# Second Class Commuters



**Alert-A-Ride**

Real-time updates on your
Access-A-Ride status

Log-In

Create Account

Alert-A-Ride

Meghan Lazier

# Introduction

Over the last year, I have become an expert on how disabled New Yorkers commute throughout the five boroughs.

## In a city of over eight million people, 800,000 New Yorkers are disabled.

Because of a 100 year-old legacy and costly infrastructure upgrades, many disabled people cannot use the same public transportation system that others rely on.

Instead, many disabled commuters use paratransit. Paratransit is door-to-door public transportation for people with disabilities. Across the US, any city that has public transportation must also offer paratransit services. The 1990 Americans with Disabilities Act mandates it. In New York City, the paratransit program is called Access-A-Ride, and over 136,820 people use the program. According to data from the MTA, there are an average of 44,590 new applications received monthly to enroll in the service [1]. There is a huge demand and need for paratransit.

Access-A-Ride, a service that was designed to help disabled people live independently, has ultimately taken away riders' independence by poorly communicating ride updates and vehicle status.

The service is chronically late, and at its worst, abandons riders unintentionally.

Access-A-Ride has only one platform for reaching users about ride updates – a call center.

I have created a prototype, Alert-A-Ride, a mobile app that alerts riders with smart phone access to real-time data about their Access-A-Ride status in order to regain control over their day and manage their commutes. The aim of my project was to better assist Access-A-Ride in communicating with its riders using existing technologies.

I have pitched Alert-A-Ride to the MTA with the support of New York City Councilman Corey Johnson and am planning on meeting with the MTA's contracted technology providers to share my ideas. I have also been asked to present my ideas to other cities with paratransit systems. In many ways, my work feels like it is just beginning.

# Process



**The nature of using design as a process to solve for a need is not itself linear. In explaining my process, I have tried to reflect the nuances of using human-centered and systems design.**

### Identifying Users
*The process of connecting with stakeholders*

Learning the basics of the Access-A-Ride system took longer than expected, and a great deal of my process was figuring out the system's ins and outs with the help of passengers. I first learned about paratransit through a volunteer at the non-profit I worked for, Vicki, an 80-year-old grandmother living alone in Brooklyn Heights. She quickly connected me to her friends who were paratransit riders. However, most of her friends were in very similar life stages and situations to Vicki, and I wanted to speak with other types of paratransit riders. I couldn't help but wonder how a younger rider would get to work or school on time using Access-A-Ride.

In order to meet more riders, I started attending Disabled in Action New York chapter meetings. Through these events, I connected with a variety of users with broad ranging life experiences. At a meeting, I met Dustin, an active 26-year-old living with his family in Hollis, Queens. When he said he'd like to talk to me more about his experiences on Access-A-Ride, I was thrilled.

### Contextual Inquiry
*Conducting interviews within context*

Interviewing and riding along with both Vicki and Dustin was critical to becoming acquainted with the experience of using Access-A-Ride. It quickly became clear that the problems with Access-A-Ride are universal – age or experience with the service doesn't change the core issues. I have highlighted some direct quotes from my conversations with Dustin over the past year:

"The way it works is that we call them [Access-A-Ride], we let them know where we want to go, what time we want to go and it's a lottery system. So depending on where we are going and where that company falls in that lottery, that's how we get attached to that carrier."

"We have to make our trips 24 to 48 hours in advance. And even with that much notice, they still want 30 minutes grace period on the day of your travel, and we only get five [minutes to get out of a building and board the Access-A-Ride vehicle]. I don't think that's fair at all. They need to change that."

"Let's say if you are waiting for the bus and the M101 says that it's coming at 9:17 in the morning, **you expect that bus to come at 9:17 in the morning**, and it should not have a 30 minute grace period [to be considered on time] because people would not sit there and accept that."
— Dustin Jones

## Contextual Inquiry
*Conducting interviews within context*

I also learned about issues with paratransit from ride alongs with Vicki. As we waited in Vicki's apartment for our scheduled Access-A-Ride, her home phone rang. Vicki asked me to answer. "It's probably Access-A-Ride calling to confirm," she said. When I picked-up, an automated voice first stated Vicki's user ID (it never called her by name) stated the vehicle number and let her know that it would arrive in approximately 13 minutes. I looked at my watch – just 3 minutes after our scheduled pick-up time at 10:00 am.

Vicki and I had decided to head to Coney Island for a hot dog at Nathan's. Although I had asked Vicki to go to a doctor's appointment with her, she insisted we do something fun. So off we went. We took the elevator down from Vicki's apartment where the Access-A-Ride van was waiting. Vicki had run into a neighbor who had just returned from Sweden in the entrance of her apartment. The driver said, "Don't worry, I'm not in a rush," and Vicki had a short conversation.

The driver asked Vicki if she needed any help getting on the bus and then secured her small shopping cart, which also doubled as her walker for our trip. As we buckled up and started our ride, our driver said that he was taking us straight to our destination – there were no other pick-ups scheduled.

Aside from the impersonal phone call, things were going quite smoothly – until they weren't. "You said you were going to Coney Island, right?" our driver asked. "Because my GPS says we're only 11 blocks away from our destination, and we're nowhere near Coney Island." I asked what address he had in his system. It was an incorrect address on First Avenue not Surf Avenue, where we had intended to go. He called the dispatcher and reported that he had the incorrect address listed. Even though Vicki and I had the correct address, the dispatcher said that we had two options – to either be dropped off at the incorrect address or back at Vicki's apartment.

The address information could have been incorrectly transcribed at various parts of the booking process. The day before our planned outing, I called Vicki and gave her the address and cross streets for Nathan's since it was easier for me to look up this information on my phone than having Vicki call Nathan's. Vicki then called and gave the Access-A-Ride scheduler her pick-up address, pick-up time, our destination's address and cross streets, our destination pick-up time and our final drop off address and cross streets. The wrong address was incorrectly entered into the dispatcher's GPS system – and we were stuck. Vicki and I decide that we would forget our trip to Coney Island and instead have lunch at Junior's in Brooklyn.

Vicki asked our driver if he could drop us off at Junior's, and after checking where his next pick-up was located and asking us not talk about it, an action that could cost him his job, he agreed. Vicki and I got curbside service to Junior's.

Vicki and I ended up having a long lunch at Junior's and we were lucky enough not to have to watch the clock for our pick-up and ate at our leisure. Vicki took a cab home, but insisted that she go by herself. I got on the subway and took some time on the ride home to process our experience.

I couldn't help but think back on my earlier interview with Vicki – about how many of her friends don't understand why she is constantly late for their planned social outings.

Vicki had told me about an incident where she had planned to meet a friend at a concert. A re-route caused Vicki to have to go to Far Rockaway before ending up at the Shomberg Center.

When Vicki eventually arrived late her friend, "got so upset which I couldn't understand. I said, 'It wasn't my fault. They took me to far Rockaway.' But she was so upset because she really thought I had planned it to be late, and I didn't plan it. At least I learned that with her I'll just be able to say 'Look, if I'm not there please go ahead.'"

"Unfortunately, I do a lot of things alone because even though many friends will say 'Oh no, don't worry about it. I'll walk with you,' they're still walking ahead…a block ahead of me, and that's no fun. I mean if I'm going to the theatre, most of the time I'll say, 'I'll meet you at theatre,' you know and we can chat and talk, and then when it's ready for me to go home, I'll you know take a taxi or Access-a-ride, whatever."

She says, "I don't mind my own company. Like maybe before I always, you know, calling somebody – 'What are you doing?' 'You going shopping? Can I go with you? Are you going to take…?' If they have a car – 'You're gonna go here…there?' Now, I don't seem to do that as much, and I think partly it is because of my handicap. It seems like I do many things alone. Years before I could call a friend: 'Hey, you wanna go here…you wanna go?' but it's not like that anymore."

## System and Landscape Mapping
*Plotting systems and stakeholders*

Through the process of spending time with users, interviewing them about their experiences and joining them for rides, I started to understand the larger system that makes Access-A-Ride work. I was also able to read and analyze letters and documents that spoke to personal accounts of frustrations with the system, written by riders to try and make sense of their frustration of dealing with Access-A-Ride.

I also interviewed experts, including a data scientist employed by the MTA, who was finally able to tell me what group within the MTA operated paratransit, and a designer who had done work with the Taxi and Limousine Commission. Because I conducted these interviews quite early in my process, they were not as useful as working directly with riders. However, I was able to better understand the politics and organization of the MTA through my interviews.

## Creating Personas
*Understanding psychographics*

Understanding and articulating the tension between users' frustrations with Access-A-Ride and their unwillingness to complain or protest publically about the service was a key insight about power and the importance of beliefs. When I brought up this tension during my thesis presentation first semester, I was encouraged me to try to organize disabled communities around their frustrations with Access-A-Ride. However, I knew this was not the right approach.

One rider, Jessica, shared with me that she had frustrations with the system, but said that it was better than the alternative of her parents having to driver her everywhere, which would result in her relying on their schedules and taking away some of the privacy she desired. She didn't want to complain about the system because she was afraid it would cause the service to disbanded.

Many riders, although frustrated with the service, had an irrational fear that complaining would build a case for the city to defund Access-A-Ride. For most riders, an alternative private car service or taxi, would not allow them the same freedom due to the high costs, so they do not want to take on the issue of Access-A-Ride.

Dustin holds prominent positions in disability activist groups and was often invited to ribbon cutting ceremonies or to give comments on new built environment projects from local politicians. This involvement made Dustin cautious about speaking up, as being involved in the community, giving feedback on projects and being able to give a voice to his mobility issues gave him a huge sense of purpose, especially since he was not working during this time.

## Historical and Legal Research
*Integrating context*

Traditional research methods also helped give me context. Understanding disabled rights through a historical perspective has been critical to my project. Learning that the Americans With Disabilities Act was passed largely through lawsuits and staging sit-ins, mirrored how the activists I spoke with at Disabled In Action were approaching current disabled rights issues in New York, through lawsuits and not creative or technological solutions. Knowing the historical underpinnings of the movement helped me identify ongoing trends and pain points in my current research.

Through my work with disabled groups, I found that Access-A-Ride was not a focus of their work. Groups were looking to ensure more accessible taxis hit the streets, and assumed that this system would someday replace Access-A-Ride, with rides being subsidized for Access-A-Ride users. Their activism activities were also focused on filing lawsuits. I did not see any evidence of disabled groups trying to use design or technology to further advocate for their needs.

I realized **I was in a position to advocate** for the system in a way that those involved in it could not. **I had an advantage being an outsider** and advocating on behalf of others.

## Synthesizing Research
*Translating data into unmet needs*

The gap between research and synthesis is always somewhat blurred. Synthesis of ideas occurred throughout the research process as I learned more about my topic and my riders. Certain methods, like creating persona maps and going through interview notes were easy to do early in the process. Other tools, like creating an experience map of the process of signing-up for and riding Access-A-Ride and creating a landscape map of other organizations working on the same topic were much more in-depth and came later. I found it helpful to have a variety of tools at my disposal to help me synthesize depending on where I was in the process.

I was also advised to make a list of unmet needs throughout my synthesis process, with the understanding that they would somewhat change over time.

### Unmet Needs — June 2014

• Simplify the application process. There are multiple issues with timing, trust and the amount of work required to apply to Access-A-Ride. This process could be totally redesigned to incorporate all users (including riders, doctors and government) needs and perspectives.

• Create a personalized system. Access-A-Ride is a huge program – and riders feel this complexity in their day-to-day experience. Creating a personalized experience – that allows for flexibility and real needs to be met (including bathroom breaks and the possibility to buy food) could go a long way in customer satisfaction.

• Reduce wait time and abandonment. I am disgusted by the horror stories I have heard from Access-A-Riders about being abandoned and stranded. There are many approaches solving this need – from creating clearly marked pick-up spaces to creating spaces for users to use wait time productively.

• Reduce the knowledge gap for new Access-A-Riders. There is a huge learning curve when it comes to riding Access-A-Ride.

### Unmet Needs — September 2014

• Policy makers are unaware of the day-to-day difficulties that riders face and the improvements that could be made to the system.

• New riders do not receive a proper orientation in order to use Access-A-Ride successfully.

• Access-A-Ride drivers lack the authority to make common sense decisions when problems arise in route.

• Elderly patrons of Access-A-Ride lack the technological familiarity that is needed to ensure correct scheduling.

• Due to technology constraints, drivers have difficultly spotting passengers waiting for pickup and are often unable to communicate with passengers who do not use cell phones.

• Riders incur hours of wasted wait time that is currently unproductive and results in frustration.

• Handicapped advocates in NYC mainly use lawsuits or group protests to garner attention, but do not have tools at their disposal to advocate in other ways.

## Ideation
*Exploring potential solutions*

Early attempts at exploring the possibility of how to transform wait time were wildly creative. I found myself attaching other problems that disabled people face, specifically high rates of unemployment and reliance on a fixed income, into my project. After multiple conversations and presenting my idea, it became clear that adding in another layer of complexity, especially one that I had not explored in my research, was complicating a very clear problem and solution. Access-A-Riders accumulated a huge amount of wasted time as a result of not knowing when their ride would arrive, and they needed other options to know their ride status in real-time in order to take back control of their lives.

Finally, it's worth mentioning that there is currently a big push from Disabled in Action and other disability advocates to increase the number of accessible cabs. Dustin doesn't think that accessible cabs are a realistic solution for more Access-A-Riders. Here's why: "Access-A-Ride is $2.50, doesn't matter where you are going, it doesn't matter what time of the day or the night. From what I was told, when you ride an accessible taxi, and I have rode one, you have to pay the meter fare. And a lot of people with disabilities are on a fixed income and they cannot afford that. So why would you push something if it's not going to be helpful?"

## Additional Research
*Wearable and appropriate technologies*

I also had to incorporate new research to support my ideation. Appropriate technology is an important element of my thesis. I had to look back at my notes and ask more questions about what technology existed on every Access-A-Ride vehicle and how ride information was coordinated, which hadn't come up in previous research exercises. I learned that every Access-A-Ride vehicle is equipped with GPS and that all ride and rider data is stored in one central database owned by the MTA.
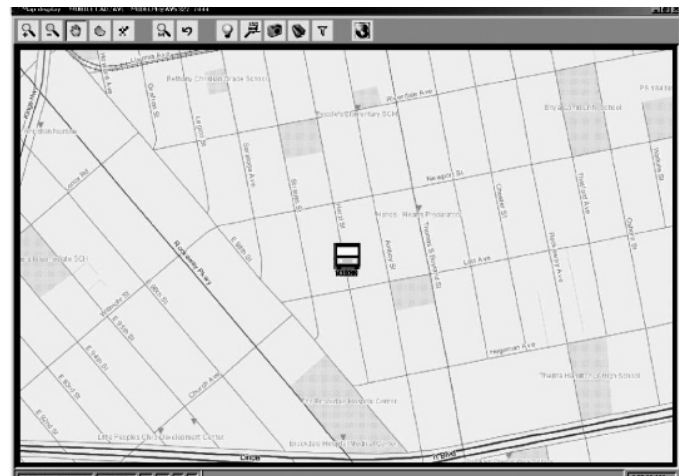


*AVLM GPS monitor*

I started to explore the option of wearables for elderly riders who did not have cell phones, but was ultimately discouraged from prototyping in this area. The concern was that scaling this intervention would be cost prohibitive. This was practical advice considering the thesis timeline and the possibility planning for actual implementation.

*Image source: http://web.mta.info/nyct/paratran/images/onthemove1_08.jpg*

## Prototyping and Collaboration
*Wearable and appropriate technologies*

Once I finished research in support of my prototype, I tried to better understand how I could test the technology around the prototype. Originally, I envisioned purchasing a GPS device and using it, either through the help of an Access-A-Ride driver or through riders sharing information using multiple devices. I did an analysis of pros and cons for different off the shelf GPS devices and selected a device that I could ask an Access-A-Ride driver to easily use that wouldn't be distracting.

In order to test the GPS device, I decided to ask Access-A-Ride carriers to allow my GPS device in their vehicles. I found a list of over 90 Access-A-Ride carriers and spent time finding their most up-to-date contact information. One of the carriers, Right Ride/MTM, agreed to meet with me and I pitched my idea. They said they would be unable to test the device with an Access-A-Ride vehicle without the permission of the MTA. However, they would be willing to let me work with a similar ride system that wasn't funded by the MTA, but had similar passenger demographics and door-to-door transport services. We shook hands and agreed to work together. Unfortunately, I received a letter from them a week later saying they would be unable to help me prototype because they had concerns about staff time needed to set-up the project. I had to rethink my prototype. I knew the GPS technology would work for my idea, since this technology already exists for other purposes, and instead started working on an interface design.

Since working with a carrier fell through, I decided to try and find technologists to help me program my interface. I advertised for help on Craigslist and at General Assembly. I also went to the Code Across NYC Hackathon, held at Civic Hall, a new co-working space for civic tech projects. My thesis topic didn't completely fit into the parameters of the challenge,

using existing public data to create new tools or maps that further understanding and use of the data. Since Access-A-Ride data isn't public, so I decided to pitch an unconference session to see if any other attendees were interested in the topic. Other attendees showed up, but unfortunately none of the interested people were technologists who could add to the project over the course of the hackathon.

## Application of Design Principles

When I felt that I could make a strong argument for making an app for Access-A-Ride, I spoke to a programmer to better understand the time and costs associated with a build, and to make sure I was working on an appropriate platform. I chose to build a tool for the disabled on a mobile platform because historically the disabled were early adaptors of cell phone technology, and according to the Pew Center for Research over 77% of Americans 65 and older own a cell phone.

I started to build my app, Alert-A-Ride, based on my learnings from research. The goal of my thesis was to help Access-A-Riders regain independence and control over their day by having more information about their ride status in real time. Each feature on the Alert-A-Ride app was created to alleviate a specific pain point in an Access-A-Rider's commute.

# Application of Design Principles

## User Experience

## Pain Point
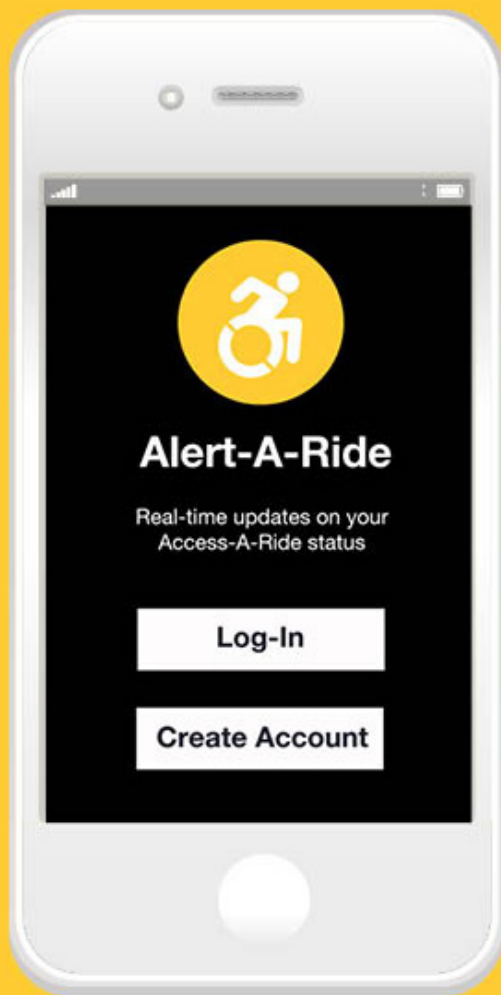
"Being a passenger, we are just a number. They don't ask you your name when you call to make a reservation. The first thing they ask you is, 'What's your ID number.' So it's almost like you are in a sci-fi movie and you are just a number to them. So, whatever digits they assign you, that's who you are. It is very impersonal."

The system isn't personalized, and riders feel like a number.

"They need to do much better with the scheduling. I mean, I've got picked up at school in Long Island City and the driver tells me that we have to be in downtown Brooklyn in two minutes and when you look at the manifest, it says it, you have to be there in two minutes."

Riders do not have on-demand information about ride status.

"I think that we deserve more time than five minutes to come out. Some people can't help it, some people walk slower naturally. If you live upstairs on the 10th floor and you have to wait for an elevator to then come back downstairs, you might miss your bus, and I've seen that happen to a friend of mine. So give us more time as far as getting to the bus, that would also help a lot."

Riders only have five minutes to board a vehicle.

"I've had to sit there and tell them that I have to be at school at 7:30 when in reality I have to be there at 9. Or if I have appointments that are really important, I got to always give them an hour, two hours in advance and sit around because you just can't trust them, and they need to do better with that because nobody else has that issue."

No past data to use to plan future rides.

# Feature

When logging into the app, a rider never needs to punch in a number. Instead, she can use her personal e-mail address and cell phone.

After logging-in to Alert-A-Ride, a rider can see his upcoming ride. He has an immediate sense of how far away his ride is. If he wants more information, he can simply tap the Access-A-Ride icon. He'll know if his ride is going to be on time, and if not, when it's expected to arrive. The address or cross streets of the current location of the Access-A-Ride vehicle will also appear.

The alert preferences allows a rider to set how far in advance she wants to be notified about her vehicle arrival. If she needs more time to catch her ride, she can set a five mile radius alert. If she needs less time, she can set a one mile alert.

Access to trip history can allow riders to book and plan future rides more seamlessly. They can look at how long their past rides have taken to better plan how long to allow for their ride. If they need to look up an address they've been to recently, it's already logged for them. They can simply copy and paste their trip history and book their next ride online from the app.

# Application of Design Principles

## User Experience

"My worst experience in Access-A-Ride was having a carrier pick me up, Carrier Ride, I was supposed to be picked up at my doctor's office and the driver never showed up until three hours later. And when I got on the bus, the driver told me that, originally, he was supposed to be on time for me. He had a wheelchair that was oversized, and I wasn't able to fit my chair on the bus. He told his supervisor that I could not fit, to send me another bus. He then went to Queens, dropped off four passengers and found out I was still on his list. Called up his dispatcher to find out that the supervisor he had spoken to went home and never told anybody about my situation."

"Riding around with Access-A-Ride is really difficult because you never really know what time you are going to get there. So, what they do is when you call in, you tell them what time you have to be there. They call that the appointment time. Unfortunately, with that appointment time, that does not guarantee you to be there at that appointment time. That just says that we will try to make it there. I think that's unacceptable."

## Pain Point

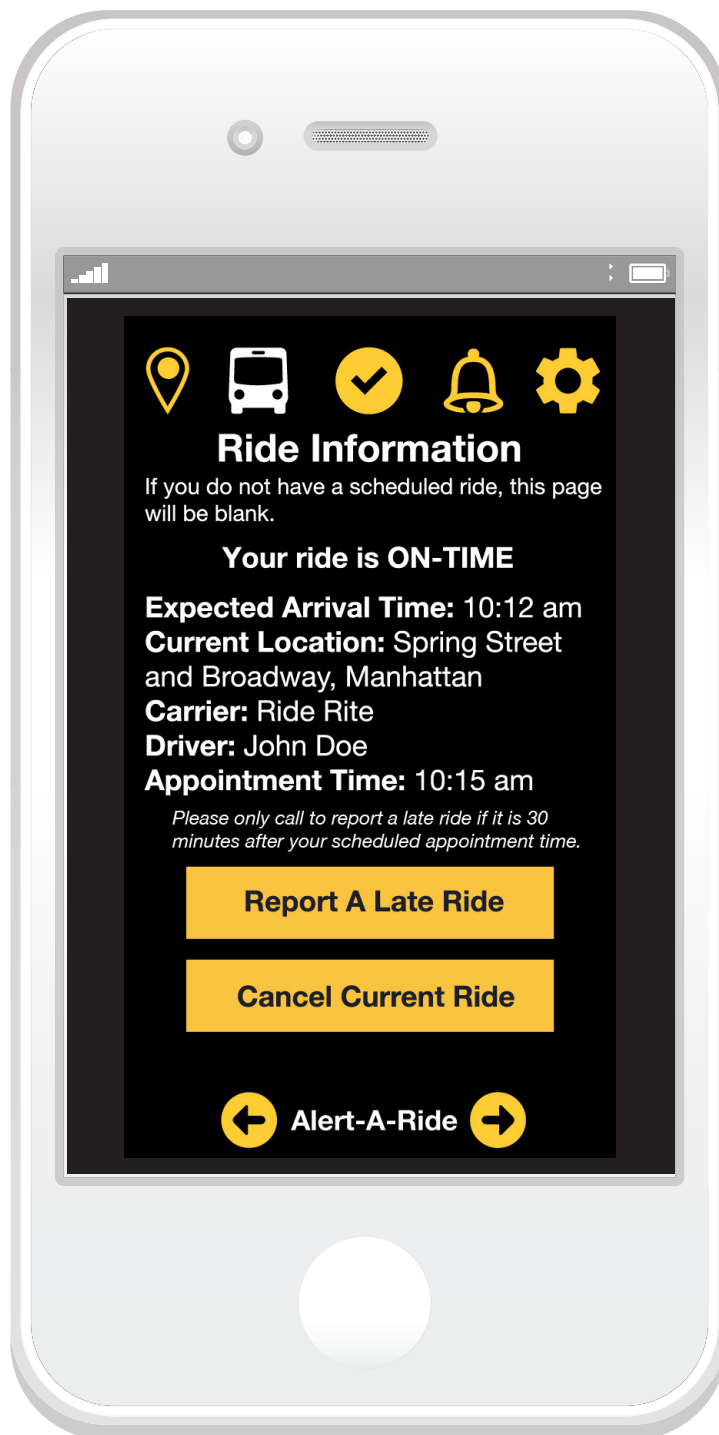Information about Access-A-Ride is inconsistently in multiple places and on multiple platforms.

Current ride alerts are only one way and on one platform.

**"I feel like you got into my head and designed what I've been thinking about for the past year."**
— Dustin, Access-A-Ride passenger

# Feature

The app includes and consolidates multiple points of contact for Access-A-Ride. If a rider wants to report a late ride, all she has to do is click to call.  If she wants to cancel a ride and take an accessible taxi or private car instead, she can do that too, just by clicking to call.  She can click to book a ride online, using Access-A-Ride's current online booking system.

A redesigned alerts option caters to individual communication preferences.   If a rider wants a text message when her ride is a mile away, she can create an alert.  If another rider wants an e-mail when a ride is 5 miles away he can set-up alerts to his preferences.  Alerts are easy to reset and readjust.

## Ride Information

If you do not have a scheduled ride, this page will be blank.

**Your ride is ON-TIME**

**Expected Arrival Time:** 10:12 am
**Current Location:** Spring Street and Broadway, Manhattan
**Carrier:** Ride Rite
**Driver:** John Doe
**Appointment Time:** 10:15 am

*Please only call to report a late ride if it is 30 minutes after your scheduled appointment time.*

**Report A Late Ride**

**Cancel Current Ride**

**Alert-A-Ride**

## Usability Testing
*Ensuring a prototype is usable and useful*

While this app is very targeted in its scope, it is underpinned by a universal design approach. A universal design approach champions designing for as broad of an audience as possible [2]. This is in contrast to an accessible design, which is an outcome that has been specifically designed for people with disabilities.

North Carolina State University's Center for Universal Design (1997) has outlined seven principles of universal design:

### 1. Equitable Use
Avoid stigmatization or segregation of any users

### 2. Flexibility In Use
Provide choice

### 3. Simple and Intuitive
Avoid unnecessary complexity

### 4. Perceptible information
Use multiple modes; such as tactile, verbal and pictorial. Redundancy of information is good so people who get information through different channels can get what you want them to have.

### 5. Tolerance for Error
Make the most used and most important elements the easiest to get to; provide fail-safe features

### 6. Low Physical Effort
With neutral body positions

### 7. Size and Space for Approach and Use
Make it easy to get to

Here is how the app meets universal design principles. The visual design takes into account best practices, including high visual contrast, for disabled and low-vision persons. I also stayed away from blue and white and went for more urban transportation colors to avoid branding everything to have a handicapped look and feel, which fulfills the principle of equitable use.

The interaction design on the app provides a simple menu and flexibility in alerts and choices within the features. Its simple design allows for an unintimidating user experience. The presence of big buttons minimizes unwanted clicks and allows for users to easily go and navigate backwards before any action is initiated.
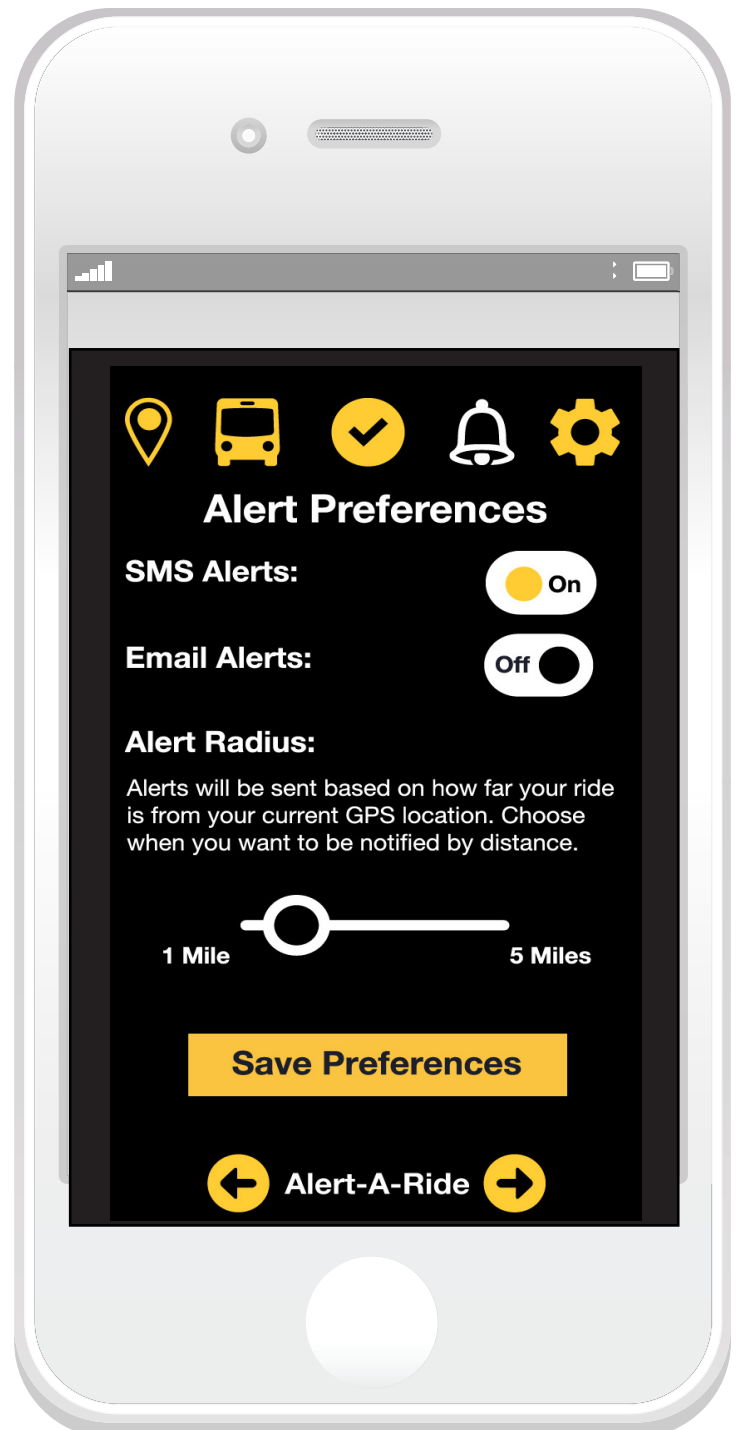
The owner of a cell phone will likely already own a phone that allows for neutral and comfortable body positions.

Once the app is live, the idea is that it will be built on multiple platforms, starting with a web app, to accommodate all types of screens and devices to make it easy to find and use online.

Ideally, the actual build of the app will also need to take into account other principles, including:

• Alternative text for images
• Speech input for requests for those that cannot use a keyboard
• Click-to-hear information read aloud

These small changes allow the app to be used by a wide variety of people, from an elderly person with low vision to a young caretaker who is a digital native. The more that assistive technologies can be incorporated, the more riders will be able to utilize the app.

**Alert Preferences**

SMS Alerts:                      On

Email Alerts:                    Off

**Alert Radius:**

Alerts will be sent based on how far your ride is from your current GPS location. Choose when you want to be notified by distance.

1 Mile                        5 Miles

**Save Preferences**

Alert-A-Ride

## User Testing and Feedback
*Working with users to improve a prototype*

I developed an app design with some interactive functionality. I showed my initial design to four Access-A-Ride users, and then iterated the design based on their feedback. The riders I showed the prototype to loved it – and they didn't have much feedback for changes or new features. Based on their suggestions, I added in a button to link to the MTA's current online scheduling platform. Another suggestion was to make the app available in Spanish, which I will take into account if the app exists beyond my thesis project. Two of the four people who prototyped Alert-A-Ride asked to collaborate on the project as it moves forward.

## Partnership and Collaboration

The final stage of my process is pitching my idea and finding funding to see this prototype become a real product. I have spent the majority of my time working with users, but I am also shifting my conversations to speak with government officials to gauge their interest in the project. Most recently, I met with Matt Green, a participatory budgeting expert who is a staff member for Corey Johnson, a New York City Council Member. Johnson is the Chair of the Health Committee, and his staff was looking for ways to help elderly New Yorkers get to their medical appointments. Through a process of community meetings, Johnson's office became interested in upgrades to Access-A-Ride. Matt Green, Samara Daly, a government tech consultant, and I met to discuss how to pitch Alert-A-Ride to the MTA.

On April 30th, we met with Thomas J. Charles and Alexa N. Gangemi from the MTA. We were also joined by Corey Johnson. I presented my prototype, and the MTA was very receptive to my ideas. They acknowledged that there were features I created that they had not considered before for a mobile platform.

However, they said they plan to create a mobile app in the next eight to ten years when they believe that more riders will have mobile technology. The reasoning is that when they survey ridership only 44% respond that they or their caregiver have access to a cell phone. Yet, using the publically available numbers on ridership from the MTA, 44% of the total ridership amounts to over 61,000 people. Working with the help of a developer, I have estimated that the cost of building an app will cost approximately $175,000, breaking down the cost to less than $3.00 per-person, just slightly more than a one way fare on Access-A-Ride. The MTA also confirmed they have one backend system where all passenger and vehicle information is stored, making the build of an application very streamlined and efficient.

The meeting ended with an agreement for the MTA to introduce me to their two contracted technology vendors in order to share ideas. While I am happy to do so, I am also planning on partnering with a journalist and writing and op-ed in order to rally other politicians and citizens to help make an app for Access-A-Ride a reality in a much shorter and reasonable time frame.

# Next Steps

**It's not just in New York where these ideas can make a real impact.**

While this app was my short-term goal for my thesis, my longer-term goal is for the city to release some data about Access-A-Ride, that doesn't reveal any personal identifiable information, so that citizen technologists and designers can create apps for disabled commuters – just as they have done for all other forms of New York transit.  I will continue to stay in touch with Corey Johnson's office about further conversations.

I have also been asked to share my app and research findings with the city of Austin, Texas.  My plan is to use this briefing to better understand paratransit needs in other cities and how I can apply my research to these other programs.

But it's not just New York where these ideas could make a real impact.  Across America, in every city that has public transportation, paratransit is required.  I'm interested in doing further work to gage interest in helping other cities incorporate more relevant and useful technology into their paratransit programs.

# Acknowledgements

# Bibliography

1. Paratransit Peer Report. Rep. New York: New York City Transit, Department of Buses, Paratransit Division, 2011. Print.

2. Connell, Bettye Rose, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story, and Gregg Vanderheiden. "Universal Design Principles." Universal Design Principles. NC State University, The Center for Universal Design, n.d. Web. 02 May 2015. <http://www.ncsu.edu/ncsu/design/cud/about_ud/udprinciplestext.htm>.

*Image source: http://web.mta.info/nyct/paratran/images/onthemove1_08.jpg*