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Welcome!

Learning from the Travel Experiences of Persons with Disabilities: Investigating Navigation Challenges Posed by Infrastructure

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Photo Credit: Dr. Scott Crawford, Smart Growth America

Learning from the Travel Experiences of Persons with Disabilities:

Investigating Navigation Challenges Posed by Infrastructure

MPC 24-515 Webinar
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University of Colorado **Denver**

In the United States...

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1 in 8 have a disability



1 in 3 over the age of 65 have a disability



1 in 24 working in design and transportation occupations have a disability



Motivation



Image Credit: New York City Department of Transportation.



Image Credit: Denver Streets Partnership

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Research Questions

1. Given disability type, how do attributes of the transportation infrastructure impact the daily mobility of people with disabilities?
2. How does the implementation and management of transportation assets impact the accessibility of travel for people with disabilities?

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Literature Review

Infrastructure Failures and Limitations

- "...lawsuits and forced settlement agreements may be essential tools for ensuring compliance." *National Council on Disability (2017)*
- Public agency leadership shows high levels of support for pedestrian planning and first-/last-mile initiatives, but support for projects such as pedestrian access to transit was not viewed as important to leadership. *Braun, L., Barajas, J., Lee, B., & Martin, R. (2022)*
- Transit services and operator training is not efficient in assisting people with disabilities to travel when and where they need to. *Bezyak, J., Sabella, S., & Gattis, R. (2017)*
- Local governments still have limited knowledge of sidewalk inventories and conditions. *Gibson, P., & Marshall, W. (2022)*

Literature Review

Challenges Navigating the City

- High vehicle speeds limit social interactions among older adults. *Zhong, S., Lee, C., & Lee, H. (2022)*
- Poor street conditions and unstable surfaces exacerbate mobility disparities, even when traveling short distances. *Clarke, P., Ailshire, J., Bader, M., Morenoff, J., & House, J. (2008), Loukaitou-Sideris, A., Wachs, M., & Pinski, M. (2019)*
- Physical and social challenges experienced while using public transit increased anxiety and risk of social and emotional safety and decreased desire to use transit systems. *Cochran, A. (2020), Velho, R. (2019)*
- Open streets policies during COVID-19 changed the navigability for sidewalks, streets, and parking spaces. *Shirgaokar, M., Reynard, D., & Collins, D. (2021)*

Literature Review

Access to Opportunity

- In the New York Metropolitan Region, people with disabilities earned up to 17.1% less, were more likely to use public transit, and experience longer commute times than workers without disabilities. *Wong, S., McLafferty, S., Planey, A., & Preston, V. (2020)*
- Half of all people with disabilities who are unemployed in the U.S. experience workforce barriers, including transportation access. *U.S. Bureau of Labor Statistics. (2020)*
- People with disabilities are twice as likely to live in poverty *National Council on Disability. (2017)*
- Households with people with disabilities experienced higher cost burdens for healthcare and transportation *Mitra, S., Palmer, M., Kim, H., Mont, D., & Groce, N. (2017)*

Literature Review

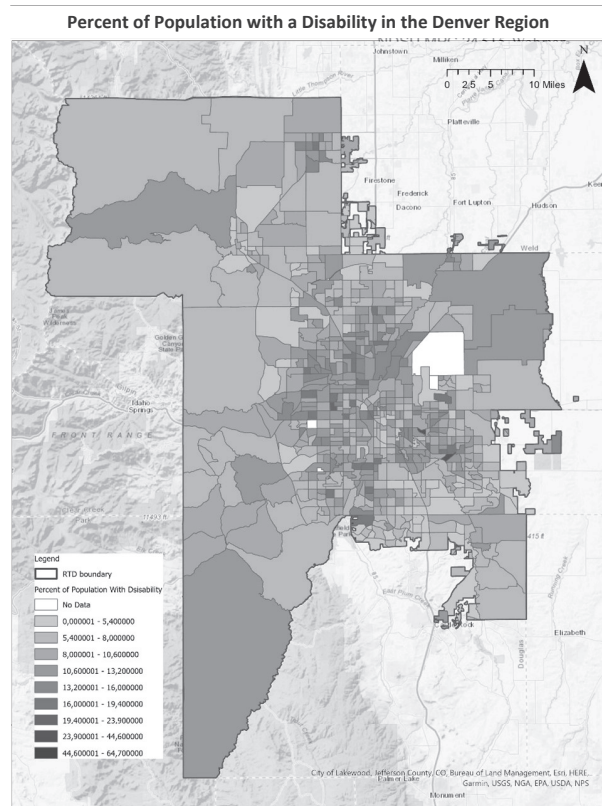
Expert Knowledge vs. Lived Experience

- A literature review of five planning journals found only 36 published papers on disability-related topics. *Terashima, M., & Clark, K. (2021)*
- Even in practices such as Universal Design, people with disabilities are considered informants rather than experts of their own experiences. *Imrie, R. (2012)*
- An under-representation of people with disabilities and other marginalized groups in decision-making leads to erasure and ableism. *Costanza-Chock, S. (2020)*
- A study comparing cyclists' and planning professionals' perceptions of bicycling showed differences in perspectives between professionals and cyclists. *Marquart, H., Schlink, U., & Ueberham, M. (2020)*

Study Context

Denver Region, CO

- Population: 3.1 million
- 9% of the population identifies as having a disability
- Ambulatory disabilities are the highest reported among persons with disabilities in the study area (25%)



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Research Approach

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Semi-Structured Interviews

Stage 1

Interviews with People with Disabilities

	Interviewees (n = 28)	Percentage
Gender		
Male	15	54%
Female	13	46%
Non-binary	0	0%
Disability*		
Ambulatory	16	
Hearing	3	
Cognitive	2	
Visual	9	
Self-Care	3	
Independent Living	2	
Multiple	7	
Use of Mobility Aids		
Yes	19	68%
No	9	32%
Drives Independently		
Yes	13	46%
No	15	54%

*Percentage not presented since interviewees identified as having one or more disability

Stage 2

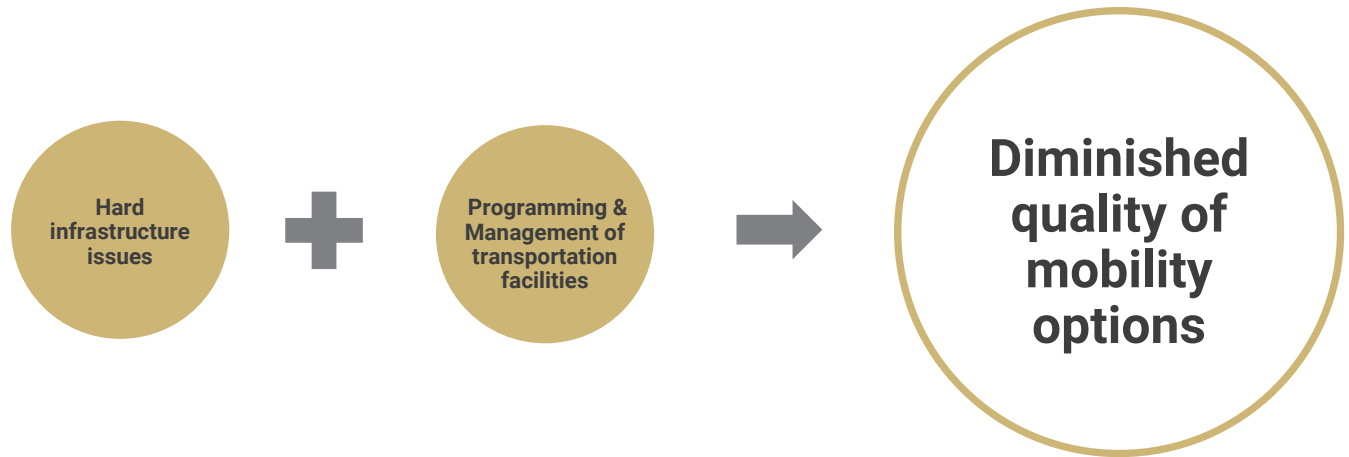
Interviews with Planners/Engineers

	Interviewees (n = 9)	Percentage
Agency Type		
Regional	2	22%
City	5	56%
Public Transit Agency	1	11%
Nonprofit	1	11%
Position		
Engineer	1	11%
Project Manager	2	22%
Planner	4	44%
Executive Leadership	1	11%
Other	1	11%

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Findings



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Interviews Revealed Failures With...



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Failures with: Sidewalks



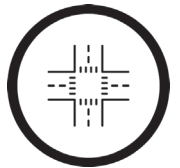
"When you go to Globeville or Elyria-Swansea (or) over in South Denver, there's spots where there's literally no sidewalk, and you're right next to a busy street ... there's no way you can do that in a chair, because there's a huge ditch."

– #12-I, Man with ambulatory disability

Key Challenges	What We Heard About Key Challenges					
	Safety Concerns	Physical Barriers	Route Abandonment	Requires Additional Resources to Navigate	Insufficient Data for Maintenance	Concerns for Liability
Inadequate Sidewalk Conditions	X	X	X	X		
Sidewalk Inventory Programs					X	X



Failures with: Intersection Design



"There's an area in my own neighborhood where I've been hit multiple times. I've spoken to the City about this, and I say, could you at least put a sign that's got 'Guide Dog crossing'? I have an email from the City guy saying signs are ineffective."

– #21-I, Blind man with guide dog

Key Challenges	What We Heard About Key Challenges		
	Safety Concerns	Impassible or hard to cross	Requires Additional Resources to Navigate
Blended Curb Ramps	X	X	X
Roundabouts or Traffic Circles	X	X	X
Pedestrian Auditory Signals	X	X	X
Lack of Safe Crossings	X	X	X



Failures with: Maintenance



"Snow is terrible. A lot of times the bus stops aren't going to be shoveled. I end up having to walk on the street because the streets are plowed."

– #5-I, Woman with multiple disabilities

"In America...we love building but do not maintain (existing infrastructure)."

– Professional interview participant

Key Challenges	What We Heard About Key Challenges					
	Safety concerns	Homebound	Inconsistency in who is Responsible	Staffing shortages	Funding shortages	Challenges developing equitable approaches
Inclement Weather	X	X	X			
Sidewalk Maintenance	X		X		X	X
Challenges with maintenance programs	X		X	X	X	X



Failures with: Public Transit Facility Design



"If I could see, I would know the bus stops right there, but the bus stops everywhere are different. They don't even have the same pole, they're not constantly the same distance from the corner, they're not even on the same side of the sidewalk, or some of them are in concrete, some of them are in grass. Trying to make sure I'm at the bus stop is very difficult."

– #23-I, Blind woman with a cane

"The bus stop will have the ramp that comes down for the bus but that's right where they put the bus stop sign. So, they'd have to stop the bus either before or after it where there wasn't pavement and that would force me to push through grass or dirt to use the ramp."

– #17-1, Man using a wheelchair

Key Challenges	What We Heard About Key Challenges			
	Safety concerns	Frustration	Hard to find	Less desirable to use
Transit Stop Identification		X	X	
Lack of seating, protection from weather, placement of loading areas	X	X		X
Surrounding conditions of transportation infrastructure	X	X		X



Image Credit: Nathaniel Minor/CPR News

Failures with: Paratransit



"We really have to be smart about where we're going because we don't have the option for impromptu trips. It takes six hours just to get to an appointment and back because you're waiting for two-hour windows before and after the trip, and the trip takes twice as long because they're shared with multiple stops. It prevents a lot of people from even wanting to utilize them because who has time to spend your entire day...?"

- #17-I, Man using a wheelchair

Key Challenges	What We Heard About Key Challenges		
	Time away from Obligations	Stress & Frustration with Experience	Pre-planning Required
Paratransit Approval Process		X	
Booking Paratransit		X	X
Riding Paratransit	X	X	X



Failures with: Transit Communications & Services



"Any time announcements happen, hearing people can hear drivers speaking over the intercom, but deaf people don't have access to that."

- #15-I, Deaf woman

Key Challenges	What We Heard About Key Challenges				
	Stress	Distrust	Missed Appointments	Ad-hoc route replanning	Requires Additional Resources to Navigate
Limited Access to real-time arrival and departure data	X	X	X	X	X
Route change and cancellation notifications	X	X	X	X	
Clear audio and stop announcements	X		X	X	X
Limited access to ASL interpretation	X				X



Failures with: Street Furniture, Emerging Tech, & Temporary Route Closures



"Close your eyes for a second and just imagine that you learn a route, you got so used to a route, and then one day the street's closed. How are you going to get to work? What do you do? What if you don't have a car and you don't know of any other route? You can't just say, well, I'm blind. I'm going to call into work and not come to work for the next three months 'cause the road is closed. You're not gonna have a job."

– #13-I, Blind woman with a cane

Key Challenges	What We Heard About Key Challenges			
	Safety Concerns	Feelings of Frustration	Impassible	Requires Additional Resources to Navigate
Construction closures	X	X	X	X
Inconsistent Placement of Street Furniture	X	X	X	X
Dockless bike and scooter share parking	X	X	X	



Image Credit: Montgomery Planning



Image Credit: Nathaniel Minor/CPR News

Failures with: Involving people with disabilities in planning, design, and decision making



"Sometimes they take the feedback, but I don't feel like some of these projects intentionally take the voices of people with disabilities (into consideration). Sometimes the solution seems worse. I wish they would do more disability-focus sessions to understand more things about wheelchair users."

– #8-I, Woman using a wheelchair

"There's a saying, 'Nothing about us without us'. If we don't have people to ask the questions about accessibility, then sometimes it just doesn't happen. They (experts) want to make it pretty, not necessarily safe."

– #1-I, Blind woman

Key Challenges	What We Heard About Key Challenges			
	Feelings of Frustration	Long implementation	Less accessible solutions	Distrust in processes
Centering voices and experiences of people with disabilities in planning processes	X		X	X
Unequal resources dedicated to pedestrian and transit projects vs. auto-oriented projects		X		X

Summary

Research Question #1:

Given disability type, how do attributes of the transportation infrastructure impact the daily mobility of people with disabilities?

Research Question #2:

How does the programming and management of transportation assets impact navigation for people with disabilities?



Thank You

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Thank you for participating!

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included in the reminder
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We appreciate your feedback.

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