

King County Metro, the Mobility Innovation Center at UW, and the College of Engineering

Customer Mindsets about Frequency and Mobility on Route 7

Spring 2021 HCDE Capstone Project

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Abstract

We partnered with King County Metro, the Mobility Innovation Center at the University of Washington, and the College of Engineering. Metro is preparing for a service change on high frequency bus routes where bus schedules are based on general frequency instead of set times. Our goal was to help Metro talk about frequency when they test a pilot of the service change. We analyzed static information, surveyed Metro bus riders who take Route 7, a high frequency bus route that goes from Rainier Beach to Downtown Seattle, and conducted in-depth, qualitative interviews with select survey respondents. As we completed our project, we provided Metro and our stakeholders with a list of recommendations and redesigns of static information that detail how they should talk about frequency when they test the pilot.

Background and introduction

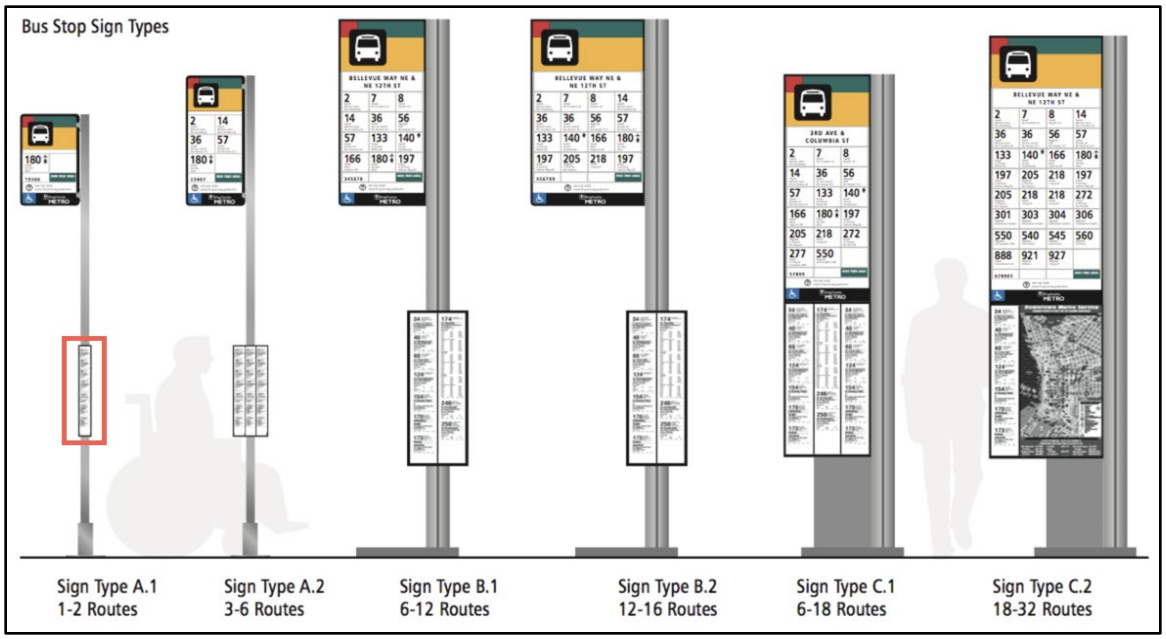
One of the biggest needs among Metro bus riders is consistent and reliable information about bus schedules, especially on high frequency bus routes. Some of the biggest needs among Metro bus operators are consistent breaks, more comfortable break spaces, and better comfort stations. Currently, Metro's service management tools are outdated, and they're working on a plan for how future services should be managed.

Metro wants to update their operational practices and for Service Quality and the Transit Control Center to give them more support, so they can address performance pressures on routes. Metro would like more layover space, but finding sufficient space has been an ongoing challenge that increases capital and service hour costs. As a result, Metro can't expand its fleet without increasing base costs. In turn, Metro can't reduce its number of buses without negatively impacting operator break times. Metro believes that changing its bus schedules on high frequency routes from schedules based on set times to general frequency could provide long term benefits.

For our capstone project, we partnered with Metro, the Mobility Innovation Center at UW, and the College of Engineering. The College of Engineering provided us with capstone funding that we used to compensate survey respondents and interview participants. Our goal was to help Metro talk about their upcoming service change on high frequency routes where bus schedules will be based on general frequency instead of set times. Currently, Metro is preparing for a pilot of their service change, so they can test the new schedules.

Due to time and COVID-19, we didn't conduct research on the route where Metro will test their pilot. Instead, we focused on Route 7, a high frequency bus route in South Seattle that goes from Rainier Beach to Downtown Seattle. We decided on Route 7 because it's near where we live, and we didn't feel comfortable working in an unfamiliar part of Seattle. Metro and our stakeholders agreed with our decision because they didn't want us risking our safety. They also mentioned that Route 7 has maintained ridership throughout the pandemic and believe our findings could help them talk about frequency when their pilot goes into effect.

As we conducted research, we learned about Metro's customer base and the steps they take when planning and completing trips. We learned about how Metro plans and builds services; how customers view frequency; and which information systems customers prefer using when taking Metro. We also learned about Metro's vision for mobility. Metro believes that mobility is a right that gives individuals from different backgrounds equal opportunities. The more we learned about Metro and our target audience, we began thinking about where we might focus our final designs. After talking about static information with a subject matter expert at Metro, we decided that we'd focus our designs on signage, specifically bus stop signs and holders.



We took this image from the Seattle Transit Blog and called out which type of signage we're redesigning. We decided on sign type A.1 because these signs and holders are located at most stops. We also believe that this type of static information has the greatest reach among customers. Although we're providing Metro with a list of recommendations about how they should talk about frequency, we believe that creating a redesign of these types of static information will also provide them with a direction regarding how they can communicate the service change visually.

Research questions

Metro's customer base is made up of a large demographic. After reading through Metros' customer satisfaction reports, we thought about how the upcoming service change may initially create distrust among bus riders who rely on set schedules or use technology to check when their buses are coming. Not all riders use technology. Some prefer static information or have their own methods of planning and completing trips. However, we don't know how customers will react to schedules that are based on general frequency. Some may have difficulty agreeing with the service change during the transition period. Our research questions focus on ideas related to possible customer mindsets about frequency and static information at bus stops:

- How might King County Metro help bus riders adopt new mindsets about real-time bus arrivals on high frequency routes?
- What is the impact of static information at bus stops?
- What do bus riders expect from schedules and timetables on high frequency routes?

Methods

Literature Reviews

We looked at reviews about bus stop design, the impact that fare payment has on communities, and rider willingness in regards to taking public transportation. Thinking about mobility, our initial research covered not only industry best practices on transit information and design, but also equity in areas related to Metro's core principles. We collected reviews from the University of Washington Libraries that were written in the past five years, so we could compare transit industry standards before and after COVID-19.

We also looked at articles where local transit experts share ideas about how Metro could improve communication regarding the frequency of bus arrivals. Oran Viriyincy, editor of the Seattle Transit Blog, created a frequent service map that highlights when Metro customers can expect bus and rail service within 15 minutes.

He believes that Metro should print his maps on timetable covers, so they can show customers where high frequency routes besides RapidRide lines are located. He also believes that his design condenses information found in Metro's system maps and makes it more understandable to the average customer.

Field observations

We conducted three field observations on Route 7. We did our observations individually, and each observation lasted 30 minutes. We conducted observations at different times/days of the week and at different bus stops. Note that we did additional observations. After interviewing SMEs at Metro, we decided to observe stops not only on Route 7, but also on routes close to home and school. We thought exploring stops in different areas of Seattle may help us better understand Metro's customer base and what they experience at stops.

On low frequency routes in areas such as Rainier Beach, Columbia City, and Mt. Baker, we found that stops contain basic amenities:

- Bus stop signs
- Benches
- Shelters
- Holders with timetables
- Public waste and recycling cans

On routes close to UW, we found that stops contain basic amenities and other resources such as tech pylons, signs that direct riders to Metro's social media channels, and journey maps that show riders how to plan and complete trips. Tech pylons are tall structures that contain digital readers, so customers know when to expect their next buses. They also contain Orca card readers, so customers can pay for their trips, and large route maps.

Subject Matter Expert Interviews

We interviewed SMEs at Metro who provided us with information about advanced service management, real-time information signs, service information, and transit route facilities. We also met with a retired bus operator who drove

for Metro over the past 36 years. We learned how services are built and deployed; how static information is distributed at bus stops; and how technology is used at stops.

Survey: "Community Feedback Bus #7"

We created a survey using Google Forms that asked respondents qualitative and quantitative questions. Thinking about mobility, we used the word community in the survey's title because we hoped respondents would think of experiences related to their cultural and ethnic backgrounds. We surveyed 100 respondents who take Route 7. Metro shared the survey via Twitter, and we distributed it using other social media channels. We shared the survey on the Facebook group "Southend Neighborhood" and "Seattle Urbanist Memes for Tap on Teens." We also shared the survey on the Reddit community "r/Seattle" and on the website buynothingproject.org.

As previously mentioned, we thought about mobility while creating our survey. While designing survey questions, we hoped to tell a story that creates an inclusive environment for respondents. We asked demographic questions related to age, ethnicity, and gender. We also asked questions related to yearly household income and location.

Before posting our survey online, we asked our sponsors and stakeholders for feedback about the overall effectiveness of our questions. We acknowledged that some respondents may feel uncomfortable answering questions related to age, gender, and income. However, we maintained that our questions give all of our respondents the same opportunity to share their stories when taking Metro.

Participant Interviews

We interviewed six survey respondents. We chose respondents based on their demographics. Before choosing respondents, we hoped to get an equal number of men and women and respondents from different ethnic and economic backgrounds. Our goal was to acknowledge Metro's vision of mobility, so we could include different perspectives about frequency, static information, and our initial design sketches. The table shows participant demographics.

Age	**Gender**	**Ethnicity**	**Income**
24 - 39 yrs.	Male	Black/African American	$75,000 - $99,999
40 -55 yrs.	Female	Asian	$100,000 or more
40 -55 yrs.	Male	White	$100,000 or more
40 -55 yrs.	Female	Black/African American	$75,000 to $99,999
56-74 years	Male	Asian	$25,000 to $49,999
56-74 years	Female	White	Less than $25,000

Participants varied in age from early 20's to early 70's and varied in income from less than $25,000 to more than $100,000. We interviewed three men and women, who represented different ethnicities and economic backgrounds. All participants took Route 7 regularly. Some used it as their primary mode of transportation while others would occasionally take other routes. During our interviews, we asked participants ten questions that filled in gaps from the survey. These questions focused on their ideas about the frequency of bus arrivals and experiences interacting with static information. We recorded interviews over Zoom with participant consent.

Findings

The image provides a glimpse into our findings, which are described in detail below.

Riders talk in frequency terms about Bus #7. **Frequency was thought of as a "range"** of time vs. an exact amount.

Riders are okay with a shift to frequency but most had moments they might **need to know the exact arrival.**

Many **riders use technology to plan their trip,** and in most cases had multiple apps. to double-check bus arrivals. Static info. was used less.

Safety came up in a variety of ways throughout the rider journey. **Riders felt unsafe waiting for the bus** for an undetermined length of time.

Field observations

About the frequency of bus arrivals on Route 7, we noted that northbound buses arrived more often than southbound buses, and customers waited from 15 seconds to 6 minutes before boarding buses. We also noted that fewer buses arrived during the day, and fewer people were waiting at bus stops. However, when we observed someone transferring from Route 7 to Route 50, the wait time was at least 30 minutes. The customer seemed to expect an arrival time as fast as the arrival time for Route 7. Looking at static information, we saw no mention about the frequency of bus arrivals for either route.

We noted that customers hardly interacted with bus stop signs and holders. Customers would glance at signs when they first arrived at stops, possibly to make sure they were at the correct ones. The majority of customers looked at their phones or looked down the road where their buses would be coming. About holders, customers barely noticed them, if at all. One customer stood their bike against the pole where these timetables are located. Based on our observations, customers seemed uninterested in static information, especially the content inside of holders.

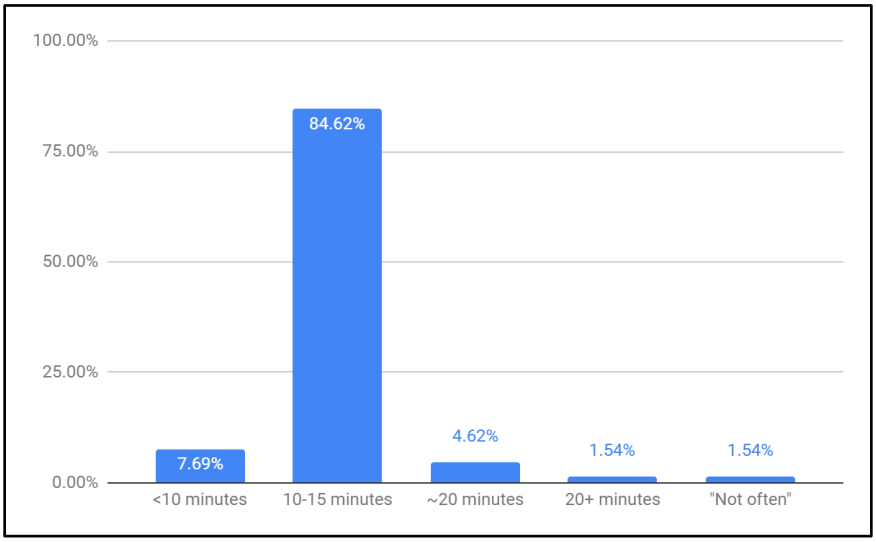
We noticed at a stop near Mt. Baker that people would use the stop for leisure activities, such as eating and sleeping. Some would use it as a location for picking up bus riders just getting off the bus or a place to meet with people. Other stops near resource centers and housing complexes seemed to be a central hub for community activities. We also noticed that a digital display at one stop hadn't been updated since 2019.

Survey: "Community Feedback Bus #7"

The majority of our results focus on three categories: *frequency*, *trip planning tools*, and *rider safety*. We summarize our findings in the sections below. For a link to a complete spreadsheet of our results, see Appendix.

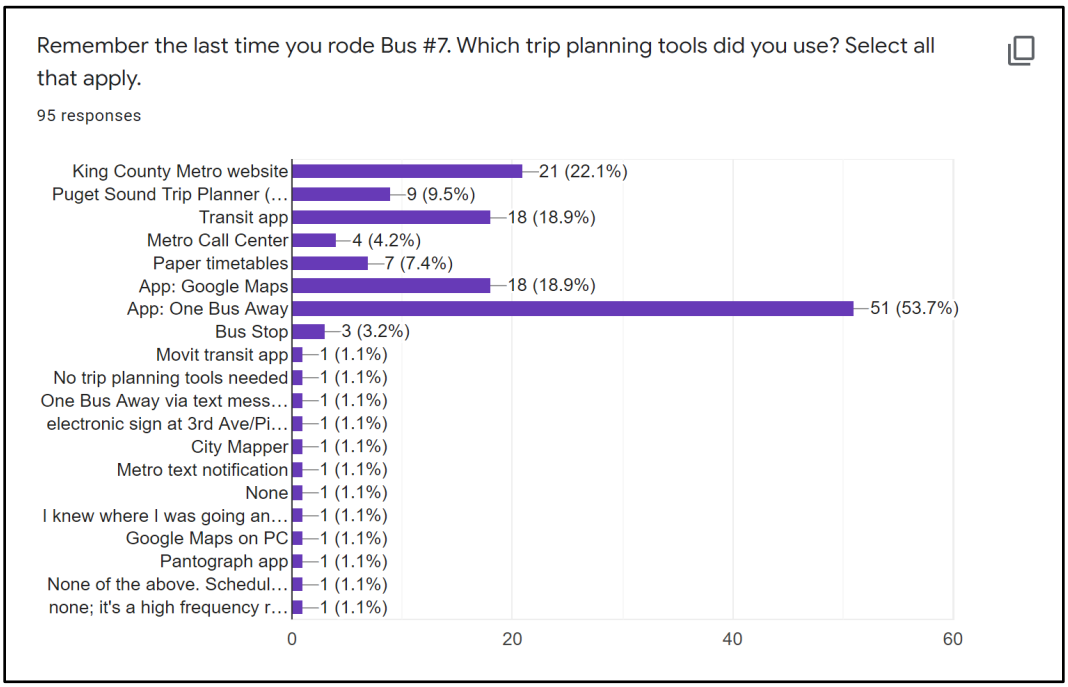
Frequency

We asked respondents how often they think buses on Route 7 arrive. Most said they think buses arrive in less than 15 minutes. The image below visualizes our data encodings.



This finding was inconsistent with our field observations, where we noted that buses arrived in less than 6 minutes. We didn't ask respondents or interview participants what time of day they ride the bus, so we don't know how they manage time. However, we believe this discrepancy is based on an inaccurate perception of time.

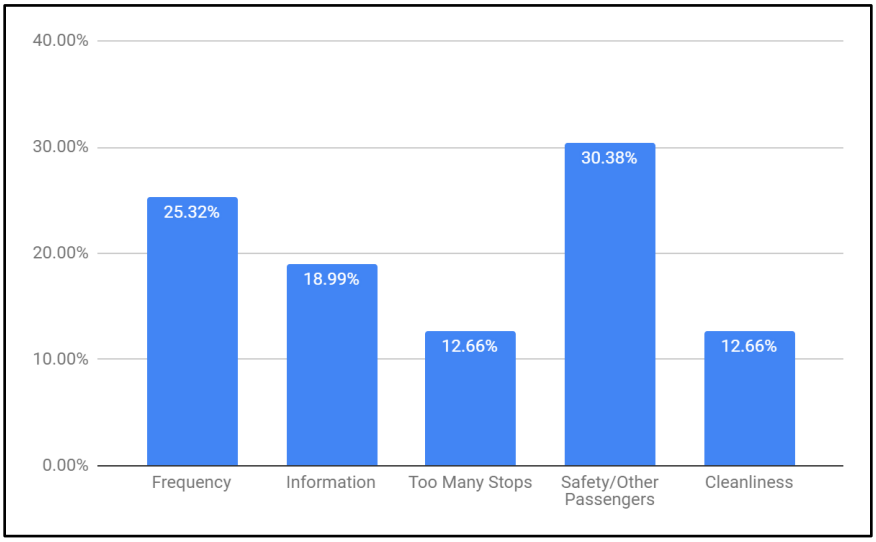
Trip planning tools



Most respondents said they used apps or Metro's website when planning and completing trips instead of using bus stop signs, holders, and paper timetables. This appeared to be consistent with our field observations, as we noted that riders typically looked away from bus stop signs. We noted that most riders looked at their phones or looked down the street where they could see if their buses were coming.

Rider safety

Before ending our survey, we asked participants if they had anything else they'd like to share with us about their experiences on Route 7. Some commented on how Metro needs more buses while others mentioned they think Metro has really nice and polite bus operators. However, most respondents commented on rider safety being one of their primary concerns.



One respondent said, "One always has to be on one's guard." Another said, "There should be more security at bus stops after dark." Even another respondent said, "Rest assured that any conversation amongst riders is lively, replete with hair raising stories and mentions of sheer terror, disgust, and revulsion." We didn't expect these types of responses before publishing our survey. Reading through Metro's customer satisfaction reports, we expected more respondents

addressing issues related to on-time performance. However, as we conducted participant interviews, we learned that rider safety would become a key topic in our research.

Subject Matter Expert Interviews

Our sponsors introduced us to SMEs at Metro, so we could understand how Metro operates on an organizational level. These interviews helped us understand Metro's design space better and which direction we should take when creating our redesign of holders.

Advanced Service Management

During this interview, we talked about scheduling and deployment and how Metro builds and manages services, such as headway and layover management. Headway is the amount of time between buses and stops. The SME mentioned that in 2010 Metro tried implementing a RapidRide service based on general frequency. We learned that Metro rolled back the service due to a miscommunication between timetables and some of their service management tools.

The SME shared a PDF of a timetable from the service. It had been in circulation between 2010-2012. The timetable is for the A Line and contains information about RapidRide and the service's frequency of arrivals. Our SME shared this information with us, so we could get ideas about how we'd like to design our final deliverables. See Ideation for more details. One important takeaway from this meeting is that Route 7 hasn't lost much ridership since COVID-19 because the majority of riders who rely on this route take it to and from work. Compared to other lines, Route 7 is operating at 70% capacity while most are operating at 50% in terms of ridership.

Real Time Information Signs

We talked about technology at RapidRide stops and how Metro will be implementing tech pylons with digital displays. We also talked about accessibility and how some tech pylons contain information systems that serve those who have difficulty hearing and seeing. We learned about real-time information displays that function as digital bus stop signs. These signs can display a range of messages, especially notifications about the frequency of bus arrivals. At the end of this meeting, the SME suggested we think about what types of consistent, static information we could implement at bus stops that complement the technology Metro will be implementing at high frequency stops.

Service Information

We met with another SME to go over static information, such as holders at bus stops. We learned that not all stops get the same information due to ridership, traffic, and budget. Low frequency stops contain holders while high frequency stops get route maps and even digital displays. Thinking about this caveat, we understood how stops in areas such as Rainier Beach would contain less information than stops near UW. One takeaway from this meeting is that Metro's planning department decides what information goes at stops, and that Metro only displays rider alerts at stops with shelters.

This interview helped us decide which information system we'd like to redesign for Metro. Thinking about our meeting with Real Time Information Signs, we chose holders because Metro will need to update them when they test their pilot. These information systems are placed near bus stop signs and where people will notice them as they board the bus. We believe this is a good opportunity for Metro to provide customers with new, consistent, and reliable information about the frequency of arrivals.

Transit Route Facilities

In another interview, we talked about planning and what resources are available at RapidRide stops and legacy bus stops. We learned that RapidRide stops are graded, and stops with higher grades get more technology. One of the main takeaways from this meeting was that accessibility plays a large factor when updating and creating stops, and new stops must meet accessibility requirements. Knowing this helped us understand why some stops in South King County haven't been updated since 2017. Meeting accessibility requirements is costly, and Metro is trying to balance the costs for building new stops while updating older ones. Another takeaway is that Metro takes into consideration surrounding geographical features (businesses, schools, hospitals, etc.) when building stops. These factors help Metro set

expectations about accessibility, ridership, and traffic, so that Transit Route Facilities knows how to distribute resources at stops.

Retired KC Metro bus operator

We met with a retired bus operator over Zoom. One of our teammates is his neighbor. He worked with Metro for over 36 years and drove numerous routes across Seattle. We learned that bus riders typically asked him questions about how to get from A to B or how to complete transfers. He said that the information on bus stop signs would sometimes confuse riders, and that they'd ask him if they were on the correct route. He admitted that he didn't always know how to help them get back on track, especially when talking with riders who didn't speak English, so he'd ask other riders to help him answer their questions. Thinking about some of his experiences, we decided that we'd use our findings to create a redesign of a bus stop sign that could be placed at legacy bus stops alongside our holder mockup.

Participant interviews

Frequency

The majority of participants said they're happy with the frequency of arrivals on Route 7. One participant said that he'd like to see more buses when heading towards Downtown Seattle, but that's so he can sit down on his way to work. Interestingly, participants seemed more concerned about rider safety. One participant said that she's afraid of taking buses at night because her stop is 2 blocks away from work, and she typically waits at that stop by herself. She also noted that she sometimes encounters people at her stop drinking or people trying to hit on her. Another participant said that, despite never having a bad encounter on Route 7, he's aware of the route's reputation. These findings are consistent with many of the experiences respondents shared in our survey. Thinking about rider safety on Route 7, we believe that Metro may consider increasing the frequency of arrivals for buses heading towards Rainier Beach after 10 PM or keeping high frequency services such as Route 7 on a set schedule from 10 PM to 4 AM. We explain this idea more clearly in Recommendations.

Static information

We asked participants how they interact with bus stop signs, paper timetables, and holders. About bus stop signs, all of our participants said they only look at them to make sure they're at the correct stops, or that they don't look at them at all. Regarding paper timetables, all of our participants said they used to look at them when they first started taking Metro, but now they use trip planning apps or their smartphones to take pictures of the route maps inside of timetables. The general consensus about timetables was they're obsolete compared to apps and typically not accurate. One of our participants suggested they might be better for older riders who don't use smartphones. About holders, participants said they're unreliable and difficult to read. The general consensus about holders is they too are obsolete.

Design

Design Principles

Below are four design principles that condense all of our findings. We created these principles for ourselves to guide us through the ideation phase of our design process. Note that we believe Metro could apply these principles more broadly in static visual communication.

1. **Make static information concise and easy to understand.** Survey respondents and interview participants don't like reading timetables and looking through entire route maps for specific information. They'd like information at bus stops to be simple and easy to scan.

2. **Make static information more noticeable.** Respondents and participants are mostly unaware of holders. Besides making static information easy to understand, make it easier for customers to find.

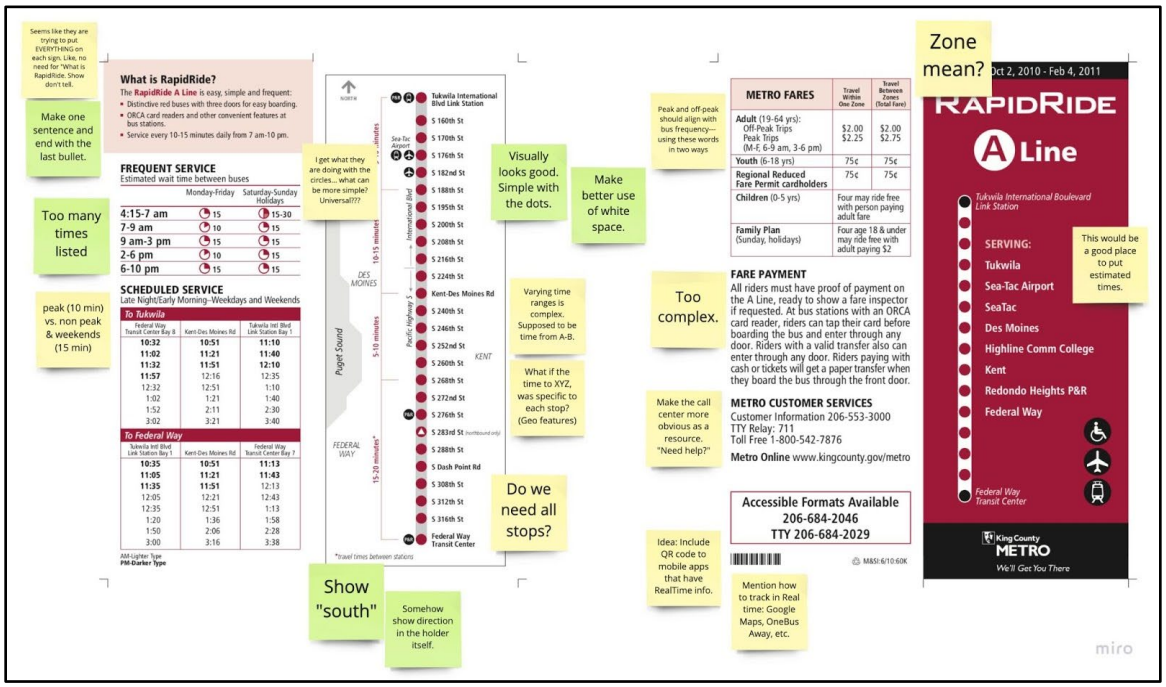
3. **Make static information more accessible.** Solving problems for people with disabilities will make information easier for everyone to engage with and will help us move our final designs closer to Metro's vision of mobility.

4. **Weave information about rider safety into final designs.** Rider safety was an important topic among survey respondents and interview participants. Incorporate related information about this issue wherever possible throughout final deliverables.

Our literature reviews contained information about color theory and universal design. One of our interview participants also mentioned color theory while talking about Metro's bus stop signs. As we solidified our final designs, we decided not to use color or focus heavily on universal design techniques. We decided to focus on content and wording about bus arrivals, as our main goal was to provide Metro with a list of recommendations regarding how they should talk about frequency.

Ideation

Using our design principles, we brainstormed how to redesign bus stop signs and holders, so we could visualize how Metro should talk about frequency when they test their pilot.

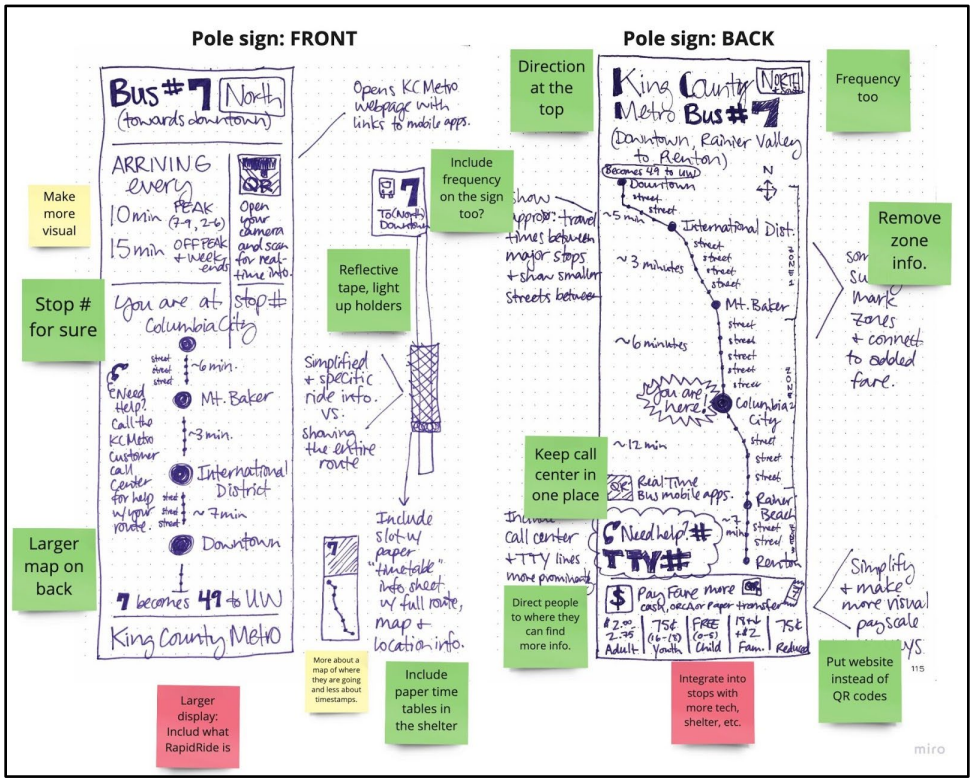


Using Miro, a browser-based collaboration tool, we placed virtual sticky notes on the timetable our SME shared with us. Our notes contained thoughts on how Metro could improve their wording about frequency. We then grouped our notes into different categories, which helped us decide where to go with our sketches and final designs.

Sketches

Before creating sketches, we did some research on bus stop signs and holders. Earlier in the paper, we mentioned that we found an image on the Seattle Transit Blog showing all of the different types of signs and holders Metro has implemented at bus stops. We chose to redesign sign type A.1 mainly because our project wasn't focused on designing

for multiple routes. However, if we had more time to conduct research, creating signs and holders for bus stops that get more traffic would have provided us opportunities to explore designs covering detailed route maps.



As you look at our sketches, you'll see that we created them using pen and paper, and that we attempted to make them as simple as possible.

Rider Feedback & Evaluation

We showed interview participants images of our bus stop sign and holder and asked them to think aloud as they looked at our designs. If participants got quiet, we asked them if they had any questions. During those interviews, participants mentioned they liked how we used directionals on the bus stop sign and holder and how we communicated frequency. Talking with these participants, we learned that customers will spend time looking at bus stop signs if they don't know whether they're at the correct stop or heading in the right direction. We also learned this sometimes creates feelings of anxiety in customers. Due to time, we divided our interviews in 2 parts, one for initial designs and one for prototypes. All of our participants offered suggestions for how we could improve our designs, and both parts helped us solidify our final designs. For images of our final designs, see Appendix.

Key recommendations

Our primary goal was to provide Metro with a list of recommendations that detail how they should talk about frequency during their upcoming pilot. Below are five recommendations that condense all of the findings from our research. We believe that Metro should follow these recommendations when they talk about frequency. We also included a list of "other recommendations" that Metro may consider following. All of our recommendations reflect the ideas from our project, SMEs, survey respondents, and participants.

1. Prioritize communication about real-time tracking information.

Customers like knowing where their buses are, even on high frequency routes.

2. Prioritize static, visual cues at bus stops, so bus riders know they're on the correct routes.

For example, including directional markers (north, south, east, and west) on bus stop signs may reduce anxiety among new customers who aren't sure if they're at the correct stops or heading in the right direction.

3. Conduct more research on rider safety.

At night, customers don't like waiting at stops, especially if they don't know when their buses are coming.

4. Increase the number of buses heading southbound after 10 PM, or introduce a hybrid service where buses run on set schedules or arrive at specific times from 10 PM to 4 AM.

5. Communicate the frequency of bus arrivals consistently across static and digital information systems.

For example, under promise and over deliver. If the frequency of arrivals is between 10-15 minutes during peak hours and 15-20 minutes during regular hours, communicate arrival times as "at least every 15 minutes."

Other recommendations

1. Consider making bus stop sign colors more vibrant.

One participant mentioned that Metro's signs are "drab" and hard to see in Seattle's gloomy weather.

2. Consider placing holders at or near eye level.

A participant who is legally blind (but can still see) mentioned that this would help her and other people who have difficulty seeing notice these resources.

3. On holders, include QR codes that direct customers to real-time information about bus arrivals.

4. Simplify paper timetables.

All of our participants said these resources aren't environmentally friendly and are typically misused. However, the majority of our participants also said one reason for taking these resources is that they contain maps of routes, which can be useful for new riders. We recommend designing these timetables to be more map focused with well-articulated information about frequency and Metro's service change.

5. Include community landmarks in route maps.

After talking with a couple of SMEs and participants, we believe that it may be more inclusive if route maps showed places that are more familiar with customers.

6. Include solar powered lights at stops without shelters.

About rider safety, one participant mentioned feeling afraid of waiting at stops by themselves at night and worried that nobody would notice them if they were in trouble.

7. Include real-time information displays, such as CP-13s, at stops where doing so is economically feasible.

These displays may alleviate anxiety among some customers who feel they need real-time information about when their buses are coming, but can't access it, either because they don't have a smartphone or aren't technologically savvy.

Discussion

We focused on static information and how Metro should talk about frequency when they test their service change. However, we learned that customers think a lot about safety while on Route 7. Going forward, we believe that Metro should do more research on rider safety and how it'll impact frequency. For example, if Metro discovers that rider safety is an issue on some high frequency routes, how would they solve the problem there? Would they increase the frequency of arrivals after 10 PM? Or would they implement a hybrid service, where fewer buses come at night and only at specific times?

If the test goes well and Metro implements their service change, we also recommend they do research on how it'll impact digital information systems, such as trip planning apps. From our findings, customers prefer using trip planning apps due to a lack of trust in static information. Some believe that timetables and holders are never accurate regarding arrival times. However, if static information contained reasonable expectations about the frequency of arrivals, and Metro met those expectations, would customers still prefer using those apps? Would trip planning apps be as popular?

We note in our findings that we didn't ask survey respondents or interview participants questions about how they manage time when waiting for their buses. Had we asked these questions, we might have better understood how they interpret frequency on Route 7. After coding our survey, we realized that respondents think the frequency of arrivals is less than 15 minutes. We noted the frequency of arrivals is less than 6 minutes. We believe this discrepancy is based on expectations about when buses should arrive instead of when they actually arrived last.

We note in our design section that we chose not to include color or focus heavily on universal design techniques while creating our final designs. We did think about how Metro might like to update the color of their signs. However, we remembered from one of our SME interviews that Metro hasn't updated all of their bus stop signs since the last time they changed their colors. We also remember that Metro's main focus right now when updating bus stops is making sure they meet ADA requirements. However, we do suggest that Metro consider updating all of their bus stops signs to the current design.

As we completed our project, we shared our findings, recommendations, and final prototypes with our sponsors. One of our sponsors mentioned that he expected something different regarding our final prototypes, specifically our holder. Note that our sponsor was in no way diminishing the quality of our work or implying that we shouldn't have redesigned holders. His expectations were that we'd design an artifact that could be placed on bus stop poles or at bus stops with shelters and would symbolize Metro's service change. This type of artifact would convey meaning with less or without words. We appreciated his feedback, as it represents the type of feedback we'll receive in industry. However, we should note that feedback is critical to producing quality work. We encourage Metro to think of our final prototypes as a jumping off point for how they talk about frequency when they test the service change.

References

- Link to complete list of references

Appendix

The following sections include links to our final designs, images that we took throughout capstone, notes taken during our in-depth participant interviews, survey results. However, the following link directs you to a raw data folder that contains these folders.

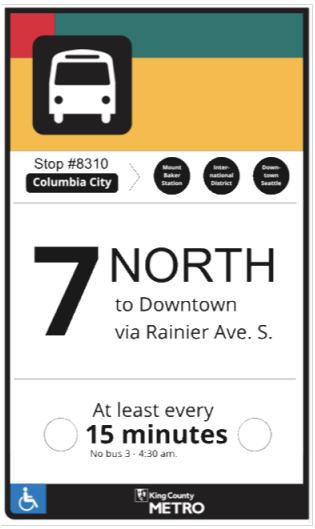
- Link to raw data folder

Final Designs

Our final designs include a redesign of a legacy bus stop sign and holder. They're meant to be supplemental to our research and list of recommendations. We believe Metro may wish to use them as they think about how to talk about frequency when they test their service change.

Bus Stop Sign

- Link to final prototype of bus stop sign

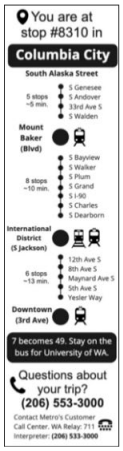


Holder

Due to the length of our holder, we divided the image in three parts: Top, Middle, and Bottom.

- Link to final prototype of holder

Top



Middle

Bottom

Images

We took a number of pictures throughout capstone. The following link directs you to a folder that contains those pictures.

- Link to images

Participant Interviews

We took a lot of notes during our participant interviews. The following link directs you to a folder that contains those notes. Out of respect for the privacy of our participants, we kept their names anonymous.

- Link to folder with participant notes

Survey Results

We'd like to be transparent about our survey questions and results. The following link directs you to a folder that contains these resources.

- Link to survey folder

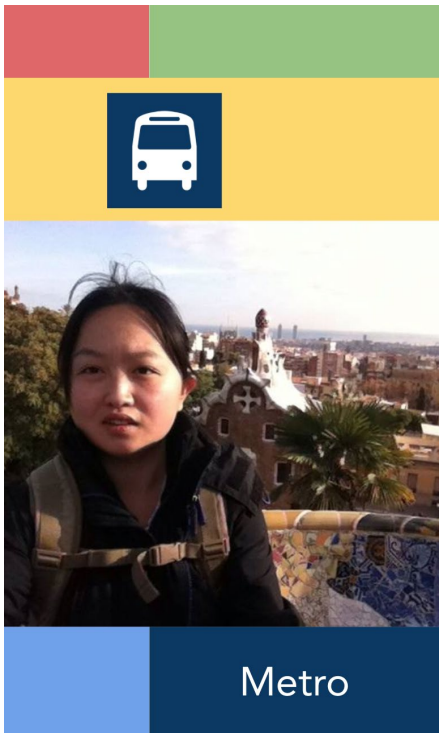
Team

COLLEEN MCDEVITT

Colleen works for King County Public Health as an Employee and Labor Relations Representative. She applies Human Centered Design practices within team interventions and in training healthy conflict engagement for people leaders.

She has her Bachelors of Journalism from the University of Missouri where she focused on photojournalism. Storytelling and getting curious about the lived-experience of the community around her is central to her interests.

DIANA TAN



Diana Tan manages the e-bikes and micromobility delivery expansion at Amazon. Prior to her current role, she was the Global Launch Manager for Microsoft Surface Worldwide.

She has an MBA from the University of Chicago Booth School of Business in Finance and Economics. Her interests include biking around the world and building innovative startups that solve user pain points.

DANIEL TAFOYA

Daniel is a technical writer creating developer documentation at Amazon Web Services.

He graduated with a BA in English with a concentration in technical writing from San Jose State University. In a previous life, he was a gardening instructor at a chain of nurseries in Southern California.

His interests include writing, breaking technical concepts into actionable steps, gardening, and skateboarding.