



THE DISCONNECT BETWEEN YOUNG ADULTS WITH DISABILITIES AND NYC'S  
PARATRANSIT SYSTEM

**Research Paper**

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by  
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## EXECUTIVE SUMMARY

The paper examines the Access-a-Ride (AAR) paratransit system in New York City, which provides on-demand vehicle services to eligible customers with disabilities and health conditions. Despite a large population of individuals with reported disabilities between the ages of 18-34 in New York City, the primary AAR users are aged 61-90. Transportation is a fundamental aspect of everyday life and accessibility to transportation can greatly impact a person's ability to participate in society. People with disabilities often face barriers to accessing transportation and therefore may have limited access to education, employment, healthcare, social activities, and other opportunities. This paper analyzes the discrepancies in AAR's service ridership across young adults with disabilities and provides possible solutions and recommendations to better serve this population. The report identifies several pressure points in the system, including the eligibility criteria, funding structure, and role of different providers. The report recommends that AAR increase diversity within its internal community and reposition its approach to programming and pilot studies. The report concludes by highlighting the need for a more inclusive and equitable paratransit system that can better serve young adults with disabilities.

## BIOGRAPHICAL SKETCH

Sarah Carrillo is receiving a Masters in Regional Planning at Cornell University, Spring of 2023. She has experience in internal and external communication and is passionate about research, strategic planning, and advocating for inclusive accessibility in public spaces. She has a Bachelor of Science in Communications, Management and Design from Ithaca College. Sarah plans to address the needs of large-scale equity by connecting with those in marginalized communities and listening to their voices.

She is eager to examine themes and methodological approaches using systems thinking to identify the injustices disabled people face within the built environment. By placing specific challenges and policy restrictions, the hope is to fill the disconnect between physical infrastructure and young adults with disabilities. She hopes to produce an actionable change that provides equitable, efficient service for all.

*“I wanna see a feisty group of disabled people around the world...if you don’t respect yourself  
and if you don’t demand what you believe in for yourself, you’re not gonna get it.”*

*– Judith Heumann*

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Maddie Ravulo, Anna Zivarts thank you for your dedicated service in transportation planning and accessibility. I am grateful to have been able to lean on thoughtful practitioners like yourselves throughout this research.

In March of 2020, I was on furlough due to the pandemic and my career path was no longer as clear cut as I previously thought. I watched the documentary Crip Camp and was completely enamored by how Camp Jened empowered individuals with disabilities. Judy Huemann's tenacious spirit and energetic attitude toward advocacy for individuals with disabilities were captured throughout the documentary. After watching the film, I felt genuinely motivated and eager to pursue a career in urban planning. I contacted Judy and worked with her for a short time as a social media intern. I am incredibly grateful I have been able to speak to one of my heroes and fortunate enough to watch as her legacy continues.

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## **LIST OF ABBREVIATIONS**

AAR	Access-a-Ride
ABA	Agent-Based Approach
CAS	Complex Adaptive System
DSRP	Distinctions, Systems, Relationships, Perspectives
MTA	Metropolitan Transit Authority
NYC	New York City
RDS	Part Whole Systems on a Relationship

## INTRODUCTION

### Young Adults with Disabilities and Their Mobility Needs

The ability to travel independently is essential for full participation in society, yet for many people with disabilities, transportation remains a significant challenge. In New York City, the Metropolitan Transportation Authority's (MTA) paratransit system, Access-a-Ride (AAR), is designed to provide accessible transportation for people with disabilities who cannot use the regular public transit system, as required by the Americans with Disabilities Act (ADA).

However, despite its intended purpose, young adults with disabilities are often overlooked and underutilized the service. This report focuses on investigating and understanding the challenges that young adults with disabilities face within AAR and how these challenges can be addressed to enhance paratransit ridership among the youth.

The report will analyze the paratransit system using Systems Thinking and theory to identify key weaknesses within the system and present forward recommendations that can connect young adults with disabilities and MTA's AAR. Additionally, the report will highlight the connection between transportation access and health, specifically the importance of investing in the "human element" of transportation systems. An online survey was shared through various social media platforms and advocacy groups gathering a total of 20 responses from adults ranging between 21-30 years old and interviews with key stakeholders were conducted.

The Vice President of MTA Paratransit spoke via Zoom as well as Tashia Lerebours, Center for Independence of the Disabled, NY (CIDNY) Community Organizer for Access-A-Ride on the

subject. Finally, the report will emphasize the significance of framing disabilities as a social issue and the need for an inclusive and accessible transportation system to positively impact the lives of the dis/abled community and society as a whole.

The next portion of this report will focus on MTA's Access-a-Ride and the operational autonomy of the system including how to apply for the service, funding, and day-to-day performance.

### MTA's Access-a-Ride (AAR) - Its Possibilities and Limitations

Customers can schedule a ride for both pick-up and arrival time prior to the day it is scheduled for, and pay \$2.75 for each trip. AAR is a shared-ride service that extends to all five boroughs and bordering areas such as Nassau and Westchester counties. AAR operates 24 hours, seven days a week, 365 days a year, and offers two types of trips. Non-priority trips with maximum ride times based on trip distance and origin to destination service or feeder service ([accessnyc.gov](http://accessnyc.gov)). Feeder services are trips made partly by AAR and public transit such as buses or trains. AAR customers are given AAR MetroCards that are used as identification and fare for mass transit.

AAR has three types of services; one is Dedicated Service Carriers (DSC), for-profit and not-for-profit agencies that provide vans and cars owned by the MTA that are committed to providing paratransit service. AAR also provides Broker Car Services (BCS), which is responsible for administrative actions such as scheduling and dispatching trips for ambulatory customers. AAR maintains a public-private partnership with TLC and the Taxi and Limousine Commission to

increase the quality of service. These are used for supplemental services and are approved for reimbursement. Tashia Lerebours highlighted the convenience of AAR.

*“It’s a transit service, it was extremely helpful, even though they have a very long way to go in terms of improvements. It’s extremely convenient and helps you get around.”*

(Lerebours, 2023)

Although it is convenient, it’s also quite costly. To maintain MTA’s AAR service, tax subsidies from state or local government cover about 40%, fares provide 4%, and the rest of the expenses are covered by the MTA. An internal MTA cross-subsidy—revenues generated by other agency activities, as well as dedicated taxes necessary to balance the paratransit budget. This cross-subsidy totaled \$266 million in 2015, more than half of total AAR costs. This sum is equal to 11 cents per MetroCard swipe, or 6.3 percent of the average fare revenue per transit ride. The heavy reliance on this cross-subsidy underscores the impact of the AAR program on the rest of the MTA’s financial plan, (Dague, 2016).

AAR is currently conducting a pilot program to initiate third-party technology-based companies to provide more options for customers. These services would provide more flexibility with same-day booking services and real-time information. This service would not replace traditional services but instead, complement the existing AAR network. The pilot program is in phase 1 and consists of 1,200 customers who can request taxis on demand through an app. The costs are allotted to an average of \$40 a ride, with customers continuing to use the service more frequently (Perlman, 2020). By providing enhanced service, riders would not have the motivation to seek

alternative modes of transportation that may be unsafe or cause discomfort and AAR would improve service and cost containment (Choi, 2022).

The second phase of the pilot program was halted due to the pandemic and is expected to have modifications in lieu of the first phase and will roll out as early as late spring. In an interview with a customer who is between the age of 21-30, they mentioned how beneficial the pilot program was to their everyday life. The service provided greater flexibility and enhanced their social life. The Vice President of MTA Paratransit discussed the questions surrounding phase two of the pilot program.

*“How is it going to have limitations on the number of trips or the dollar amount per trip with the goal of creating a program that is not just useful for people with disabilities, but also financially sustainable and able to deliver this program to a larger group of people?”* (Pangilinan, 2023)

It was reported in 2019 the MTA spent \$614 million on paratransit services for about 160,000 disabled customers. Each ride in a blue-and-white Access-A-Ride van cost the MTA on average \$86, significantly more than the average taxi trip in the city. (Perlman, 2020).

The importance of this pilot program is considerable. Not only for the customers the AAR currently serves but also for young adults with disabilities. Younger generations have proven to be much more adaptable and fluent with technology, meaning an app that serves on-demand paratransit services would be highly desirable for those that face challenges traveling within New

York City.

To support this claim, six out of the nine survey participants said they would use a mobile app as their preference to schedule a ride through AAR. Clearly, there is an opportunity to better serve this demographic and support their needs.

Although paratransit is a service offered in New York City, many individuals with disabilities continue to opt for mass transit due to various reasons, including their ineligibility for Access-a-Ride (AAR) services. In conversation with Ms. Lerebours, she discussed how many young adults with disabilities feel as though they do not need the service or are ineligible.

*“They just think, okay, No I don’t need to. I don’t need to apply for it and that’s a common thing. Some people think, no, they’re not going to accept me or they denied me so I don’t need it. I’ll go take the bus.” (Lerebours, 2023)*

Some individuals use the credit New York State allows to reimburse for taxicab and service vehicles if AAR is not an option. However, many with disabilities do not have the financial availability to front the costs of a taxi service. Often they feel like there is no other option but to take mass transit.

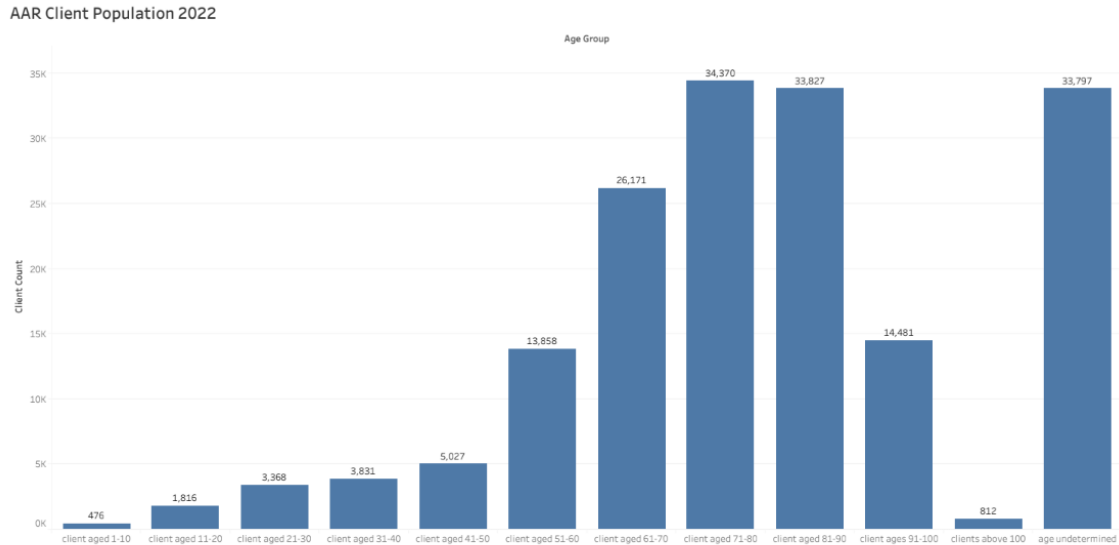


Image 1: AAR Client Population 2022 (NYCT, 2016)

**Image 1** illustrates the AAR client population in 2022, collected by New York City Transit, demonstrating customers between the ages of 61-90 are the main users. In all, there are 94,368 AAR riders. There are only 3,368 customers between the ages of 21-30.

According to American Community Survey (ACS) data, 106,789 individuals with reported disabilities between the age of 18-34 live in New York City. This large gap between users in specific brackets of age raises various questions about equity, paratransit, and young adults with disabilities. Including the following.

1. Why are there significantly fewer AAR riders between the ages of 21-30 compared to other age groups?
2. What are there any barriers that prevent young adults with disabilities from accessing AAR services?

3. Is the AAR service accessible and accommodating for younger riders with disabilities?
4. Are there any outreach or marketing efforts specifically targeting young adults with disabilities to promote AAR services?
5. What are the alternative transportation options young adults with disabilities are currently using?

AAR services are crucial in providing accessible transportation to eligible customers with disabilities and health conditions. However, the program's heavy reliance on cross-subsidies and the significant gap between age groups raises concerns about equity and financial sustainability. To address these concerns, the pilot program explores the use of third-party technology-based companies. The importance of this program is significant not just for current AAR customers but also the underlying opportunity for young adults with disabilities who require on-demand paratransit services.

While AAR provides valuable services to eligible customers with disabilities and health conditions, there are still significant barriers to accessing mass transit in New York City for many individuals with disabilities. These barriers include physical obstacles, lack of information, and inadequate training for transit employees. In the following paragraphs, I will explore some of these challenges and potential solutions for creating a more inclusive and accessible mass transit system in New York City.

### Barriers in Mass Transit For Youth

Navigating mass transit can be challenging for anyone, but for young adults with disabilities it can pose numerous barriers to accessing transportation. From discriminatory actions and

behaviors to a lack of accessibility features, the experiences of people with disabilities on public transportation have been documented in numerous studies. In this section, I explore the challenges faced by young adults with disabilities on mass transit and how the MTA is working to improve accessibility and inclusivity within its system.

MTA has allocated \$5.2 billion to make stations accessible and almost \$600 million for elevator upgrades. The investment is to improve safety, reliability, and efficiency. So far, 21 stations have been upgraded, and MTA is partnering with private developers through the Zoning for Accessibility program to create transit-oriented-development. For example, Sedesco is reimbursing MTA for two new elevators at the 57th Street F station, and in return, benefiting from one acre of extra floor space in a new mixed-use skyscraper. MTA's goal is to become a 95% accessible system by 2055.

Ms. Lerebours reflects on her life between the ages of 21-30, living with a disability, and shares her experiences, illustrating the challenges individuals with disabilities face while trying to navigate the public transit system.

*"It was some time after I graduated from college, and I was so excited. You know, I was going to a job interview, but I had a seizure just before I left home. Luckily it wasn't too strong. But my father went with me to the interview. That's the thing, to have a disability where it's like you need someone like a chaperone. I didn't even know anything about AAR. My focus was on graphic design because that's what I had studied. But when you reach a point in your disability, 'oh, it's not that bad, so I can take the bus or train,' you*

*know it's not a problem. But then when the person has a disability that progresses when it gets worse, and then you reach a point where you know, okay, taking the subway and bus really isn't safe."* (Lerebours, 2023)

Lerebours' account of her resistance to using the AAR service is too common of a story. There are clear underlying themes across her lived experience, including the feeling that there is a lack of independence for those with disabilities, the unawareness of AAR, and as a young adult with a disability, the frustrating confrontation that public services aren't as inclusive as they may seem.

Participants from the primary survey were asked what matters most when riding public transit between options of public safety, accessibility, efficiency, and flexibility. The majority of participants ranked public safety as their first priority, emphasizing the argument that young adults with disabilities are concerned with their safety and wellbeing when riding public transit.

The second option that they weighted the most was accessibility. When asked how their disability impacts their daily travel one respondent said the following.

*"I have cerebral palsy and primarily use a wheelchair in the community, but sometimes will walk with a cane or rollator. I cannot walk distances or stand for any significant length of time. I do not feel comfortable taking public transit unless I am in my wheelchair, as I am not steady on my feet and am easily knocked over by crowds. Additionally, I have a visual perceptual disability that impacts my depth perception and*

*sense of direction, which can make it challenging to find bus stops, elevators on street level, etc.”*

Discriminatory actions and behaviors rise from the notion that individuals with disabilities are inferior to others, according to a study by Sarah Wayland, which investigated the experiences young adults had on public transportation in Australia. Through the first-hand accounts of young adults, many barriers within public transportation were identified. Although this study is based in Australia, it is important to note that many social interactions are applicable to the United States public transportation system. Accessible seating was found to present a myriad of issues in terms of discrimination toward young adults. Priority seating has been symbolized for the elderly, disabled, pregnant women, and the injured. Younger people with disabilities may not be able to withstand standing, stopping, or moving in transit for long periods of time. Participants in this study revealed,

*"They were less likely to try to access priority seating when it was in use, often changing seats or standing if challenged, neither of which could be considered desirable. They also reported delaying travel and not boarding buses or trains that were full, with accessible seating already occupied (even by those not entitled to do so), and this affected them being on time for work, education, and social activities." (Wayland, 2020).*

Staff within mass transit have also been mentioned in the study. Stating drivers (both bus and railroad), have been verbally abusive or not helpful. Participants revealed they felt anxious and excluded after these experiences.

The barriers young adults with disabilities face while using mass transit are numerous and multifaceted. Ms. Lerebours' story highlights the challenges individuals with disabilities face while trying to navigate the public transit system. Discriminatory actions and behaviors towards people with disabilities, lack of accessibility features, and unhelpful staff members are all barriers that have been identified in studies. However, the MTA has recognized these issues and has taken significant steps to improve accessibility and inclusivity within the system. Through initiatives such as the Zoning for Accessibility program and investment in upgrading elevators, the MTA is making progress towards becoming a more accessible system. There is still much work to be done, but the commitment to becoming a 95% accessible system by 2055 is a positive step towards achieving a more inclusive mass transit system.

Despite efforts made by the MTA to improve accessibility and inclusivity within the public transit system, there still exists a social framing that excludes people with disabilities from fully participating in society. This next section will explore the social barriers that young adults with disabilities face when navigating the city and using mass transit. From societal stigmatization to systemic barriers, this section will shed light on the challenges that young adults with disabilities face beyond just physical accessibility barriers

## YOUNG ADULTS WITH DISABILITIES: DEFINITIONS AND SOCIAL FRAMING

### Understanding the Unique Needs and Challenges of Young Adults in Relation to AAR

Young adulthood is a period of transition, where individuals are tasked with successfully moving into adulthood while forming their identities through experiences and activities. This includes living independently, professional and academic development, social scenes, developing social and romantic relationships, parenthood, and new physical surroundings. However, this age group is often overlooked and undefined, as discussions on adolescents versus adulthood blend within young adults, causing this population to be lumped into a broader category. This can make it difficult to assess their needs and wants, and to understand how services like AAR can better serve this demographic.

The lack of a clear definition for young adults can lead to research outcomes that are too broad if a large age bracket is included. Without a focused approach to understanding this age group, they may not receive the support and services they need. Young adults with disabilities have social and professional lifestyles just like their peers without disabilities, but the challenges posed by AAR, such as shared rides or delayed pick-up times, can make it difficult for spontaneous activity. This can limit opportunities for social and romantic relationships, employment, and other activities, which can have a significant impact on their health and well-being across their lifespan.

The United States Office of Disease Prevention and Health Promotion defines young adults as those between the ages of 18 to 25. By recognizing this age group as distinct from both adolescents and older adults, policymakers, service providers, and researchers can better understand the challenges faced by young adults and work to develop targeted solutions to meet their needs. This includes services such as Access-a-Ride, which can play a crucial role in

providing transportation for young adults with disabilities and helping them access employment, education, social opportunities, and other activities that are important for their health and well-being.

Within AAR data, the age bracket 21-30 covers the young adult demographic. Elena Higley, from the University of San Francisco, focuses on defining young adulthood, claiming young adults are given the task of transitioning successfully into adulthood, forming their identities through experiences and activities. This includes living independently, professional and academic development, social scenes, developing social and romantic relationships, parenthood, and new physical surroundings (Higley, 2019). Within this transition of adulthood, young adults are also entering the workforce, applying for their own health insurance and making contributions towards the economy.

During the period of young adulthood, individuals are making important choices and establishing patterns that can have long-term effects on their health and well-being. For instance, engaging in risky behaviors like distracted driving, speeding, or driving under the influence of drugs or alcohol which can result in serious vehicular accidents leading to permanent or temporary disabilities. This can create a significant increase in the need for accessible transportation services like Access-a-Ride for those who are unable to drive or who require additional assistance. In fact, according to the National Highway Traffic Safety Administration, young adults between the ages of 21-24 have the highest rates of vehicle crashes compared to other age groups (NHTSA.gov, 2021). This highlights the importance of providing accessible transportation options for young adults with disabilities or injuries resulting from vehicular

accidents to ensure they have the same opportunities to participate in social and economic activities.

Aside from vehicular accidents, the population of young adults with preexisting conditions and chronic illnesses should also be fully recognized. Young adults with disabilities have social and professional lifestyles just as young adults *without* disabilities do. The challenges AAR has posed to customers make it difficult for spontaneous activity. Shared rides or delayed pick-up times can make days a lot longer as a result the customer requires a high level of preparedness. In addition, dating has become a difficult challenge for many users as pick-up times may cut conversations and activities short. If there is a work meeting that appears on the calendar day-of (as they often do), a person using AAR would have to communicate with their manager that they are unable to attend. Access to transportation is a huge element of one's ability.

For young adults with disabilities, their ability to work and earn a living can be limited, making them reliant on government support. Access to reliable transportation is crucial for them to access employment opportunities, educational institutions, medical appointments, and other essential services. Without it, they may have to rely on expensive or unreliable alternatives, further limiting their opportunities for independence and success.

Therefore, investing in services like AAR can have a positive impact on the lives of people with disabilities and their ability to contribute to society. In the end, the question comes down to whether investing in accessible transportation services is worth it for a society that values inclusivity and equal opportunities for all.

Understanding the needs and wants of young adults is essential for any organization, especially one like Access-a-Ride. The young adult demographic is a diverse group that has unique challenges and opportunities. By focusing on the specific age range of 21-30, AAR can better analyze its data to identify areas where improvements can be made. AAR must consider the impact of disabilities on its customers and work towards creating a more accessible transportation system. As society evolves, so do the expectations of accessibility and inclusion. AAR must rise to the challenge of meeting these expectations by continuously adapting to the changing needs of its customers. The investment in a reliable and inclusive transportation system like AAR is worth it to ensure that all members of society have access to transportation and the opportunities that come with it.

The lack of a clear definition for young adults often leads to them being overlooked in discussions and policy decisions, resulting in inadequate support and services. This issue extends to transportation mobility, particularly for those with disabilities who rely on services like AAR. However, the challenges faced by individuals with disabilities in accessing transportation are not solely a matter of inadequate infrastructure or services. Rather, they are rooted in societal perceptions and attitudes towards disability. The following section of this report will examine the social theory that underlies these perceptions and how they contribute to an imbalanced system that fails to provide equal access to transportation for all individuals, with a particular focus on AAR.

## Exploring Disabilities Through Social Framing: A Key Way to Engage Mobility

The framing of disabilities is a complex and multifaceted topic that has garnered significant attention from scholars. While some scholars argue that disabilities should be defined in the context of transportation, others believe that a social framing of disability is necessary to understand the impact of disabilities on individuals and society as a whole.

The surrounding framing of disabilities varies, and often scholars begin their argument through a structure of definitions. Soffer and Chew, claim that constructionists argue that social phenomena are produced by "claims makers" who struggle over the definitions of social issues and problems to impose their understanding and interpretation of social reality (Soffer and Chew, 2015). These phenomena can challenge the accountability and lived experience of a person with a disability. Instead of defining disability in the context of transportation, and in particular, Access-a-Ride, the Mass Transit Authority Program, the focus of disability will be seen through a paradigm of social framing. Soffer and Chew argue that the ways through which disability is framed as a medical issue or a social one influences social attitudes and behaviors toward persons with disabilities, impacting policies related to disabilities and services, which in turn affect the well-being and the lives of persons with disabilities. Their study incorporated young adults, both non-disabled and with disabilities, to find out how they frame disabilities. They found that the role of the environment in disability was the only theme aligned with the social model of disability. Notions concerning accessibility and discrimination that this theme is comprised of reflect an understanding of disability as a contextualized phenomenon. From the

perspective of a young adult, configuring disability through a social context is inherently crucial to how partnering infrastructure supports this framework.

The push for inclusive design within the social model of disability, rather than the medicalized term of accommodations, can begin to shift the conversation. The Center for Universal Design, School of Design, State University of North Carolina at Raleigh created seven key principles that structure the dynamic versatility and social concepts within inclusive design. These key principles include, equitable use, flexibility in use, simple intuitive use, perceptible information, tolerance for error, low physical effort and size and space for approach & use (IHCD, 2022). Each principle emphasizes the social connection and opportunity for designers, developers and policy-makers to think about how public uses can become more inclusive. The World Health Organization (WHO) developed a comprehensive definition known as the "biopsychosocial" approach (IHCD, 2022). This approach focuses on the concept of "function," which captures various aspects such as body functions, body structures, activities, and participation. The WHO emphasized the importance of considering the interaction between individuals with functional limitations and their personal and environmental context. They recognized that context plays a significant role in shaping disability outcomes. By integrating this definition into the WHO's International Classification of Functioning, Disability, and Health (ICF), they aimed to provide a holistic understanding of disability that takes into account the multifaceted factors influencing an individual's functioning.

Researcher, Abigail Cochran emphasizes the clear connections transportation access has between behavior and health through their research and analysis of in-depth interviews. Focusing on the

role of transportation-related social interaction, Cochran concludes the findings from the study by suggesting that we invest in the "human element" of transportation systems and focus on the interaction between transportation workers and passengers. Shifting the focus is worth doing in order to realize the health co-benefits of making transit more accessible to people with disabilities and everyone. The human element of transportation includes body language, socialization (relying on others to assist when there is a physical barrier), isolation, and safety. These factors contribute to and impact the disabled community and clearly show the relationship between the built environment and communities.

In conclusion, framing disabilities as a social issue rather than a medical one is crucial in shaping attitudes, policies, and services toward persons with disabilities. The environment plays a significant role in shaping disability, and accessibility. Investing in the human element of transportation systems and focusing on the interaction between transportation workers and passengers can lead to the realization of health co-benefits for people with disabilities and everyone. Universal design within the social model of disability can shift the conversation towards a more inclusive and accessible transportation system, positively impacting the lives of the disabled community and society as a whole.

With the recognition of the complex nature of the issue at hand, it is evident that a comprehensive and strategic approach is needed to address the challenges faced by the Access-a-Ride program. By applying Systems Thinking, we can analyze the Access-a-Ride program as a complex adaptive system and gain a holistic understanding of the interactions and relationships

between its various components.

### The Complex Adaptive System of AAR through Systems Thinking

The issue of providing on-demand paratransit services for people with disabilities, specifically through the Access-a-Ride program offered by the MTA, is a wicked problem in a messy system that requires a comprehensive approach to understanding and addressing its complexities. This includes understanding the ridership demographic and behaviors. To confront this issue, a system analysis was initiated to identify the relationships within the system and the involvement of multiple agencies. This approach is grounded in systems thinking, which highlights the relationship between reality and thinking and emphasizes the need for mental models to understand the complex adaptive system within the problem. Through thinking, distinctions are created which set apart one thing from another. Distinctions give the opportunity to think of the relationships within a system and how that structure is working systematically. AAR has many departments and agencies that work hand in hand to provide this service. However, there is a strong gap that's been identified within this system. Since everything is related to one another, it's more than a one-point solution but rather the possibility to explore how the system connects both internally and externally.

By visually mapping each component of the system, relationships can be defined, and missing gaps can be identified. Meaning that a visual systems map is being added to thought process. By combining these two elements together, there is an opportunity to conceptualize this wicked problem holistically. Once distinctions have been made, systems are mapped through the part-

whole structure. By analyzing these systems, relationships are defined, and unanswered questions become visible. Perspectives can be applied to the systems map, leading to a change in the organization of the system itself. Combining all these elements is similar to putting the pieces of a puzzle together, but in this case, it's a Complex Adaptive System (CAS).

Addressing this issue begins with identifying the relationships within the system and the involvement of multiple agencies since AAR is a wicked problem.

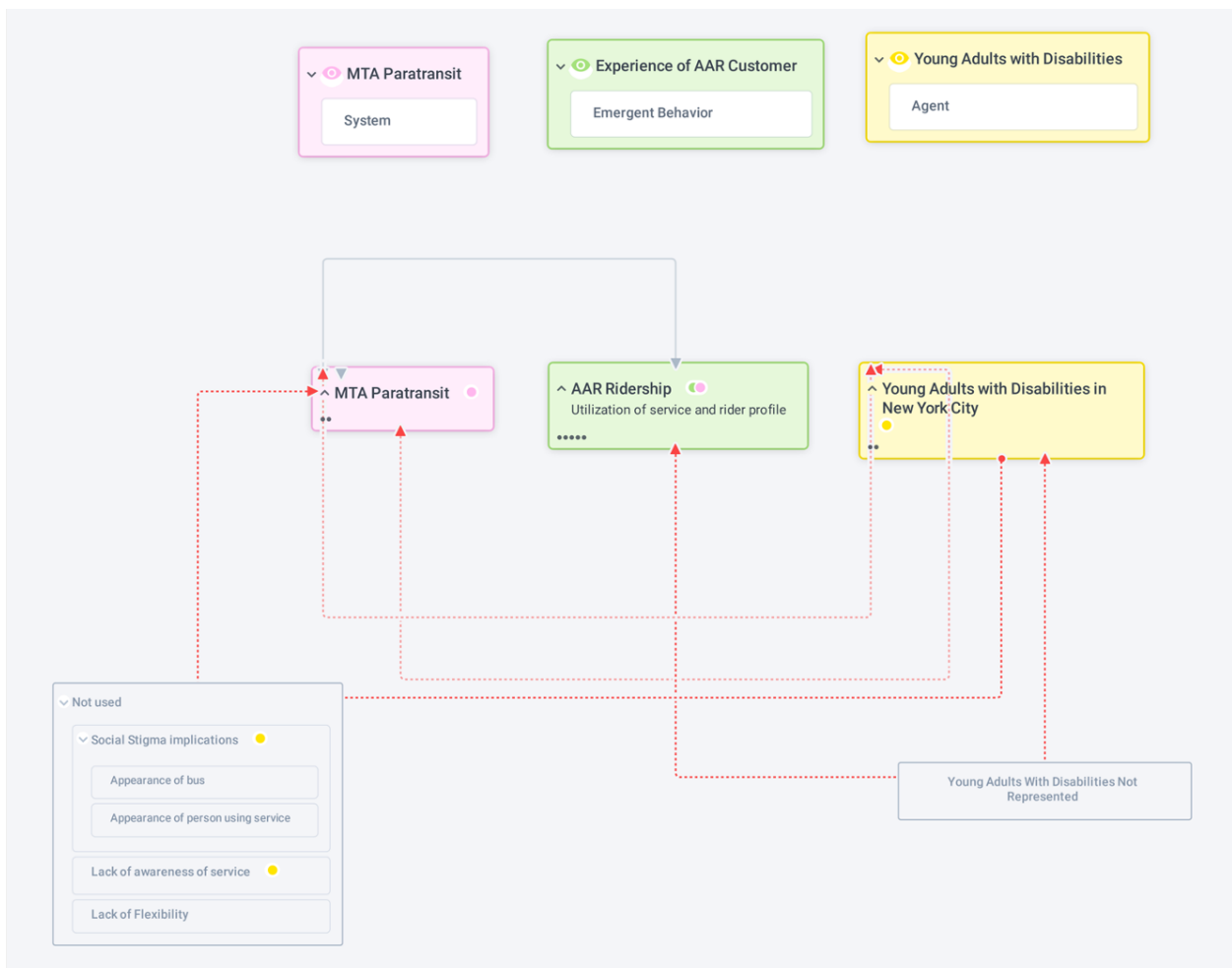
What we think a system should be versus what the system actually is, emphasizes the relationship, or lack thereof, between reality and thinking. Challenging wicked problems through systems thinking results in mental models that provide the building blocks for an Agent-Based Approach. Agents are key players within the system this varies from AAR drivers, customers, and executives. Mental models form the perspectives and understandings of how we comprehend connections, which allow us to identify what may be more relevant to our personal needs. These mental models allow us to think about the complex adaptive system within the problem and understand it. In this case, the MTA provides on-demand paratransit services for people with disabilities, but an ABA approach reveals a disconnect between the AAR program and the needs of an entire community – young adults with disabilities.

#### IDENTIFYING (DIS)CONNECTIONS: AAR, YOUNG ADULTS, AND NYC

By analyzing current AAR customer data, including demographic information, commute details, and funding allocations, a bigger picture of AAR including which networks show a greater relationship and feedback loops. Taking it a step further, current data about New York City's

general population of young adults must be compared to AAR. By doing so, the evaluation of unmet needs can be raised. Why aren't young adults taking Access-A-Ride? Is it the appearance of the vehicle? Are young adults unaware of AAR as a resource? Are the eligibility rules biased toward the aging population rather than those with disabilities in general? How are advancing technologies playing a role in this dilemma?

The Systems Map shows the AAR system, the emergent behavior, ridership, and the agent, young adults with disabilities.



**Figure 2: Systems Map**

**Figure 2**, refers to the final Systems Map, it provides a visual representation of the complex interrelationships and interactions between the three key components: MTA Paratransit, AAR Ridership, and Young Adults with Disabilities in New York City. The Systems Map enables a macro-level view of the system and allows for the compression of the system's parts into a bigger whole. I will zoom into each component in the following sections.

The Systems Map provides a more comprehensive understanding of the structural predictions and the true logistics of the system. By visually identifying the negative correlations between the agents using red dotted lines, it becomes clear that the system is not fully corresponding to the presented agent, which in this case is young adults with disabilities. These negative correlations highlight the gaps in the system and the areas where improvements are needed. By analyzing and manipulating the Systems Map, it becomes possible to test different scenarios and identify potential solutions that can enhance the overall functioning of the system.

# Unpacking the Complexity of AAR Eligibility Criteria and Funding: Insights from a Systems

## Map

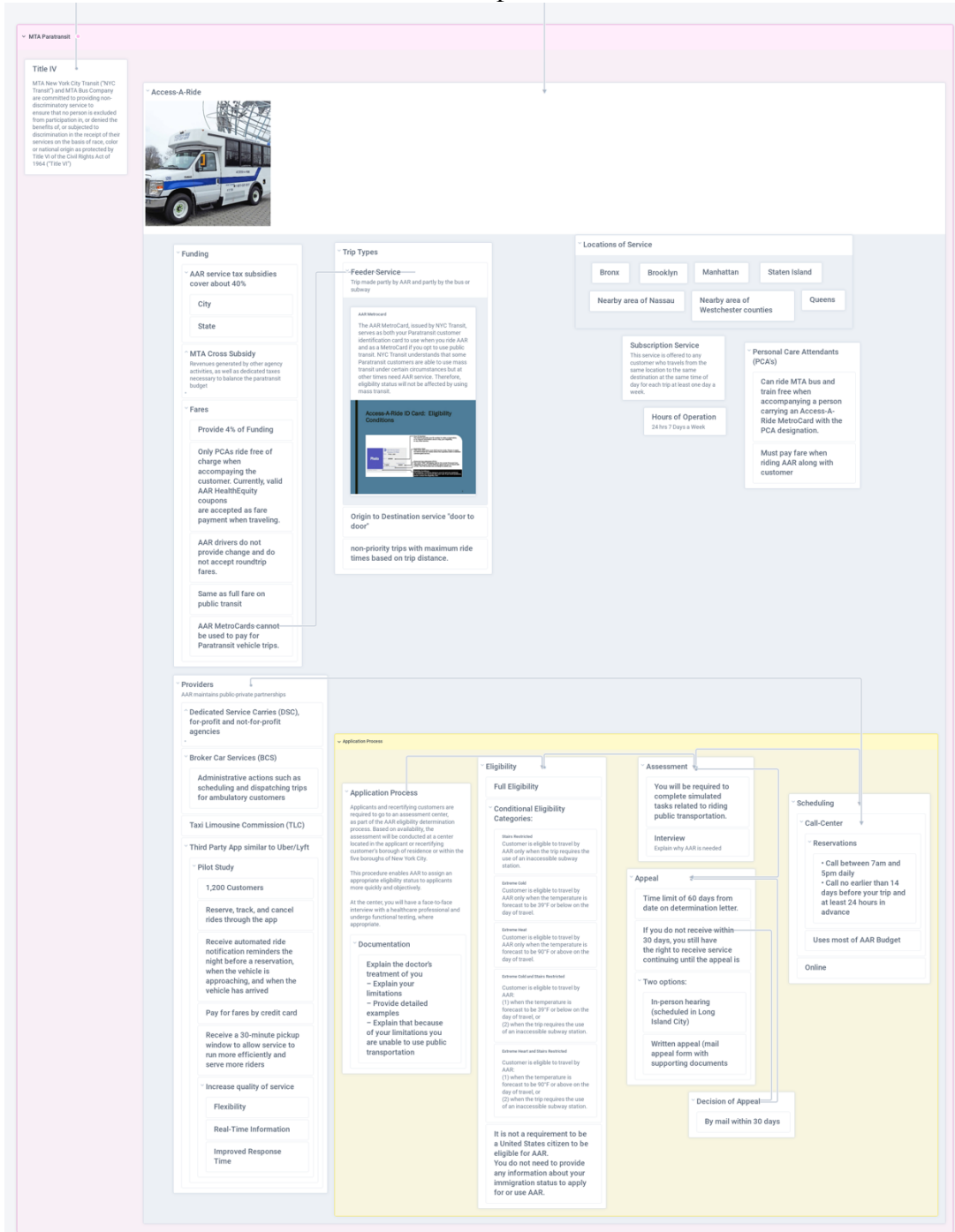


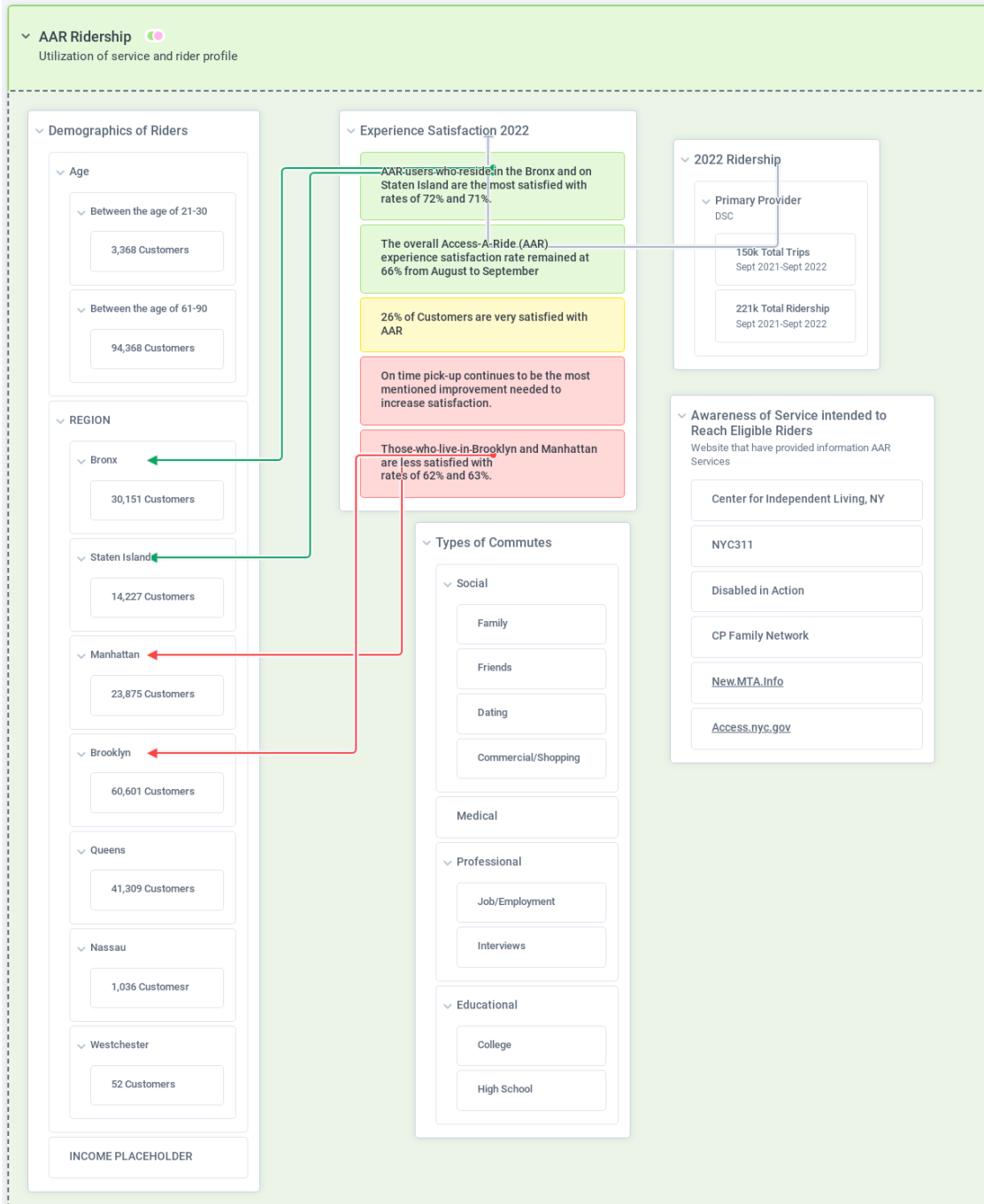
Figure 2.1: MTA Paratransit Systems Map

**Figure 2.1** illustrates the autonomy of the AAR system and how it is operated. Components include technical management details including hours of service, boroughs AAR reaches as well as the process a customer goes through to enroll in the service. Eligibility criteria for AAR service is an essential component of the system, as it determines who is able to utilize the service. By visually mapping out the process, it becomes evident that the eligibility criteria are prescriptive and not based on an individual's needs or circumstances. It's important to point out the strategic way this information is presented, the eligibility process is linear and shows the step-by-step process. Representing the eligibility process this way, creates a clear picture of its narrow approach, and presents an area within the system that may offer a solution that can enhance the connection between young adults and AAR. This can create a significant barrier for those who do not fit into the rigid eligibility criteria, leaving them with limited transportation options.

The AAR's funding structure and the role of the different providers also become apparent through this mapping process. Each section highlights the part-whole components that create that section and can create key distinctions between how the system is functioning. By doing so, I highlight the complex relationships between the different agencies involved in providing this service. By breaking down the AAR system into its individual parts, it becomes easier to understand the areas of pressure and the potential points of intervention to address the issues faced by young adults with disabilities. A case example of that is through the eligibility process. Another way parts of a system are broken down in this diagram is shown in the funding section, where it shows the system's three major providers. This positionality helps provide a structural focus of what potential partnerships and opportunities there are between one another and what

each of those relationships look like. In addition, the map also demonstrates how AAR relies on external companies to provide drivers for the service. This is an important distinction and will be discussed later in the results.

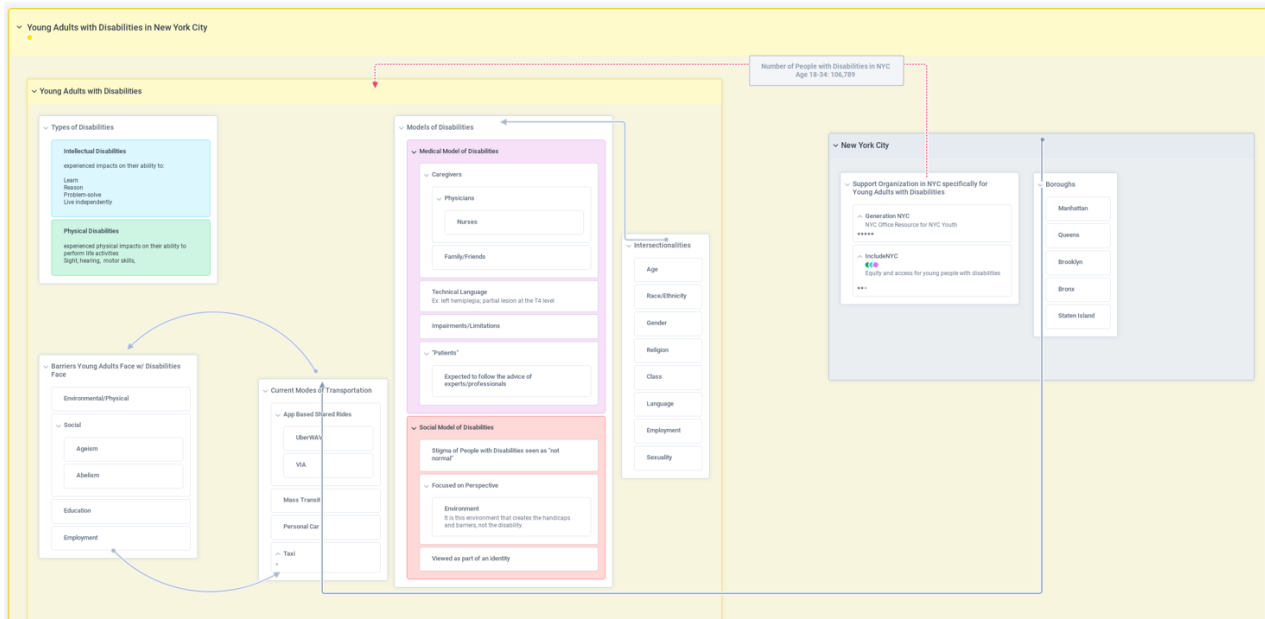
## AAR Ridership: A Limited Demographic Reach



**Figure 2.2:** AAR Ridership Systems Map

**Figure 2.2** shows the ridership profile that was created using data from Paratransit Dashboard and requested data from NY Transit provides insights into the experiential and utilization elements of AAR. The data helps to understand the level of satisfaction among customers, which is represented by the colors green, yellow, and red. The green color indicates high satisfaction, while the yellow and red colors represent moderate and low satisfaction levels, respectively. By analyzing the ridership data across regions and the Experience Satisfaction Survey from the MTA Paratransit, relationships between the different factors that affect the ridership experience can be identified. For instance, it can be observed that regions with higher demand for AAR services tend to have a lower satisfaction rate due to the longer waiting times and trip duration. Such insights provide a foundation for improving the AAR service and addressing the issues faced by its customers.

### Young Adults with Disabilities and Their Connection to NYC

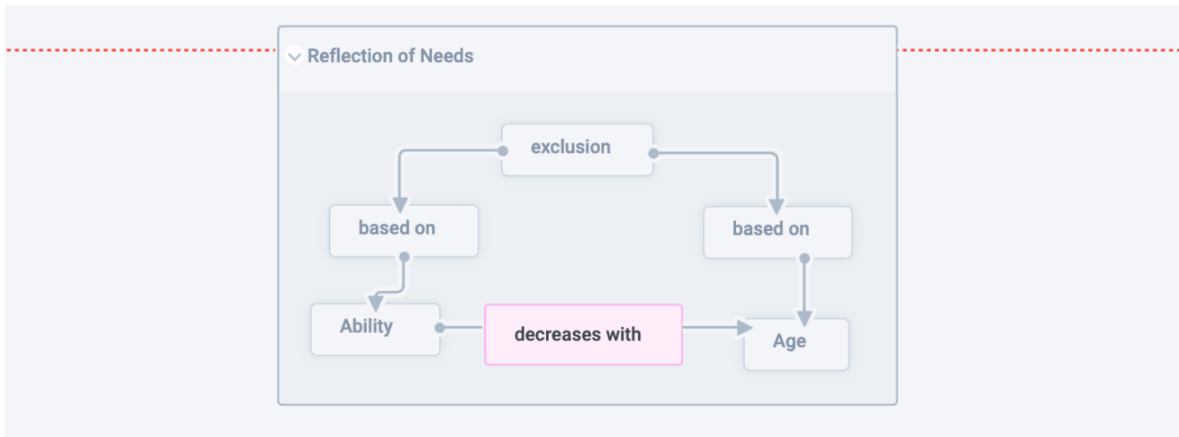


**Figure 2.3:** Young Adults with Disabilities Systems Map

Broken into two parts of a whole system **Figure 2.3**, articulates the Systems Map of Young Adults with Disabilities in New York City. Distinguishing the difference between young adults with disabilities and New York City separated the two and allowed for an improved analysis across its connections. By doing this it, provided the opportunity to examine the relationship young adults with disabilities have with New York City. Resulting in the question: what are young adults with disabilities currently using as their main mode for transportation? This thought process, resulted in a feedback loop between barriers young adults face and modes of transportation. The framing surrounding disabilities vary, and often scholars begin their argument through a structure of definitions. Using systems mapping, there is a distinction between the medical and social model and how each of these theories create different demands and needs. By doing this, the hope is to separate the two models which can clarify the distinctions across each model's attributes.

The following section displays an RDS (relate, distinguish, systemize) model which visually describes a mental model of the MTA Paratransit system. This component of the systems analysis was crucial in identifying the theory and stigmatization that connects to the system's demographic data.

## Do the eligibility requirements work for young adults with disabilities?



**Figure 2.4:** RDS between MTA Paratransit; Eligibility, and Young Adults with Disabilities

A red dotted line is used to indicate a negative relationship between young adults with disabilities and the AAR system within the eligibility portion of the application process. The negative relationship stems from the lack of young adults enrolled within the AAR system. In order to enroll in the system, one must apply, be deemed eligible and receive approval.

As someone with Rheumatoid Arthritis, I myself was marked ineligible to use AAR when I was 22 years old. Rheumatoid Arthritis is a chronic illness that can vary day to day on pain level. Flare-ups, which result in swelling and inflammation of specific joints can be triggered by stress, cold weather, an infection, or weight gain. On the day that I traveled to the testing center, I saw in a waiting room with several older adults. An evaluator watched as I walked and took a few steps up to a simulated fake bus. At that moment I felt judged. I felt as though my experience living with my disability was measured on a fixed moment, where in reality, my experience with my disability has been much more than what the evaluator had seen. After I received the rejection letter, I wondered if I would have been accepted if I had been tested during

a flare-up. The idea of appealing and going through the process again seemed daunting. I did not want to go through that again.

The RDS model in **Figure 5**, suggests the large number of older adults using AAR stems from the mental model that ability is related to age. The combination of using Systems Thinking, personal accounts, and interviews show that there is an imbalance within AAR's customers. Alice Wong, a disability rights activist confronts access and mobility with two questions.

*“We all have the capacity to create access for one another. And while things still feel bleak, I have hope for the future, because we all have the potential to learn and grow if we close the distance together. I’ll leave you with two questions to think about:*

- 1. Who is missing in the spaces you inhabit and why?*
- 2. What can you do beyond being a “good ally” to advocate for access through actions and practices?” (Wong, 2022)*

When questioning the relationships between young adults with disability and the AAR system, the eligibility process provoked further questions. How many young adults with disabilities have applied but have been deemed ineligible? This is the focus of the next section. The RDS model in Figure 5 illustrates MTA Paratransit's mental model, which shows that there are levels of exclusion within the AAR system due to ageism and ableism. This may suggest a bias and reverse ageist ideology within the AAR system. With the social model of disabilities there are various elements including, stigma, perspective, and identity. These three elements contribute heavily to the way young adults are perceived by the AAR system as well as how young adults

perceive the AAR system. This is evident through stakeholder interviews and personal experience. Further examination of AAR's outreach efforts and physical presence may shed light on why the system is often referred to as a last resort for those with disabilities.

### “Stress-a-Ride” Not Access-a-Ride?

The attention that AAR is receiving is most likely from upset customers who have nicknamed the system; Stress-a-Ride, this has created a decrease in motivation to enroll in the service of potential customers. In addition, there is a lack of physical advertising for AAR service. Unless there is a branded vehicle on the road, there is little public outreach extended to NYC residents. Outreach is often prioritized to senior homes and older citizens experiencing health problems. This lack of physical presence carries weight to those that have a disability and feel invisible, as so are their resources.

The term "Stress-a-Ride" is often used among customers to describe AAR. Due to its lack of flexibility, difficulties communicating with drivers, and excessively long trips due to shared rides. Common stories of customers across all ages, left feeling frustrated by the service have deterred those interested in applying, especially young adults. Lerebours recalls,

*"I avoided AAR, to me it was just hearing the horror stories. Even witnessing what my mother went through. I'm like, I can't. No, no"*

*“You know I was like, I don't want to use it [in reference to AAR]. That's it. You hear stories and you're like wow, okay, I don't want to go through that. I don't want to call 24 hours in advance. It can be frustrating.” (Lerebours, 2023)*

Confronting the challenges of mobility, Claire Perlman of ProPublica uses a wheelchair and shared her decision to stay away from AAR in a Gothamist article.

*“I didn't sign up. Instead, I chose to live within walking distance of my workplace, an economic privilege that many disabled people in this city don't have. This wasn't necessarily the easy option. My office at the time was located in Union Square, in a Manhattan neighborhood that ranks among the highest in the city in median rents. On top of that, I had to find an apartment that wasn't a walk-up, that didn't have steps at the entrance and that didn't have a closet-sized bathroom. In bad weather, I had to take a taxi or Uber to work. My decision to avoid Access-A-Ride has eaten into my budget. But the anxiety saved seemed worth it.” (Perlman, 2020)*

Perlman provides insight into what it's like to not use AAR and the alternative methods required to go to work. Most young people with disabilities cannot however afford to live close to work, especially in the NYC area. It's clear the system has a lot of service improvements that need to be made. However, these shared experiences have caused a negative impact on potential customers. There is a stigma tied to the name “Stress-a-Ride”. A stigma that you are getting a service less than the popular majority. You are not receiving equal transportation access and

service to those using mass transit.

### The System's Agents: AAR Drivers

Another key finding from the CAS analysis was the behavioral role AAR drivers have within the system. As an agent, the key component of their role is the interaction with customers on a daily basis. Lerebours shares a story her supervisor had told her.

*“She told me a story about a woman who wanted to go to a casino. I forgot where it's located. and the driver was surprised. And you know my supervisor was like It's nothing wrong with that. She has every right, just because she's using paratransit, it doesn't mean Oh, it's only to the doctor. And that's the constant. It's a constant misconception. Oh. oh, you're using Paratransit, okay, just to the doctor. We use it to go to work. We use it to go to the doctor. We use it to go hang out with our friends. you know it's not people always thinking. you know about access. The ride isn't linked to doctors. It's only linked to going to the hospital.” (Lerebours, 2023)*

Following these simple rules, system agents such as AAR drivers create an emergent behavior that may alter the customer experience of the service provided by AAR. For example, if AAR drivers are welcoming, friendly, and accommodating, customers are likely to have a better experience with the service. On the other hand, if AAR drivers are rude, unhelpful, or dismissive, customers may have a negative experience with the service, even if the system itself is functioning properly.

It's important to recognize the role that AAR drivers play in shaping the customer experience, and to provide them with the training and resources they need to effectively communicate with customers and provide high-quality service. In addition, AAR vehicles are white vans with blue lettering that have a wheelchair logo. Brokerage service varies and can be common taxis or cars. The appearance of the AAR van might indirectly deter customers to ride AAR because of the discrimination attached with disabilities that are identifiable by the physical presence of the vehicle. By doing so, the AAR system can work more effectively to meet the needs of its customers and reduce the negative stigma associated with the service.

There are broader systemic issues at play that must be addressed, including the lack of targeted support for young adults with disabilities who could rely on AAR services. To better understand these issues, the next section will highlight the broader disconnect that exists between this population and the city as a whole. By addressing both transportation and broader societal barriers, New York City can work towards creating a more inclusive and connected community for all residents.

### **Can New York City Do More to Support the Mobility of Young Adults with Disabilities?**

Examining the relationship between New York City and young adults with disabilities is essential to understanding the role AAR plays. Reiterating that there are currently 106,789 young adults with disabilities living in New York City (ACS, 2022). Programs and support organizations controlled by the City of New York that are specific to young adults with disabilities, such as GenerationNYC and IncludeNYC should make transportation a priority. Currently, the programs mentioned, feature resources for professional development, educational

achievement, and quality health promotion. However, there is an explicit gap between how these young adults with disabilities are navigating the city and what methods of transportation they use to arrive at school, work, social activities, etc.

Links between the AAR system and these organizations can provide awareness, partnerships, and the opportunity for an enhanced quality of life among young adults with disabilities. From the perspective of a young adult, configuring disability through a social context is inherently crucial to how partnering infrastructure supports this framework.

Using Systems Thinking to confront the inequities posed by young adults with disabilities, key elements have been identified as barriers to access. The essential points in the research explained above, emphasize the need to explore the relationship young adults have with paratransit services in New York City.

The next result of the systems analysis stems from the negative responses Access-a-Ride has had. These complaints have carried a heavy weight on the name of the service along with its attraction to new customers.

## WAYS FORWARD: RECOMMENDATIONS

AAR has been treated like another transportation system by policymakers and city officials rather than an integration of mass transit. Alejandra Ospina reflects on her experience using AAR, on Alice Wong's Disability Visibility podcast. Whereas for 897,690 New Yorkers (MOPD, 2019), this is their main form of daily transportation.

*“People don’t make accessibility a priority unless and until it directly affects them. To know what it’s like not to be able to use something that a majority of the population can use. Given that paratransit, Access-A-Ride is supposed to be our main alternative that we’re supposed to be happy with and shut up and use, I would love for all of those folks to have to schedule all of their rides 1-2 days in advance and wait anywhere between ½ hour to 3 hours even to be picked up and to be driven around the entire city before they even get to their destination. No non-disabled commuter would find that acceptable”*  
(Ospina, 2020)

Through this analysis, there are several components that need to shift including a social mental model of young adults with disabilities from the perspective of the MTA Paratransit, strategy, and communication efforts among City organizations, AAR, and young adults with disabilities and a focus on eligibility requirements for applicants. The integration process of creating a supportive AAR system for young adults with disabilities is required from all networks in order to be successful.

The future of AAR should represent a system that promotes inclusivity and eliminates barriers for young adults with disabilities. Major stressors within the root differences between the current and future system are found within levels of awareness among young adults with disabilities and the support groups that cater to them.

## Building Awareness Across Networks

The process of distributing the survey also made clear how difficult it is to reach young adults with disabilities. In order to get survey participants, the survey was shared amongst LinkedIn and reached leaders in New York City's transportation industry, but did not yield any results. In addition, the survey was shared amongst advocacy groups' social media accounts, including Center for Independent Living, IncludeNYC, and Generation NYC but again, did not yield any results. The survey was finally shared with the Mayors Office of People with Disabilities and was blasted through a list serve. This finally gave the results of the 20 survey participants as mentioned throughout this report. Reaching young adults with disabilities was proven to be challenging but possible. AAR must lean into several networks and strategically think about the current resources young adults may have and how transportation is connected.

In order to build awareness AAR should connect with advocacy groups catered to young adults and educational institutions across the five boroughs to enhance awareness and this option of public service. The VP of Paratransit shared the current focus of the customer outreach team.

*“We do have a customer outreach team, and we have done some work with different organizations. I don't know if we've touched these 2 organizations [IncludeNYC, Generation NYC] or not before. But we do work with some of the centers for independent living and senior groups just to at least spread the word.”* (Pangilinan, 2023)

Survey participants were given the following description of AAR, Access-A-Ride Paratransit Service provides public transportation for eligible customers with disabilities or health

conditions that prevent them from using the public buses and subways for some or all of their trips. AAR operates 24/7/365. (AAR, 2022). With this knowledge, 11 out of the 14 respondents said they felt somewhat likely or extremely like to use the service. Demonstrating, that more than half of the respondents would like to have an opportunity to access this service and use it in their daily lives.

Another method to build awareness is to create physical presence with riders through advertising placements on mass transit. As mentioned, many young adults with disabilities are presently using mass transit for multiple reasons. Either they believe that's the only option and are unaware of AAR, feel as though they may not be eligible for AAR services, or they have heard the challenges current customers face when using the service. Therefore, reaching this targeted demographic with strategic placement in subways, buses and rails is recommended.

#### Investing in Shared Routes: Enhancing Access-a-Ride's Efficiency and Flexibility

Externally, there is an opportunity for AAR to reposition itself as a more inclusive service. However, internally, an even greater opportunity exists to enhance the service for existing customers. In an op-ed, Edward Friedman, a young adult who uses the paratransit system, urged federal leaders to support AAR through funding. As mentioned, one of the main issues within AAR is its difficulty in providing flexibility and efficiency. These factors are strong arguments for why young adults do not use paratransit.

Friedman suggests a cost-effective solution that provides the on-demand flexibility that the disability community seeks. This can be achieved by converting traditional shared ride

paratransit into a same-day system using Uber-like routing technology. He argues that instead of debating who should fund an outdated system, the state and city should work together to leverage their collective dollars to improve AAR (Friedman, 2023). The federal government should also play a funding and oversight role to ensure quality service.

AAR has struggled with funding and operational efficiency, leading to issues with flexibility and service quality, as mentioned. This is a problem that cannot be solved by AAR alone, and requires support from federal leaders to provide the necessary funding and oversight to ensure the system is operating effectively.

The federal government has an important role to play in providing funding and oversight to AAR, as it is responsible for ensuring that transportation services are accessible to all Americans, including those with disabilities. In addition, federal funding can help support the implementation of new technologies and innovative solutions to improve the efficiency and effectiveness of AAR.

Increased federal funding and oversight can also help ensure that AAR is meeting the needs of all customers, including young adults with disabilities who may be currently underserved by the system. By providing additional resources and support, federal leaders can help AAR develop new strategies and approaches to better serve this population.

Strengthening this system could increase customer satisfaction, service efficiency, and potential cost savings. Advocates have expressed concern that shared routes are not a recommended

method due to the vulnerability of people with disabilities to illnesses. However, with proper funding and a repositioned policy, there is an opportunity to better serve customers and attract the targeted demographic.

### Reimagining AAR and Who it Serves

Through this analysis, many pressure points within the system's service have been identified, shedding light on the social model and theories tied to the main dilemma. AAR has indirectly excluded young adults with disabilities, hindering its ability to achieve its intended goals.

Reimagining and redesigning what this system could be must begin with its agents.

While drivers for AAR receive training, they do not have discussions based on the interdisciplinary intersections of disabilities. With a large network of drivers and route systems, it is important for AAR to increase the diversity of disabilities within its internal community.

Furthermore, repositioning the approach AAR uses to think about its future programming and pilot study could be a stepping stone to improve the system. The VP of Paratransit explained the strategy behind selecting participants for the pilot program:

*"It's not targeted as an age group, but rather at a frequency group with the goal of getting everybody but high priority on the frequent users." (Pangillian, 2023)*

It is evident that the pool of customers they are selecting is mainly from an older population since this is AAR's main demographic. Therefore, understanding the pilot program's results and

needs will be selective and biased towards that population, which is problematic because it does not represent all individuals with disabilities. This emphasizes **Figure 1** and its visual representation of the disconnect AAR has with young adults. If there is not enough of a sample size for young adults with disabilities, is there a possibility to accept new customers and introduce them to the pilot program?

## CONCLUSION

The AAR system has many challenges that need to be addressed to better serve the disability community, particularly young adults who are underserved by the current system. The lack of flexibility and efficiency within the system is a major barrier for young adults, and the system needs to be updated to meet the needs of this demographic. Systems Thinking has helped identify weaknesses within the system and provided recommendations to create a better service.

However, it is important to recognize that these issues are not unique to AAR, but rather reflect broader societal attitudes towards disability and aging. This has created a division within the disability community and siloed the intersectional identities of disabled individuals.

To address these challenges, a more inclusive approach is needed that recognizes the diversity of the disability community and the contributions of all individuals, regardless of age or ability. This includes working towards greater accessibility and inclusion in all areas of society, including transportation, education, employment, and housing.

While this report has identified several issues and made recommendations, there is always room for further research to deepen understanding and identify additional opportunities for improvement. For example, additional research could explore the experiences of young adults with disabilities using public transportation in other cities or countries, or could examine the experiences of other marginalized groups within the disability community.

In addition, it is crucial that the voices of disabled individuals are heard and incorporated into decision-making processes. Advocacy and community involvement are essential to ensure that the needs of the disability community are met, and that solutions are developed in partnership with those most impacted.

Overall, the AAR system has the potential to be a valuable resource for the disability community, but this will require greater funding, oversight, and innovation. By working together, stakeholders can create a more inclusive and effective transportation system that meets the needs of all New Yorkers, regardless of ability or age.

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