do. But the Hill is close to North campus. They don't consider students like me or people who work on North Campus. And even for the routes like Commuter North that take me where i need to go are just really long routes. The Commuter North and South routes could be shortened. Because Commuter South goes south but also to the east side of campus. Like East Quad, Ross, Cantina. Same with Commuter North, it goes to the medical campus, but it could be shortened to just go strictly north. MedExpress should be designated for just that side of campus.

15. I: So, you like it gets you where you need to be. Is there anything else you like about the Blue Buses besides that?

16. P7: No, I think the buses are actually pretty filthy.

17. I: So, we talked about what you like and dislike. You don't like how the routes are not efficient, they don't consider people that live where you live, and they assume you have all your going-ons on North Campus. But you like the fact it gets you where you need to be. If you could change one thing about the Blue Buses, what would you change?

18. P7: The main thing I would change is adding heated bus stops. Like in Chicago where I'm from, they have lamps that project heat. Because when you're trying to predict an ETA, life happens, and you can't foresee when it does. But what you can do is put the heated lamps out. Because you know every winter in Michigan is awful. I'm not going to list other things because then I would be picky.

19. I: So just to reiterate one last time you like it gets you from Point A to Point B but you don't like the experiences that come with it like the inefficient routes, the cold, the filthiness.

20. P7: Precisely.

21. I: Switching gears, how often do you go to North Campus a week? And if it's daily, tell me how many times a day.

22. P7: I go to north campus twice a day, every day during the week. On the weekends, I might go once a day but never on Saturday. Maybe 11 times throughout the whole week.

23. I: Which stops do you frequent the most?

24. P7: Pierpont Commons and Cooley. That's for North Campus. For central campus, Michigan Union, Rackham, the Power Center, and CCTC.

25. I: So, let's compare experiences here. Taking the Blue buses Monday through Friday versus taking them on Sundays. How would you describe the difference?

26. P7: Monday through Friday, the buses run much more frequently and there's more routes that run. So, CS and CN don't run on the weekends, so I have to walk 13-15 minutes just to get to a bus stop with an active route. So, it's terrible on the weekend. And the buses run 25 minutes apart. So, it's really unpredictable. You have to set your schedule around the buses and not your schedule by your schedule.
27. I: Say you're at your place and you need to get to class on North Campus, take me step-by-step how you navigate getting there.
28. P7: So, if my class starts at 8:30, I'll wake up at 7. And I'll be at the bus stop by 8.
29. I: Okay so when you're at the bus stop, do you look at your phone to track the bus? Do you get a notification? Elaborate on what happens.
30. P7: I look at my phone because I track the bus on DoubleMap, but I don't look at the times, I look at the actual map to see where the bus is. I mostly look at DoubleMap the whole time I'm waiting to make me feel like assured I know how much longer I'll be waiting. And I listen to music while I'm waiting.
31. I: For every 10 times you're waiting during the week for the bus, how accurate would you say it is?
32. P7: The ETA on DoubleMap is never accurate. I never use those. But the app itself is so accurate. If you know how to read a map and check where it is relative to the map, it's in real time. The only time it's not accurate is if the driver doesn't have their tracker on. So, if a driver didn't turn on their tracker, and a bus comes by, I'm like "Oh I didn't know the bus was coming" but only because I didn't know it was on the map. And that's a driver error not an app issue.
33. I: What app or apps do you use to navigate the Blue Buses?
34. P7: DoubleMap.
35. I: Do you ever use any other apps beside DoubleMap?
36. P7: No because I'm really good at reading maps. So DoubleMap makes it so easy for me to track the buses.
37. I: Do you think that's due to the user interface or you've just been at Michigan for so long?
38. P7: I think it's both, but the app is really easy to use. Some people act like it's hard, but they just don't know how to read a map. The map on DoubleMap is perfect.
39. I: What functionality of DoubleMap do you use the most?

40. P7: The map.
41. I: Ah okay, I assumed as much.
42. I: Are there any other functionalities you use often?
43. P7: No, mostly just the map.
44. I: Which functionality do you like the most?
45. P7: I like how you can filter routes. Like you can select which routes you want to see displayed on the map. It simplifies things for me.
46. I: Out of all the functionalities on the map, do you think there's anything missing?
47. P7: I don't think there's anything missing. It's good to keep it simple because people are already confused about how to use it.
48. I: So, to sum everything up, you don't really enjoy using the Blue Buses but you do enjoy using DoubleMap to access the blue bus system.
49. P7: Exactly.
50. I: So, the experience of using DoubleMap is solid?
51. P7: Yes. That's the only reason I get on the bus is because of that app.
52. I: If it weren't for DoubleMap?
53. P7: I would Uber everywhere. That's what I did my first year. It wasn't until I learned how to use DoubleMap, that I started using the Blue Buses a lot.
54. I: Oh okay, so the experience of using DoubleMap prompted you to use the Blue Buses regularly?
55. P7: Bingo.
56. I: Thank you so much for your time and this concludes the interview!



## Appendix E

### *P8 Interview Transcript*

1. I: Thanks for taking your time to let me interview you. The purpose of this interview is to get a better understanding of how students navigate getting to and from North and Central campuses via the Blue Bus System. Specifically, how technology (DoubleMap) assists in this navigation. I want to preface this by saying this interview will be audio recorded and we will be keeping your information confidential.
2. I: What's your first and last name?
3. P8: [Redacted]
4. P8: I understand.
5. I: What's your major?
6. P8: Biology. Pre-med.
7. I: What year are you?
8. P8: Junior. One more year to go!
9. I: I feel that!
10. P8: Literally.
11. I: Where do you live approximately? You don't have to give your address. Just like North/Central? Whatever you feel comfortable with.
12. P8: I live in the Courtyards on North Campus which is across the street from Bursley.
13. I: Okay so I'm going to transition to your general experiences with the Blue buses, tell me about your overall experience with them.
14. P8: Overall, I've had a pretty decent experience with the blue buses. I think they are definitely better in the morning than at night. I can tell at night the drivers are a little bit irater. And ready to leave. I've seen plenty of them close the door on students. I think they're plenty nicer and routine in the morning than in the nighttime.
15. I: Explain what you mean they close the doors on students?
16. P8: Right, so once they pull up at the CCTC, they let the people who are standing there in and then close and dash off. That's normally at night though not in the morning or

daytime. They'll see someone running and they'll get right to the door and then they'll close it and not open it again.

17. I: Outside of this, do you have any other dislikes regarding the Blue Buses?

18. P8: No, that's my main gripe.

19. I: What do you like about the bus system?

20. P8: I like how the drivers do the same routes, so I know who I'm looking for. And I think the app is decent.

21. I: Which one? DoubleMap?

22. P8: No, I use the Michigan app. I think the routes cover a nice bit of campus too.

23. I: I believe the Michigan app uses DoubleMap software.

24. P8: I think it's a little different on the Michigan app because the buses appear as dots but on DoubleMap they actually have bus icons.

25. I: You're right. Do you have a preference?

26. P8: I like the bus icons. But the Michigan app doesn't have that, the one I use.

27. I: So, you use the Michigan app but still like the interface on DoubleMap a bit better?

28. P8: Correct.

29. I: Which stops do you use on Central and North campuses?

30. P8: On North, I use the one by Bursley. The Pierpont stop, and the one by Northwood. On Central, I use the CCTC, the Union stop, and the East Quad and Couzens stop.

31. I: Do you find that some stops are busier than others?

32. P8: Oh definitely. Of course, CCTC because that's the main one. I do think the Union stop does get quite a bit of traffic. Oh, and Pierpont! That's like the busiest stop because of all the North Campus people.

33. I: So, you said the Blue Bus covers an adequate amount of campus. Do you feel that's only at the stops you're frequenting, or some spots are neglected?

34. P8: Well from where I need to go, it's fine. I know some of my friends who live on Washtenaw Ave have trouble getting there via the bus system. Like there wasn't a stop to

get to the old Trotter and Evans house. I definitely think there could be more stops. And then they closed the stop by the hospital which hurts quite a bit of people.

35. I: Are adding more stops what you would change about the Blue Bus system?

36. P8: Yes.

37. I: On average, how often do you go to North Campus during the week versus the weekend?

38. P8: Every day because I live on North Campus

39. I: So let's compare experiences of taking the blue buses during the week versus the weekend. How would you describe the difference?

40. P8: The weekend requires a lot more planning because a lot of routes don't run like Commuter North and South which I honestly think is not smart. For those people who do live on those sides of campus and have to get to university buildings to study or do class projects. It's less regular so you definitely have to utilize the maps and figure out when you need to be at the stop, or you'll miss the bus and wait another 30 minutes.

41. I: So, the frequency on the weekends is not as often as it needs to be?

42. P8: Yeah, it's not and the number of routes needs to be increased.

43. I: Say you're at your apartment and you need to get to class on Central Campus, take me step-by-step how you plan that.

44. P8: I try to make sure I give myself at least 30 minutes travel time and I look at the Michigan app to see when the bus is coming to see if it's close to the time I need to go out to the stop now or if I can wait inside a couple more minutes because it's cold!

45. I: So, accuracy, ETA? Does it give you an ETA? And if so, how accurate would you say it is percentagewise?

46. P8: I would say 60%. I wouldn't say it's accurate though because the drivers drive really fast at night, so the ETA is off. I don't really look at the ETA, I just figured out where the bus is and go from there from the app.

47. I: So, you primarily use the Michigan app?

48. P8: Yes, but I use Google Maps sometimes.

49. I: How often do you use Google Maps and do you like it?

50. P8: I only use it if I have to go somewhere, I don't normally go like the VA because I'm in pre-med and I have to volunteer. I will say the ETA is much more accurate on Google Maps.

51. I: Okay, what functionalities do you like the most on the Michigan app?

52. P8: Oh, I can tell you! I like that routes are color-coded. That really helps me. I also like that the stops are on there. I think for some people that are not familiar with the stops, they don't know the terms inbound/outbound. Maybe they can change it to saying going to central, leaving central. I know what that means but still. I also like how they have real time trackers.

53. I: So, you're using the Michigan app but it still utilizes DoubleMap software. Have you seen the DoubleMap app before?

54. P8: Yes.

55. I: Would you ever switch over to the standalone DoubleMap App?

56. P8: No. because the Michigan app has everything I need, and I don't need more apps. The Michigan app tells me what food they have at the League or what else is going on campus.

57. I: have you seen the interface on the DoubleMap app though?

58. P8: Yes, and I don't think it makes a difference, I've used the Michigan app long enough where it's sufficient for what I need.

59. I: Okay. What functionality of the app do you *use* the most?

60. P8: just the tracking to see where the actual bus is.

61. I: What functionality do you wish would be changed?

62. P8: I don't like how the drivers forget to turn on their trackers and you might miss the bus if you don't know it's coming on the app.

63. I: Would there be anything you'd *add*?

64. P8: I think they should add a better ETA. They should also add the list view of the routes. Like the expected times it's supposed to run daily. I think they should also structure it like google Maps. Where they can say okay, I'm here and I'm trying to get here. Instead of trying to navigate the map because not everyone can read that map clearly. Oh, and they also don't have enough information about the commuter lots. Because it can be confusing to know where to get on the bus but not know where to park your car.

65. I: So, to sum everything up it gets the job done but there could be many improvements?

66. P8: Yes, like the drivers need to be more patient, the routes can be more frequent and regular, and some of those functionalities can be added.

67. I: Okay, well thank you for your time and I look forward to getting all of this information you've shared into making improvements.

## Appendix F

### *P9 Interview Transcript*

1. I: Hi [name redacted], thanks for taking the time out of your day to share your opinions on the Blue Bus System.
2. P: No problem, I like being interviewed. It makes me feel important!
3. I: Well, I value what you have to say so in that case yes, you are important. The purpose of this interview is to get a better understanding of how students navigate getting to and from North and Central campuses via the Blue Bus System. Specifically, how technology (DoubleMap) assists in this navigation. I want to preface this by saying this interview will be audio recorded and we will be keeping your information confidential.
4. P: I do.
5. I: Okay, great. So, where do you live approximately? You don't have to give specifics just approximately.
6. P: I live on Plymouth road which is on North campus. A little bit behind Northwood
7. I: Okay cool I'm familiar with that area. What's your year and major?
8. P: I'm a junior and my major is IOE.
9. I: Ooh, so the bulk of your classes are on North Campus?
10. P: Yep.
11. I: What's been your general experience with the Blue buses?
12. P: Generally, my experience with the blue bus system is that I use it every day. It's okay but it could be better.
13. I: Let's start on the bright side of things, what do you like about the bus system?
14. P: What I like about the Blue bus system is its all throughout campus. Its spread out very well and I know if I need to get somewhere on campus, I can get there or somewhere very close to it. I like how there are many stops on campus.
15. I: Yeah, a lot of people have commented that the bus systems are better than your average city. You can count on at least being able to take *a* bus.
16. P: Exactly. That's what makes it okay.

17. I: Shifting gears, what do you dislike about the blue buses?
18. P: What I dislike about the blue bus system is that they could add more routes. Some routes need more support because they are super busy, and it gets chaotic trying to get on the bus when there's a swarm of people.
19. I: Yeah, I can only imagine. Especially if it's cold and you're carrying stuff. Sounds like a recipe for disaster. If you could add any routes, which would they be?
20. P: I would add another Bursley-Baits bus and another bus route between north and central campus. And then maybe another one on central campus because I think right now you can only use commuter south to get to most of central from north.
21. I: I think another Bursley-Baits would be valuable considering that every time I take it, the bus is filled to capacity.
22. P: *Every time* and it's so annoying.
23. I: Exactly. How many times do you use the Blue Buses during a normal school week?
24. P: I live on North campus and I probably only go 3 times a week to Central campus because most of my classes and work are on North.
25. I: Alright, that's not too terrible. You aren't required to be all over the place all the time.
26. P: Yeah, I can't complain.
27. I: Which stops do you use the most on Central and North campus?
28. P: I use CCTC the most on central because my job is close to the CCTC whenever I have to work on central. On North, I most often use the Bursley-Baits bus stop because it's the closest to my apartment. I will say I use the Ann Arbor buses more because there's a stop right outside my apartment so it's more convenient. I don't use the blue bus system that often because I don't really have a need to if the Ann Arbor bus stop is right outside my apartment complex
29. I: That's interesting. I don't know too many people who regularly take the Ann Arbor buses. It's good that you have experience with two different bus systems so you can really formulate your opinion because you have something to compare it to.
30. P: Yeah, now that you mention it. I guess I'm well versed in bus systems!
31. I: So, let's compare your experiences taking the Blue Buses during the week versus the weekend. How would you say they differ?

32. P: During the weekend it's much harder to take the blue buses. During the week, I'll wait 7-10 minutes for a bus. On the weekend, I can wait up until like 25 minutes for a bus.

33. I: That seems to be the general consensus from everybody. Say you're at your apartment and you need to go to class by bus. Can you describe step by step how you plan your trip?

34. P: Oooh okay, I check when the nearest bus is coming from Bursley-Baits if I'm on north campus trying to get to central. If I'm on central, I go to the CCTC, and then get dropped off at Bursley-Baits and walk to my apartment because the blue bus doesn't stop close to my apartment.

35. I: Okay. So you really weren't kidding when you said don't use the blue bus system that much.

36. P: Nope.

37. I: Which apps do you use to help ride the buses?

38. P: I use Transit because it's the Ann Arbor bus system software. Every once in a while, I'll use DoubleMap. I used that a lot more when I used to live on campus. I used to use the Michigan app as well but I'm not sure if that's around anymore. DoubleMap was always easier.

39. I: Interesting you say it was easier. What about it made it easier?

40. P: As soon as you opened the app, the map was right there for you to find the buses.

41. I: That's good. Let's segue into when you do use DoubleMap, what feature you use the most?

42. P: What I use the most is the live tracker, but I'll check the map to see how far or close the bus is. Because sometimes the bus will be parked somewhere waiting and you'll see the ETA is saying approaching but the bus driver is taking a break or not in service and forgot to turn off their tracker.

43. I: That seems to be a consistent theme. Would you say that is a driver error?

44. P: It has to be. I don't think it has anything to do with the app.

45. I: Which feature do you like the most on DoubleMap?

46. P: I really like the real time for the bus location because I like to plan everything. I really like to know how long it's going to take me to get somewhere because it's so cold.



47. I: That seems to be very common amongst people. They like that it's so real-time.
48. P: If you could add one functionality, what would you add?
49. P: I'd add a functionality for when a bus goes out of service or understand how many buses are currently active. I think that's it because the apps are straight to the point and they tell you what you need to know to get from point A to point B.
50. I: So, it seems like your general experience is okay for the Blue Buses with some improvements that could be added?
51. P: Yes.
52. I: And your experience with DoubleMap is for the most part good?
53. P: Yes
54. I: Alright that concludes the interview. Thank you for taking the time out of your day to answer questions. And I'm sure this will contribute in making the overall experience for the campus better.