How Are People with Disabilities Travelling in Indian Cities? Assessing Transit Usage Patterns and Designing Inclusivity Policies

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PRESENTATION OUTLINE

- Outlining Research Background
- Objectives of Study
- Identifying Travel Barriers
- Methodology
- Policy Implications
- Conclusions

BACKGROUND

How do People with Disabilities Travel?

- Travel patterns of PWDs tend to be complex and different
- PWDs are making 30% fewer trips than people without disabilities
- PWDs are making short-distance trips but taking more time and are more dependent on public transport
- Public transportation gives PWDs autonomy in their travel

BACKGROUND

- PWDs face many barriers while travelling
- PWD's reduced accessibility to transport facilities leads to reduced visibility in public spaces thus leading to social exclusion
- Understanding the relative preferences of mobility barriers is important in developing inclusivity policies. Very few studies are there in the existing literature regarding ranking the mobility barriers of PWDs.

OBJECTIVES

1. Determining the relative importance of various barriers (infrastructural, transportation facilities, policy and administrative, and attitudinal) that limit the mobility of people with disability.
2. Attempts to analyze the existence of an asymmetry in the way people with disability evaluate the mobility barriers and the variation of these with respect to the type of disability.
3. Identifying solutions to tackle the main barriers and quantify their impact on the overall mobility of people with disability

IDENTIFYING TRAVEL BARRIERS

Infrastructural Barrier

- Lack of continuity in sidewalk
- Lack of handrails
- Narrow entrances on public transport
- Too high floors of public transport vehicles
- Absence of landings in ramps or staircases

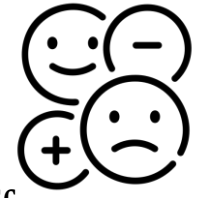
Transportation Barrier

- Unavailability of sufficient space for mobility aids
- Stops at inconvenient distances
- Bus drivers refusing to help to board or stop
- Multiple buses arriving at the same time
- Burden memorizing routes
- Unreliable schedules

Policy and Administrative Barrier

- Lack of transport subsides
- Authorities are delaying or not issuing disability certificate
- Difficulty in getting reserved seats

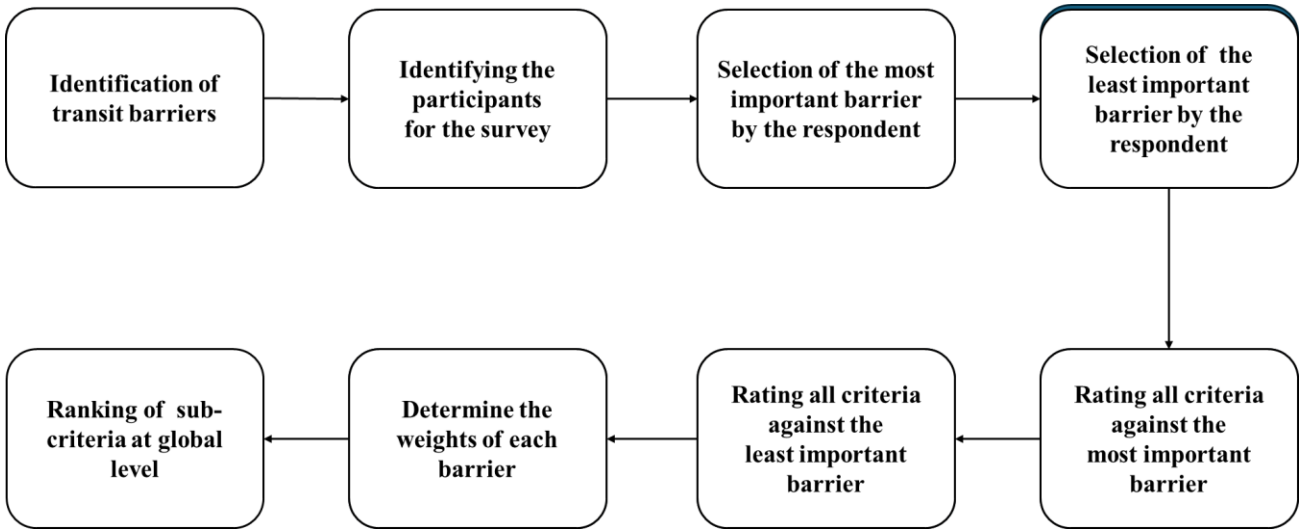
Attitudinal Barrier



- Perception of being a burden
- Fear of being patronized by fellow passengers
- Social discomfort due to time taken getting on/off transit vehicle
- Presumption of Incompetence

METHODOLOGY AND DATA

- The Bayesian Best-Worst method is used
- Survey was conducted in Varanasi, India
- 53 responses were obtained



Types of Disability	Share (%)
Locomotor	37.73
Visual	13.21
Multiple Disability	41.51
Others	7.02

RESULTS- FULL SAMPLE

Main Criteria	Main criteria Weights	Sub-criteria	Sub-criteria Weights	Global Weights	Rank
Infrastructural Barrier **(IN)**	0.2959	IN1	0.2271	0.0672	**4**
		IN2	0.1395	0.0413	**13**
		IN3	0.1964	0.0581	**8**
		IN4	0.2213	0.0655	**5**
		IN5	0.2157	0.0638	**6**
Transportation Barrier **(TR)**	0.1861	TR1	0.1665	0.0310	**15**
		TR2	0.2224	0.0414	**11**
		TR3	0.2220	0.0413	**12**
		TR4	0.1313	0.0244	**17**
		TR5	0.1323	0.0246	**16**
		TR6	0.1255	0.0234	**18**
Policy & Administrative Barrier **(PA)**	0.3220	PA1	0.2427	0.0782	**3**
		PA2	0.4281	0.1378	**1**
		PA3	0.3292	0.1060	**2**
Attitudinal Barrier **(AT)**	0.1959	AT1	0.2199	0.0431	**10**
		AT2	0.1881	0.0369	**14**
		AT3	0.3164	0.0620	**7**
		AT4	0.2756	0.0540	**9**

- Policy and administrative barrier was rated at top
- Getting a disability certificate was the most difficult sub-criteria of barriers
- The least important barrier was transportation barriers
- The least important sub-criteria was unreliable schedule

RESULTS – DISABILITY WISE

Main criteria	Main criteria weight	Sub-criteria	Sub-criteria weights	Global weights	Rank	Main criteria	Main criteria weight	Sub-criteria	Sub-criteria weights	Global weights	Rank
Locomotor Disability						**Visual Disability**					
Infrastructural Barrier **(IN)**	0.338	IN1	0.2319	0.0784	**3**	Infrastructural Barrier **(IN)**	0.256	IN1	0.2845	0.0728	**3**
		IN2	0.1343	0.0454	**9**			IN2	0.1009	0.0258	**17**
		IN3	0.1911	0.0646	**7**			IN3	0.1728	0.0442	**10**
		IN4	0.2284	0.0772	**4**			IN4	0.2240	0.0573	**6**
		IN5	0.2144	0.0725	**5**			IN5	0.2177	0.0557	**7**
Transportation Barrier **(TR)**	0.179	TR1	0.2001	0.0359	**13**	Transportation Barrier **(TR)**	0.187	TR1	0.1520	0.0284	**14**
		TR2	0.2519	0.0451	**10**			TR2	0.2206	0.0412	**12**
		TR3	0.2176	0.0390	**12**			TR3	0.2399	0.0448	**9**
		TR4	0.1050	0.0188	**17**			TR4	0.1394	0.0261	**16**
		TR5	0.1030	0.0185	**18**			TR5	0.1066	0.0199	**18**
		TR6	0.1223	0.0219	**16**			TR6	0.1415	0.0265	**15**
Policy & Administrative Barrier **(PA)**	0.340	PA1	0.2063	0.0701	**6**	Policy & Administrative Barrier **(PA)**	0.372	PA1	0.1808	0.0673	**4**
		PA2	0.4192	0.1425	**1**			PA2	0.3316	0.1234	**2**
		PA3	0.3745	0.1273	**2**			PA3	0.4876	0.1815	**1**
Attitudinal Barrier **(AT)**	0.143	AT1	0.1904	0.0272	**14**	Attitudinal Barrier **(AT)**	0.185	AT1	0.2722	0.0503	**8**
		AT2	0.1695	0.0242	**15**			AT2	0.1709	0.0316	**13**
		AT3	0.3638	0.0519	**8**			AT3	0.3326	0.0615	**5**
		AT4	0.2763	0.0394	**11**			AT4	0.2243	0.0415	**11**

- People with locomotor or visual disabilities perceive policy and administrative barriers as the most difficult barrier
- The least important barrier was the attitudinal barrier
- The most important sub-criteria was delay in getting a disability certificate for people with locomotor disability and difficulty in getting reserved seats for people with visual disability

RESULTS – DISABILITY WISE

Main criteria	Main criteria weight	Sub-criteria	Sub-criteria weights	Global weights	Rank
Other Disabilities					
Infrastructural Barrier **(IN)**	0.338	IN1	0.2211	0.0747	**3**
		IN2	0.1561	0.0527	**11**
		IN3	0.2289	0.0773	**2**
		IN4	0.1913	0.0646	**8**
		IN5	0.2027	0.0685	**7**
Transportation Barrier **(TR)**	0.159	TR1	0.1183	0.0187	**17**
		TR2	0.1894	0.0300	**15**
		TR3	0.2294	0.0364	**13**
		TR4	0.2203	0.0349	**14**
		TR5	0.1291	0.0205	**16**
		TR6	0.1135	0.0180	**18**
Policy & Administrative Barrier **(PA)**	0.253	PA1	0.2799	0.0709	**5**
		PA2	0.4826	0.1222	**1**
		PA3	0.2374	0.0601	**9**
Attitudinal Barrier **(AT)**	0.250	AT1	0.2911	0.0729	**4**
		AT2	0.2043	0.0511	**12**
		AT3	0.2238	0.0560	**10**
		AT4	0.2808	0.0703	**6**

Main criteria	Main criteria weight	Sub-criteria	Sub-criteria weights	Global weights	Rank
Multiple Disabilities					
Infrastructural Barrier **(IN)**	0.265	IN1	0.2074	0.0550	**8**
		IN2	0.1557	0.0413	**12**
		IN3	0.2016	0.0535	**9**
		IN4	0.2176	0.0577	**7**
		IN5	0.2177	0.0578	**6**
Transportation Barrier **(TR)**	0.191	TR1	0.1562	0.0299	**16**
		TR2	0.1993	0.0381	**14**
		TR3	0.2140	0.0409	**13**
		TR4	0.1360	0.0260	**17**
		TR5	0.1759	0.0337	**15**
		TR6	0.1186	0.0227	**18**
Policy & Administrative Barrier **(PA)**	0.298	PA1	0.2817	0.0840	**2**
		PA2	0.4449	0.1327	**1**
		PA3	0.2734	0.0816	**3**
Attitudinal Barrier **(AT)**	0.245	AT1	0.2146	0.0526	**10**
		AT2	0.2071	0.0507	**11**
		AT3	0.2906	0.0712	**4**
		AT4	0.2877	0.0705	**5**

- For people with other disabilities infrastructural barrier is the most difficult barrier
- For people with multiple disabilities policy and administrative barriers are the most important barrier
- The least important barrier is transportation barrier

POLICY IMPLICATIONS

- Minimizing the delay in getting a disability certificate
- Inclusive infrastructure with ramps to board
- Sensitivity training to the public as well as incorporating it into the school curriculum
- Buses exclusive to PWDs with clear branding
- Transit stops near key destination

CONCLUSION

- The relative preferences of mobility barriers among different categories of disabilities are analyzed by the Bayesian Best Worst method
- Asymmetry exists in perceiving mobility barriers among people with different disabilities. Thus it is important to develop disability specific policies to ensure an inclusive transit system

Limitations and Future Scope:

- Certain types of disabilities are combined together as there was not enough sample size in those categories
- Future studies can be conducted using a wider sample by incorporating various socio-demographic variables and mobility enablers as well.

THANK YOU!!!

QUESTIONS