

Disability Accommodation and Improving Accessibility in Public Transportation

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*Third Place: Researched Argument (UNIV 200)*

## **Abstract**

This paper addresses the need for accessibility in public transportation from a disabled perspective, focusing on four key areas wherein states can enact meaningful change. These areas are specified as physical accessibility, which concerns the built and engineered environment of public transit and surrounding areas; informational accessibility, which concerns the availability and clarity of information passengers need to navigate transit; management accessibility, which refers to the way information processing is handled by transit agencies when exchanging information with transit users; and social accessibility, which deals with the interpersonal environment that public transit creates and facilitates. Specific areas of attention are universal design, the ability of disabled transit users to get to transit stations as needed, the availability of helpful information in multiple accessible locations, using multiple modes of communication in information transmission, simplifying the application process for paratransit users, broadening the avenues for exchanging information with a transit or paratransit provider, and facilitating social inclusion of disabled people. This paper uses terminology from the disabled community, including ableism, the marginalization of disabled people, and neurodivergent, which refers to the state of one's mental processes working in a way different from the assumed norm. When referring to people with various hearing disabilities, the paper uses the terms deaf and hard of hearing. In the Deaf community, "Deaf" with a capital D is used to refer to Deaf culture, where "deaf" refers to a person's hearing. This paper does not address cultural Deafness, so the word "deaf" is used.

## Disability Accommodation and Improving Accessibility in Public Transportation

Jean-Jacques Rousseau wrote about government as a social contract between the government and its people, whereby the people give up some of their freedom in exchange for the government protecting their rights. The exact nature of these rights are debated across the world, but existing elements of government illuminate examples of what these rights might be. The public transit system is one such element. It serves the public through providing transportation, facilitating mobility and allowing people to travel with relative ease. Transportation access expands job possibilities, provides a route to needed services, makes participation in civic duties easier, enables social growth, and promotes community health. As such, the public requires a working transportation system.

The purpose of public services is so that the public can use them as needed to fulfill their needs. The ability of any person to access such a service is called *accessibility*. Accessibility affects all public transportation users, but it is most frequently mentioned in the case of disabled people who require accommodations to be able to use the services as intended or in a similarly effective manner. In 1990, the American government passed the Americans with Disabilities Act, or ADA, which combated ableism, the marginalization and disenfranchisement of disabled people, by setting out requirements for states to meet in their standards of accessibility for disabled passengers of public transportation. This included the mandate that transportation construction be made physically accessible, which resulted in the modification and implementation of accessibility features such as wheelchair ramps and lifts, and the provision of paratransit services, in which disabled people who could not use other forms of public transportation could schedule a ride to come pick them up and transport them (Americans with

Disabilities Act of 1990). Despite the Act's stipulations, the mandate did not provide funding for these changes, and review of compliance was infrequent (United States Government Accountability Office, 2012, p. 10). Complaints from disabled people about the accessibility of public transit are still numerous and wide-ranging. As it stands, the accessibility gaps in public transportation represent one of the many axes along which ableism is perpetuated. To better ensure the useability of public transportation to disabled riders, states must implement accessibility changes related to the physical environment, the availability of information, management processes, and the social environment of public transit.

### **Physical Accessibility**

Physical accessibility is the concept of facilitating access in the built environment. Often, one may think of physical accessibility as being made of wheelchair lifts and ramps, but there are many more aspects to this. For example, truncated domes, also sometimes called rumble strips or detectable warning surfaces, are a form of physical accessibility because they are a design feature that lets blind and visually impaired (VI) people know when they are approaching an edge (Lee, 2011, p. 1). This does not help a blind or VI person get to the platform, but it makes the environment safer and friendlier to their existence in this space. When states expand physical accessibility, it is important that they add entrance-enabling infrastructure to vehicles and stations, but they must go beyond this to ensure that public transit users are able to reach the space to begin with.

Physical accessibility infrastructure is a facet of universal design, which Edward Steinfeld and Jordana Maisel describe as “a process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation” (quoted in Steinfeld, 2017, p. 28). Steinfeld emphasizes the importance of universal design as

providing accessibility beyond disability, facilitating inclusion of varying body sizes, shapes, and socioeconomic statuses (p. 28). Universal design centers diversity, which makes it especially useful for considering the paradox of conflicting accommodations, a well-known phenomenon in disability circles that manifests when different individuals have conflicting accessibility needs (for example, a VI person who needs audible stop announcements and an autistic who needs quiet in order to focus on information). Steinfeld lists the components of universal design as follows:

- 1 *Body fit*. Accommodating a wide range of body sizes and abilities.
- 2 *Comfort*. Keeping demands within desirable limits of body function.
- 3 *Awareness*. Ensuring that critical information for use is easily perceived.
- 4 *Understanding*. Making methods of operation and use intuitive, clear, and unambiguous.
- 5 *Wellness*. Contributing to health promotion, avoidance of disease, and prevention of injury.
- 6 *Social integration*. Treating all groups with dignity and respect.
- 7 *Personalization*. Incorporating opportunities for choice and the expression of individual preferences.
- 8 *Cultural appropriateness*. Respecting and reinforcing cultural values, and the social and the environmental context of any design project. (p. 28)

In terms of physical accessibility, universal design means ensuring that there is sufficient space for disabled people to navigate environments, which means incorporating room for aids like service animals, wheelchairs (both manual and powered), canes (including white canes, which may need to sweep an arc in front of the user), and walkers into the planning of a space. Public transit often incorporates spaces reserved for disabled passengers, but the spacial

accommodations surrounding them are often cramped. Widening aisles, for example, would facilitate ease of motion that would be necessary for disabled people and more comfortable for everyone. As Steinfeld notes, it is not sufficient for body fit to be accommodated if comfort is neglected (p. 28). Providing physical space to disabled people while neglecting levels of comfort available to the abled population does not resolve the issue of marginalizing disability.

Physical accessibility on transit vehicles and in transit stations are important, but it is also crucial to consider the fact that a transit user must first move their physical body to the place of transit. In areas where public transit stations are further apart, the distance is a barrier to entry. When combined with the tautologically higher rate of movement disability and fatigue in the disabled community (as opposed to the abled community), disabled passengers are disproportionately affected by infrequency of stops (Bjerkan & Øvestedal, 2020, p. 1180). Crabtree et al. note that accessibility of sidewalks may also pose an issue when going to a transit station, and they emphasize that not only walking to but standing at a bus stop may prove fatiguing for certain disabled people, as it might an abled person who has had a particularly exhausting day (pp. 166-7). To that end, it is also necessary for states to ensure that there are accessible ways of getting to transit stations particularly for those who have no other mode of transportation. It is absurd to design a route of access to a bus station or metro assuming that a person has a car to get there. Assuming no other method of travel forces states to consider the most widely accessible options, which include providing wide and frequent sidewalks and crosswalks, and covered places to sit and park a wheelchair while waiting for transit. So doing, states lower the barrier to physical entry of the transit system.

### **Information Accessibility**

For one to be able to use public transportation effectively, there must be an understanding of the basic information for operation. It may be easy to take for granted one's knowledge of how to navigate a system, but when someone is using public transportation for the first time or is new to a type of transportation, information about how to use a service is invaluable. This can include times for transit arrival, locations of stops, how to pay, who is eligible for reduced fare, and what accessibility features are available. The availability of information like this is in itself an accessibility feature, as recognized by Steinfeld in his description of universal design and by Bjerkan & Øvestedal in their literature review (Steinfeld 28; Bjerkan & Øvestedal 1185). Beyond being useful for a person who is new to the system, the way information is presented and the extent to which it is available is a need felt keenly by many disabled people. For sensory disabilities like vision and hearing conditions, visually- and audibly-presented information often needs to be supplemented with some other form of communication. For intellectually disabled and otherwise neurodivergent people, it is especially important that information be accessible in obvious locations, and may need to be redundant or specific in ways not intuitive to neurotypical abled people. To improve ease of access to important information in and about public transit, states must be sure to incorporate a multiplicity of modes of communication with clear directions, and include universal design in the location of information.

When accessing information about public transit, it is important that as much information as possible be available in one easy-to-find place location, and at regular intervals. Care must be taken to make these locations obvious to a traveler to maximize their ability to find this information on their own. Bjerkan & Øvestedal discuss the importance of centralized information as one of the “functional requirements for inclusive transport” listed in their paper of the same name, calling attention to the need of travelers to be able to plan their journeys with full

and accurate information about the travel options available to them (p. 1186). Bjerkan & Øvestedal prefer the idea of having information available in one central location, and only recommend having information repeated in multiple locations as an accommodation for cognitively disabled transit users (p. 1186). As I am developmentally disabled, my perspective on this is biased, but to me having multiple information stations is intuitive. Bjerkan & Øvestedal focus on the benefits to travel planning before a trip, but I use the signs near the tracks at my local Metro during my trip (p. 1186). I check my route against the maps on the wall to ensure that I have not made a mistake in planning my trip, and in the event that something goes wrong (there is a breakdown, or I miss my train, for instance), having signage lets me plan an alternate route. Neither of these uses are exclusive to cognitively disabled people, although it does help me to have clearly stated and redundant instructions, which may be what Bjerkan & Øvestedal mean when they say that for information to be accessible to cognitively disabled travelers traveling alone, it “may need to be presented in a tailor-made way” (p. 1186). In addition to maps, information reminding passengers about boarding and disembarking processes may provide support for riders with anxiety (like me) and memory and information processing disabilities.

Conveying information redundantly through multiple modes expands the availability of knowledge. Having stops announced through marquees and over a loudspeaker is an example of this, although for the effort to be successful the marquee must be legible and the intercom intelligible. These are useful for blind, VI, deaf, and hard of hearing passengers, but they also benefit people who process information better when presented either orally or in writing. Having signs written in Braille as well as English and other common languages, and hiring staff who speak ASL also expands access to information for disabled riders (Bjerkan & Øvestedal 1186).



At the same time, care must be taken to ensure that the variety of informational modes provided are not prohibitively overwhelming for some riders. Simultaneous marquees and loudspeaker announcements are helpful for many people, abled and disabled alike, but they can also worsen conditions for other riders who are sensitive to sensory overload. When I am overstimulated by sensory input, I become more anxious, but also sometimes lose my inability to focus. There have been times when a loud noise like an intercom announcement has made it so hard for me to concentrate that I am temporarily incapable of reading a sign, much less a scrolling marquee. It would be easy to argue that this conflict of needs means that states should not implement the communication changes I have described, that they should instead cut back on availability of information, or that conflicting accommodations make it too difficult to enact meaningful change in public transit accessibility. In response, I call the reader back to Steinfeld and Maisel, and their description of universal design as “a process” (p. 28). As a facet of universal design, accessibility too is a process, and thus its aim is not perfection but progress. Though it sounds contradictory to implement spaces where information is disseminated through many means and then also require a space less full of stimulation, the paradox of accessibility means that the needs of one group will occasionally contradict the needs of another. The solution is not to choose between these needs, but to give passengers options. Accessibility is necessary because current public transit design centers abled people. This issue will not be solved by choosing which accommodations should be implemented. To serve the best interests of the population, states must facilitate safe spaces for a multiplicity of needs.

### **Management Accessibility**

The ability of a potential transit user to access public transportation can be contingent upon the management of information by the transit agency. This includes personal information

like a paratransit user's registration, but also general information like fares. This is an extension of the last section in that it pertains to the management of information by transit agencies. For states to improve accessibility in this area, they must be sure to store information in a way that is convenient for different transit agencies to use and exchange, and for users attempting to book and register for public transportation and paratransit.

Bjerkan & Øvestedal describe this idea under their functional requirement of “reduced management” (p. 1189). They emphasize that “[a]pplication processing is often lengthy, and the bureaucratic processes are slow and complicated” and that the “processes often demand comprehensive user involvement, and applicants have to educate themselves in legislation, guidelines, rights, appeal options,” which places an undue burden on transit users to manage their own access to transportation (pp. 1189-1190). Applicants should be assisted with these burdensome elements rather than having to seek out their rights and appeal options themselves. Furthermore, simplifying the application process would lower the barrier to attempting to register, and may promote more favorable interactions between transit users and transit agencies. This may be achieved through integrating technology and communications between entities, such as having physicians' offices communicate with paratransit agencies to help determine potential paratransit users' eligibility, so that potential travelers do not have to keep track of all the paperwork and submit it themselves (Kaufman et al., 2016, p. 8). Ideally, these improvements would make it easier for paratransit users to gain access to paratransit and help riders benefit from the service who would have been stopped by the previous burdensome application requirements.

The current system of paratransit registration relies primarily on paper documents, and could be vastly improved by the ability to submit information electronically and over a phone

call (Kaufman et al. p. 7). This applies also to the process of scheduling paratransit for pickup, which is rarely possible less than a day in advance. Kaufman et al. recommend making paratransit reservation available “reserve on-demand, through multiple channels depending on their abilities and the situation: phone calls, SMS text messages, smartphone applications, and wearable devices, like emergency alert necklaces” (p. 7). Expanding the manner of reserving a ride makes the process more flexible and less cumbersome to the user, increasing the likelihood that any rider will be able to benefit from the modality and make trips that they would otherwise be unable to make.

Despite Kaufman et al.’s suggestions for expanding accessibility in paratransit, they frame the possibility of expanding the use of paratransit as an undesirable outcome. They suggest that increased use of paratransit caused by increased accessibility will necessitate “[p]aratransit agencies [...] to implement regulations like ride quotas or rides only for specific trip purposes, where legally permissible,” despite the fact that “many cost-saving measures that a transit agency could make to limit service are explicitly forbidden by ADA guidelines” (pp. 17, 19). Kaufman et al.’s paratransit suggestions are “explicitly forbidden” in the ADA to keep companies from being able to restrict passengers’ travel, which is exactly what Kaufman et al. are proposing. These suggestions would violate the spirit of accommodation by restricting disabled transit users in ways that do not apply to their abled counterparts. Furthermore, to restrict disabled riders’ usage as a solution to the issue contradicts the nature of transit as a public service. Kim and Ulfarsson, in their discussion of the interplay between public transportation and quality of life, recognize paratransit cost as an issue, and rather than suggest that the burden be placed on passengers, they advise that “ways to develop and offer more efficient and effective paratransit services should be a critical issue in urban transportation in coming years” (Kim and Ulfarsson,

2013, p. 114). It is the duty of the government to serve its people; thus, the end goal in solving cost issues of paratransit must be one that upholds the service of disabled riders.

### **Social Accessibility**

Socialization is an oft-neglected facet of accessibility. Unlike physical, informational, and management-based accessibility, social accessibility has few concrete hallmarks on an interpersonal level. The very nature of public transportation encourages social accessibility by providing the means for people to engage in community, but real social inclusion runs deeper than this. In a world where ableism is the norm, disabled people are casually erased even by those with good intentions, let alone those who mean harm or do not care if they cause it. For a transit system to meet the needs of disabled people, it must be a safe and comfortable place for them physically, but also emotionally and psychologically. Social accessibility provides emotional and psychological security through social safety.

Ableism expressed in interpersonal interactions is damaging in itself and in the possibilities it precludes. When Beyzak, Sabella, and Gattis surveyed disabled adults about their experiences with public transportation and paratransit, they found that “three out of the top six barriers to public transportation experienced by people with disabilities were related to characteristics of the driver, including drivers not calling out stops, inappropriate driver attitude, and driver’s lack of knowledge” (p. 56). As with providing maintenance for physical disability aids, drivers accommodating disabled people may occur less often because of the effects of marginalization; apathy or the perception that the action does not matter, at least not to anyone present. The failure of a driver to call out stops to disabled passengers has a tangible impact on the passengers’ ability to use the transportation effectively. A lack of knowledge contributes to this also, whether it is that the driver is not sufficiently knowledgeable about the transit system to

answer questions or whether they do not know the proper procedure or etiquette for handling a mobility aid. Improper handling procedures can cause aids to be damaged, usually at the cost of the user, and improper etiquette fosters an unsafe environment for the aid user caused by a failure of a transit employee to understand or respect the passenger's boundaries about their belongings and agency. This falls into the category of "inappropriate attitude," a category which encompasses driver behaviors that range from a lack of accommodation to abuse, like the refusal to provide service to a disabled person (Steinfeld p. 25).

Beyond the harm to individual passengers, the persistence of social mistreatment marks affected transit as an unsafe space for disabled people. It is not sufficient that drivers receive training on proper procedures for dealing with disabled passengers, but transit management must actively work to foster a space of social inclusion. Steinfeld writes that inclusivity can be aided by universal design, which "reduces stigma by shifting the focus of service delivery from people with disabilities as a protected class to general improvements in services and design" (p. 28). Steinfeld is not saying that disabled people should not be protected, but that if accommodations to disability are included in the scope of regular transit service, rather than being add-ons or afterthoughts, disabled people will be more centered in the social environment. Bjerkan and Øvestedal carry this idea further when they propose that "vehicle drivers who are trained in communication as well as in anticipating and accommodating needs of travellers [sic] with disabilities can further provide predictability and security, as well as aiding travellers [sic] in tasks that cause stress and self-consciousness" (p. 1192). By incorporating accessibility into the social environment of public transit, states provide a safer and more comfortable space for disabled riders.

Disability accommodations are a pillar of access for users of public transportation. States are obligated in providing public service to make it accessible, both by ethics and by law.

Accessibility categories and types of accommodations come in many forms, and states should pay special attention to increasing physical, informational, management, and social accessibility.

Universal design may be helpful in accomplishing this. Accessibility is a process, and not a destination, and thus the effort that must be made is continuous. The effort itself can be an

improvement, in that it reflects an effort on the part of states and transit agencies to

accommodate and serve the needs of the ridership. Disabled travelers on public transit deserve spaces that are designed with them in mind.

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