ON THE MOVE

Urban travel experiences of Persons with Disabilities and a path to build more inclusive transport systems

A Report by OLA MOBILITY INSTITUTE
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Ola Mobility Institute (OMI) is a new-age policy research and social innovation think tank of Ola focused on developing knowledge frameworks at the intersection of mobility innovation and the public good. The Institute concerns itself with public research on electric mobility, energy and mobility, urban mobility, accessibility and inclusion, and the future of work and platform economy. All research conducted at OMI is funded by ANI Technologies Pvt. Ltd. (the parent company of brand Ola).

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Mobility today is at a turning point with its future being shared, connected, electric, and AI-powered, and India is at the forefront of this global revolution. The country is actively building a mobility infrastructure which will not only help us meet current demand but also that of the decades to come. Accessibility and inclusion are two vital characteristics of a sustainable and resilient mobility system. Thus it needs to be accessible for everyone, particularly for the millions of Persons with Disabilities residing and aspiring in the country towards a future of promise.

Persons with Disabilities live with various constraints on moving around and accessing myriad socio-economic opportunities. These barriers limit their access to education, employment, healthcare, entertainment and avenues for social engagement. This in turn leads to poorer quality of life for this community.

The Government of India’s various schemes and policy initiatives such as the Accessible India campaign and Smart Cities Mission have been pivotal in improving accessibility of the mobility infrastructure and reinforces the government’s commitment to leave no one behind. Accessible transportation networks are a crucial component of the efforts to increase both social inclusion and economic development by way of equitable access.

Ola Mobility Institute’s study on capturing urban travel experiences of persons with disabilities to make transport systems accessible is valuable in this respect. It contains rich insights for urban and transport planners, policymakers, transport operators and civil society. The impact of the COVID-19 related transport restrictions on this community documented in the report is particularly helpful in understanding their evolving transport needs during the pandemic.

I congratulate Ola Mobility Institute for releasing a timely, multi-stakeholder and evidence-based report that will help governments, businesses and civil society to understand the lived mobility experiences of Persons with Disabilities and make mobility systems more accessible and inclusive for all.

(Ramdas Athawale)
Foreword

The transport sector is an enabler of economic development. Accessible mobility networks connect people and places, creating opportunities for growth, jobs, trade and commerce. Over the coming decade, transport and mobility systems are poised to change faster than any time in human history, and India is preparing to be a key stakeholder driving this mobility revolution. As we move towards smart, sustainable and resilient mobility, there is a need to ensure that these systems are inclusive for all, including for Persons with Disabilities.

As per the Census 2011, 26.8 million persons with disabilities reside in India. Non-government sources suggest that the actual population of PwDs may be over 100 million. This too is a conservative estimate when benchmarked against the global disability rate of 15% of the population.

Persons with Disabilities face significant transport disadvantages limiting their access to education, employment, healthcare and recreation. Physical, digital and attitudinal transport barriers constrain their ability to travel independently and safely. The onset of the COVID-19 pandemic has further compounded the inaccessibility of mobility systems for this community. These factors perpetuate a vicious cycle of exclusion and poverty - an outcome unaffordable for an emerging global power like India.

The Government is actively investing in improving the accessibility of the country’s mobility infrastructure through interventions such as the Accessible India Campaign. These initiatives have been critical in removing many transport barriers and improving travel experience of PwDs.

Ola Mobility Institute (OMI), seeks to support various efforts to improve accessibility of urban mobility systems through this report capturing the results of a comprehensive study on urban transport experiences of PwDs. This study was conducted in collaboration with eight organisations working for the empowerment of PwDs. The report captures a detailed account of lived travel experiences of women and men with disabilities across the trip chain for buses, metros & local trains as well as intermediate public transport. The study also highlights the impact of the pandemic on the travel experiences of this community.

This report will provide policy-makers, industry and development professionals with an effective lens to look at the urban mobility challenges that persons with disabilities face, along with actionable tools to accelerate the proliferation of accessible and inclusive transportation. I congratulate OMI for publishing this timely report and look forward to an accessible and inclusive mobility future for India.
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EXECUTIVE SUMMARY

Transport systems that are safe, accessible, reliable and affordable enable full access to various socioeconomic opportunities. Thus, they are critical for unlocking the full latent value of human capital. However, for the millions of Persons with Disabilities (PwDs) in India, inaccessible transportation has been a major barrier in achieving their full potential. This report seeks to identify opportunities to remove these barriers and makes strategic recommendations in this direction.

Persons with Disabilities form the largest minority in India (Shenoy, 2011). There are different definitions and methods for estimating the number of PwD living in the country resulting in varying figures. For instance, as per Census 2011, India is home to about 26.8 million PwD. However, the actual number is likely to be several times higher. The fact that The Rights of Persons With Disabilities Act, 2016 recognizes 21 disabilities as against 7 in the earlier ‘Persons with Disabilities (Equal opportunities, Protection of rights and full participation) Act, 1995 lends credence to the same (Bagchi, 2018). A 2009 World Bank report estimates the population to be between 55 – 90 million (O’Keefe et al, 2009, p. xii). Even these figures could be an under-representation of the on-ground reality when benchmarked against global estimates. The United Nations estimates that globally 1 billion people or 15% of the population lives with a disability - including visual, hearing & speech, locomotor, intellectual and other forms of disability. Furthermore, about 80% of this population resides in the developing world (“Disability-inclusive development,” n.d.). Based on the global disability rates, a rough calculation suggests that there might be more than 180 million people living with a disability in India.

Source/basis of estimation |
<table>
<thead>
<tr>
<th>Population in millions</th>
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<tbody>
<tr>
<td>CENSUS 2011(MILLIONS)</td>
</tr>
<tr>
<td>26.8</td>
</tr>
<tr>
<td>WORLD BANK(2009)</td>
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<td>55-90</td>
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GLOBAL DISABILITY RATE OF 15% APPLIED TO INDIAN POPULATION 180+

as per the 2011 Census of 1.21 Billion (“India at Glance,” n.d.)

INACCESSIBILITY OF TRANSPORTATION AND THE LOSS OF ECONOMIC DIVIDEND

Just like any non-disabled individual, Persons with Disabilities also need safe, accessible, reliable and affordable transportation for accessing a variety of socioeconomic opportunities. However, in India, accessibility considerations often get overlooked during the planning phase of urban transport systems. This, in turn, perpetuates the exclusion of PwD from accessing various opportunities. An economy pays the cost of such exclusion in the form of reduced productivity of the Persons with Disabilities, as well as their carers, such as family members, who otherwise would have a higher economic output. According to the International Labour Organization, the cost of excluding Persons with Disabilities from the workforce could be as high as 7% of a country’s Gross Domestic Product (GDP) (Buckup, 2009).

In 2020, COVID-19 has affected the ability to travel safely for everyone. However, the overall transport experience of Persons with Disabilities has been severely compromised as a result of the pandemic. The restrictions instituted in response to COVID-19 coupled with the emphasis on social distancing has not just introduced new difficulties for this community overnight, but also increased the intensity of the physical and digital inaccessibility further.

This study aims to:
• Catalogue the urban travel experience of Persons with Disabilities
• Outline the actual and anticipated impact of the COVID-19 pandemic on the travel experiences of PwD
• Demonstrate the opportunity to improve accessibility throughout the trip chain
• Provide recommendations for improving the accessibility of urban transportation

SCOPE AND METHODOLOGY

The Ola Mobility Institute partnered with eight organizations working to empower Persons with Disabilities. In late 2019, 21 women and men with Disabilities (interviewees) were nominated by six of these organisations for semi-structured interviews to understand their travel experiences. The modes of transport covered include metro/local trains, buses, auto-rickshaws, taxis and auto-rickshaws & cabs attached with technology enabled platforms i.e. mobility aggregators. The interviewees narrated their experiences by answering more than 30 questions encompassing different phases of a journey. The phases include trip planning, getting to the boarding spot, boarding, in-transit experience, disembarking, payment and other considerations. Subsequently, between August – October 2020, three Focused Group Discussions (FGDs) were conducted with Persons with Disabilities nominated by five of the aforesaid organizations. 11 men and women with Disabilities participated in the FGDs and shared their experiences and anticipated concerns as a result of restrictions introduced in response to the COVID-19 pandemic. Firsthand travel experience after March 25, 2020 followed by participation in the previously conducted semi-structured interviews were the two key criteria for selecting the FGD participants. In order to maintain continuity, all FGD participants were briefed about the observations and insights gathered through the aforementioned interviews.

This report captures observations and insights on the travel experience of Persons with Disabilities shared through semi-structured interviews. These findings have been supplemented by FGDs to capture the actual or anticipated impact of the COVID-19 pandemic on the travel experiences of PwDs across the various modes of transport. While the findings presented in this report may not be generalized for the travel experience of all PwDs in India, they nevertheless, help in understanding the nuances of urban travel when one lives with a disability as elaborated below:
1. TRIP PLANNING
Inaccessibility and unavailability of information inhibit trip planning

Inaccessible online resources, including websites and apps, as well as physical resources, such as display boards or travel booklets, present challenges in trip planning for Persons with Disabilities. Furthermore, these resources often lack crucial information around the accessibility of the mode of transport and surrounding built infrastructure.

PwDs bare loss of productive time in navigating infrastructural inaccessibility

The travel time windows of PwDs match that of the non-disabled population. However, PwDs budgeted additional time to navigate around various physical, digital and inaccessibility.

2. ON-GROUND TRAVEL EXPERIENCE
Includes getting to the boarding spot, boarding, in-transit phase, disembarking and travel to final destination

PwDs travel independently but are constrained by the inaccessible built environment

Persons with Disabilities regularly travelled independently or with the support of their carers depending on the nature and extent of their disability. However, the varying levels of inaccessibility of transportation, built environment and information systems prevent them from travelling freely.

Boarding and disembarking are more challenging as compared to the in-transit phase of a journey

Travelling to or from a pick-up or drop location, and independently and safely boarding or disembarking from a vehicle are more challenging than the in-transit experience itself. This is attributable to poor walkability, inaccessible physical infrastructure such as bus stops and inaccessible transport vehicles.

Technology is regularly leveraged to overcome inaccessible elements of a trip

Persons with Disabilities use smartphones for identifying locations, verifying if the vehicle is on the expected route, communication etc. The Deaf also use a smartphone to overcome communication barrier as and when necessary.

Lack of sensitisation and training negatively affects the travel experience

PwDs request for assistance from transport staff and fellow travellers to navigate around various accessibility barriers. However, a lack of training and sensitization of travel personnel and fellow travellers results in discrimination and compromised travel experiences.

Women’s safety needs to be given additional attention

Women with Disabilities often experience harassment under the guise of assistance, especially at the time of boarding or disembarking a vehicle. Unlike non-disabled women, they might not be able to escape to safety or raise an alarm in the event of a threat.

3. PAYMENT EXPERIENCE
Inaccessibility of payment modes restricts full participation in commercial activities

Inaccessible online payment modes including mobile wallets, net banking, etc. pose difficulty in completing payment transactions independently. Similarly, Persons with Disabilities may find it difficult to identify and handle currency notes depending on the nature and extent of their disability.
COVID-19 IMPACT

The pandemic has compounded many urban transport accessibility challenges faced by Persons with Disabilities. This ranges from difficulty in planning a trip, safely and independently boarding a vehicle, getting support from transport staff or fellow travellers to fare payment. Unavailability of COVID-19 related information in accessible formats, non-disability inclusive COVID response procedures and inadequate training and sensitisation around disability and may be attributable for this.

Given that a transport system once established is used for decades, accessibility considerations should be part of the key success criteria right from the design and planning stage. Similarly, India needs to invest time and resources to make the existing transport infrastructure more accessible for PwD. There needs to be an ecosystem-wide concerted effort to achieve these goals. This report outlines 11 recommendations to improve the urban transport accessibility in India in chapter 4.

HERE ARE SELECT 7 RECOMMENDATIONS

01 Mandate collection of up-to-date gender age and disability (GAD) disaggregated transport data.

02 Notify standards of accessibility for physical and digital infrastructure across the trip chain.

03 Ensure that the Country’s disaster response, especially with respect to transportation, is disability inclusive.

04 Specify universal accessibility as essential criteria in the technical requirements for procurement of goods or RFP for tenders.

05 Announce fiscal incentives for accessible transportation thus encouraging the industry to invest in the development and production of accessible transport solutions.

06 Automobile companies and transport operators to publish an accessibility policy along with an annual roadmap for accessibility improvements based on standards notified by the Government.

07 Conduct regular independent professional accessibility audits of transport systems covering the entire trip chain.

Refer to chapter 4 for a comprehensive list of the recommendations with supporting information.

As India prepares to build a brave new resilient world after the COVID-19 crisis, sustainability, and inclusion need to be a priority. India’s demography is one of our key advantages. In the post-COVID period, sustainable and inclusive transport systems will be essential to unlocking the full potential of India’s human capital. As a corollary, a failure to invest in accessible transport systems could mean a foregone economic dividend amounting to up to 7% of GDP (Buckup, 2009). Thus, India cannot afford to lose the current opportunity to build a more inclusive and accessible transport system and country.
CHAPTER 1

INTRODUCTION

India is home to 26.8 million Persons with Disabilities (Census 2011). Non-government estimates peg this number between 55 – 90 million (O’Keefe et al, 2009, p. xii). Application of global disability rate of 15% (“Disability-inclusive development,” n.d.) to India’s population of 1.2 billion (Census 2011) yields a figure of over 180 billion. Irrespective of what’s the correct number, it is undeniable that India has an opportunity to build a more accessible and inclusive country for millions of PwDs and unlock their full human potential.

Transport systems, which are the arteries of an economy, play a huge role in enabling access to a variety of socio-economic opportunities. Thus, building a more accessible and inclusive India requires investment in the development and upgradation of transport systems to make them more accessible. This report aims to catalogues the urban transport accessibility challenges experienced by PwD and makes recommendations to improve the accessibility of transport systems.

THE EVOLUTION OF DISABILITY DISCOURSE

“Disability” as a concept has undergone an evolution due to the ever changing societal mental models. Initially, a disability was seen as a punishment for the sins from one’s past life – this was the ‘Karma’ model. Later, under the ‘medical’ model, disability was construed as a disorder that needed to be cured. This transitioned into the ‘charity’ model which encouraged viewing Persons with disabilities through a sympathy and welfare lens. The contemporary ‘social’ model recognizes that people experience disability on account of the infrastructural and attitudinal barriers in a society.

INCREASING ATTENTION TO ACCESSIBILITY OF TRANSPORTATION AND BUILT ENVIRONMENT

The Indian Disability Rights Movement which had started in the 1970s, gathered momentum in the 1990s. In 1992, India became a signatory to the Proclamation on the Full Participation and Equality of People with Disabilities in the Asian and the Pacific Region. It recognized that the built environment throughout much of Asia and the Pacific has been designed without consideration for the needs of persons with disabilities. As a result, Physical obstacles and social barriers prevent citizens with disabilities from participating in community and national life. The enactment of the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 (PwD Act) was a major milestone. It required Governments, local authorities and Government owned/controlled establishments in the transport sector to improve accessibility of various modes of transport such as railways, buses, airlines, as well as footpaths, road crossings, etc. within their economic capacity.
India continues to participate in the disability discourse in the new millennium.

In 2007, India ratified the United Nations Convention on the Rights of Persons with Disabilities (UN CRPD). It requires a country to take appropriate measures to provide access to PwD (on an equal basis with others) to the physical environment, transportation, and information, and communications technology and systems (The United Nations, 2006).

The country has also adopted the Incheon Strategy 2012 (Incheon Strategy, n.d.). Goal 3 of the said strategy is to enhance access to the physical environment, public transportation, knowledge, information and communication for Persons with Disabilities (UN ESCAP, 2012).

Similarly, India is a signatory to the Sustainable Development Goals 2030 (SDG 2030). Goal 11 of SDG 2030 calls upon member states to provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, with special attention to the needs of those in vulnerable situations, such as persons with disabilities.

Most recently, India enacted the Rights of Persons with Disabilities Act, 2016 (RPWD Act) which supersedes the earlier PwD Act. The RPWD Act requires the Central Government (in consultation with the Chief Commissioner of Disabilities) to lay down standards of accessibility for transportation (Rights of Persons with Disabilities Act, 2016).

Recent efforts to improve accessibility of transportation and built environment

In December 2015, Prime Minister Narendra Modi launched the Accessible India campaign, a nation-wide movement to improve the accessibility of the built environment, transportation, and information & communication systems. The campaign targeted conducting accessibility audits of all the international airports, railway stations and Government owned public transport carriers and converting them into fully accessible international airports, railway stations and public transport carriers by March 2018 (“Accessible India Campaign”, n.d.). However, in December 2019, the Ministry of Social Justice and Empowerment has informed the Lok Sabha that the aforesaid deadlines have been extended to March 2020 on account of slow progress (Nath, 2019).

Different states within India are also working to make transportation accessible. For example, in January 2019, the Delhi Government announced the addition of one thousand buses fitted with hydraulic ramps to the existing fleet of 3750 accessible busses (Barua, 2019). Similarly, in June 2019, the Goa Chief Minister, Dr Pramod Sawant, launched wheelchair accessible school buses for students of Sanjay Centre for Special Education with the aim of reducing dropout rates of students using a wheelchair (Asian News International, 2019).
**THE OPPORTUNITY TODAY**

While the various efforts taken by the government have helped in enhancing transport accessibility, there is still a huge scope for improvement of accessibility of transportation in general and urban transportation in particular. There is an urgent need to understand the usage patterns, needs and concerns of PwD with respect to Urban transportation. The country requires effective solutions that are developed and deployed at scale. The need is even more pronounced in light of the opportunity presented by the COVID-19 pandemic requiring the creation of safe, accessible, affordable, and inclusive transport solutions.

This study aims to investigate the urban travel experiences of Persons with Disabilities and come up with recommendations to make urban transport more accessible. An inclusive and accessible transport system which equally empowers Persons with Disabilities will unlock their full potential and enable them to make even higher contributions to their family, community and the country.
CHAPTER 2

METHODOLOGY & STRUCTURE

2.1. RESEARCH QUESTION

The report addresses the following research questions:

a. How do Persons with Disabilities travel using different modes of urban transportation, and what challenges do they experience?

b. How have the restrictions introduced in response to the COVID-19 pandemic either already affected or are expected to affect the travel experience of Persons with Disabilities.

2.2. SCOPE

Disability groups

This study is focused on the urban travel experiences of Persons with sensory and locomotor disabilities. Sensory disabilities include visual (persons having difficulty in seeing) and hearing and speech (persons having difficulty in hearing or speech) disability. Locomotor disability includes persons who have difficulty moving around.

According to Census 2011, 19% of India’s population of Persons with Disabilities have difficulty in seeing, 26% have difficulty in hearing or speech, and 20% have difficulty in moving around. Together, they constitute 65% of the population of Persons with Disabilities in India. Further, 31% or 8 million Persons with Disabilities live in urban areas (Rights of Persons with Disabilities Act, 2016).

This study investigates the travel experience of persons living with a single disability. Accordingly, persons living with multiple disabilities have not been interviewed as a part of this study.

2.3. RESEARCH METHODOLOGY

Modes of urban transport

The Persons with Disabilities were interviewed about their experiences of travelling with Metro/local trains, Buses, Auto-Rickshaws, and Taxi Cabs, as well as vehicles attached to technology-enabled platforms or mobility aggregators. Together, these modes of transport cover 55 - 80% of the motorised urban transportation in Indian cities with a population of more than one million (Gadepalli, 2016).

For this study, we partnered with eight leading organisations working to empower Persons with Disabilities in three cities – Delhi NCR, Mumbai, and Bangalore. In late 2019 six organisations nominated 21 Persons with Disabilities associated with them and belonging to one of the three groups of disabilities that form the focus of this study. Emphasis was given to nominating PwD who have personally used the modes of transport which are the subject of this study. This helped in learning about authentic day-to-day urban transportation challenges faced by the members of the disabled community.

The researchers took the participating PwD through an unstructured interview which included more than 30 questions and covered various phases of a trip/journey from planning, getting to the boarding spot, boarding the vehicle, in-transit experience, disembarking, payment of trip fare and other considerations. The aim of the interview was to learn about their authentic experiences of traveling through various modes of urban transport.
Between August – October 2019, 11 Persons with Disabilities (across the three disability groups) nominated by 5 organisations participated in three FGDs. First-hand travel experience followed by participation in the unstructured interviews were two criteria for selecting the FGD interviewees. Similar to the semi-structured interviews, the FGD covered all the modes of transport and phases of trips. In order to maintain continuity, all interviewees were briefed on the key observations and insights collated through the semi-structured interviews.

2.4. STRUCTURE

This report presents the observations and insights for each mode of transport in distinct sections under chapter 5. The attributes affecting all modes of transport are collated and presented towards the beginning of the chapter. Further, the report presents the impact of COVID-19 restrictions on the urban transport experience separately under each section. This structure is aimed to facilitate easy comprehension of the impact of COVID-19 restrictions on urban transport experience of PwD.

2.5. LIMITATIONS

Persons with Disabilities participating in the FGDs had fewer opportunities to travel during the COVID-19 pandemic as compared to the preceding period. Therefore, their contributions to the discussion were a combination of their personal travel experience along with the travel experience of their peers from the disabled community during the pandemic. Furthermore, the interviewees also relied on (a) their previous experience of urban travel, (b) the challenges experienced back then and (c) the resources/ tactics used to navigate around those challenges to share anticipated difficulties on account of infrastructural, operational and attitudinal changes as a result of COVID-19 restrictions. A richer understanding of urban transport accessibility challenges is likely to emerge once travel activity returns to the pre-COVID levels.

The observations and insights documented in this study through semi-structured interviews and FGDs primarily reflect the experience of the individual interviewees and other PwDs in their network. Although it is likely that these experiences are shared more broadly by other members of the respective disability groups, a wider study is essential to arrive at an exhaustive understanding of transport challenges experienced by the disabled community across India.

2.6. APPLICATION

This study and its findings could be used to embark on a process to improve the accessibility of urban transport systems in the country. Further, the study may also be used to kick-start a larger country-wide research on the urban transport experiences of Persons with Disabilities. Such a wide-scale research will help in generating additional qualitative and quantitative information which will be helpful in effective policy formulation. It will also play an important role in adapting the existing transport systems and designing new ones to make India more accessible for Persons with Disabilities.
3.1. GENERAL

Disability is a dynamic and multidimensional concept. It is the result of negative interactions that take place between a person with an impairment and their social environment (Chadwick, n.d.). There are various combinations of nature and extent of impairment(s) that make disability complex. For instance, visual disability includes a person living with complete blindness as well as a person living with low vision. Similarly, members of the Deaf community may be hard of hearing (limited perception of sound) or could have no sound perception whatsoever. Locomotor disability includes a wheelchair user as well as a caliper user and even someone who does not use any aids, but is not able to walk long distances.

Persons living with a visual disability undergo mobility training in order to learn to navigate using a white cane. While undergoing mobility training was common, some people living with low vision and who don’t depend on a white cane for navigation may choose to forgo such training. Persons with Visual Disabilities (PwVD) opt for assistance when provided by the transport operator, for instance, the Metro Sahayak in the Delhi Metro. However, where such assistance is unavailable, for example in the Mumbai local trains, the PwVD are forced to train themselves to travel independently. Such self-training, however, may take months of efforts before a reasonable degree of familiarity and proficiency is developed.

Deaf persons (persons with hearing &/or speech disability) are also able to undertake independent travel using different modes of transport. Unlike Persons with Visual Disabilities, Deaf persons don’t undergo any mobility training. They, however, may need some assistance to bridge over the challenges surrounding an oral conversation, say, communicating the destination to an auto-rickshaw hailed from the street.

Given the inherent diversity within the disabled community, the experience of Persons living with a Disability also are diverse.

Independent/assisted travel

Persons living with a Sensory Disability largely travel independently using different modes of transport.
Physical accessibility of the built environment as well as digital accessibility is nevertheless an important consideration for Persons with Sensory Disabilities. Inaccessibility in these spaces negatively impact their experience and by extension the ability and willingness to travel independently.

For persons living with a locomotor disability, the ability to travel independently is majorly influenced by the extent of disability and its interaction with the built environment. Inaccessibility of footpaths, streets, and vehicles only constrains them further. For instance, a caliper user may be able to independently board, travel, and disembark from an auto-rickshaw. However, this travel option might be unavailable to a wheelchair user.

There are several challenges and possible points of failure in a door-to-door journey for a Person with Locomotor Disability. Poor walkability of roads to get to the boarding point, unavailability of an accessible vehicle, - say, a low floor bus with operational ramps, safe transfer from wheelchair to seat (where necessary), etc. are but some of the things which need additional planning. These challenges don’t just make travel inconvenient and cumbersome, they also increase the risk of injury. The difficulties get further exacerbated when one has to use multiple modes of transport/vehicles in a single journey (trip chaining). As a result, many Persons with Locomotor Disabilities prefer travelling by their personal vehicle which may be adapted to fit their needs. However, given the capital and the operating cost in acquiring, modifying, operating and managing a personal vehicle, affordability is an important factor.

Attendants, carers and assistants

From time to time, Persons with Disabilities need some assistance to function in an inaccessible physical or social environment. Family members, spouses, friends and colleagues form important components of a PwD’s support system for such assistance. In addition, the PwDs also reach out to non-disabled strangers present at a location with a request for assistance (when necessary).

Persons with Locomotor Disabilities might require a full-time attendant or a carer depending on the nature and extent of their disability. One may require a same-sex carer for assisting with daily living activities such as bathing, dressing up, etc. Interviewees of this study have hired attendants through various agencies as well as through personal outreach. Most carers seem to be trained for assisting patients as opposed to a PwD. As a result, they often need further training and instructions to provide assistance safely and effectively. Additionally, there is a high turnover amongst attendants which results in disruptions to day-to-day life of a PwD along with increased hiring and training costs.

The ability to hire an attendant is contingent on the availability of suitable personnel and the financial capacity to afford their services. For instance, an attendant can cost between INR 2.4 – 3 lakhs per year in a city like Delhi, according to one interviewee of this study. Where the hiring of a full-time attendant is not possible, family members often take up the caregiving responsibility. However, such an arrangement may result in a reduced capacity for economic and social output of the PwD and the family members (Carers Worldwide, 2016).
**Assistive device and technology**

Persons with Disabilities make use of various assistive devices and technology in their day-to-day life. These devices enable them to increase, maintain or improve their functional capabilities. A few examples are listed here along with the purpose for which they may be used.

<table>
<thead>
<tr>
<th>Assistive device and technology</th>
<th>Purpose</th>
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<tbody>
<tr>
<td><strong>PERSONS WITH VISUAL DISABILITIES</strong></td>
<td></td>
</tr>
<tr>
<td>White cane</td>
<td>Mobility and navigation</td>
</tr>
<tr>
<td>Screen readers, magnifiers, Apps such as Google maps, Eye-D, Nearby Explorer</td>
<td>Navigation, discovering new places, orientation, safety (to ensure that the vehicle is following the correct route)</td>
</tr>
<tr>
<td><strong>DEAF PERSONS</strong></td>
<td></td>
</tr>
<tr>
<td>Hearing aids</td>
<td>Improved hearing and sound perception</td>
</tr>
<tr>
<td><strong>PERSONS WITH LOCOMOTOR DISABILITIES</strong></td>
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</tr>
<tr>
<td>Wheelchairs, walkers, elbow crutches (single or bilateral), shoulder crutches (single or bilateral), walking cane</td>
<td>Mobility</td>
</tr>
<tr>
<td>Prosthetics such as artificial limbs</td>
<td>These replace or compensate for a missing or disabled body part (amputee or limb deficiency)</td>
</tr>
<tr>
<td>Orthotics such as calipers, braces, etc.</td>
<td>These support, align, prevent, or correct the function of moving parts of the body</td>
</tr>
<tr>
<td>Adult diapers, urinal bags, catheters, etc.</td>
<td>Daily living aids - often required during travel on account of lack of accessible toilets and/or carers</td>
</tr>
</tbody>
</table>
Other travel patterns

Interviewees of this study report having distinct planning processes for a new or unfamiliar route and a route frequented by them. While information is actively sourced for the former, experience from previous journeys plays a key role for the latter.

PwDs generally budget a buffer time to deal with any challenges arising as a result of inaccessible vehicles and physical environment, negotiating for the accessibility related needs with transport staff such as drivers and assistants (where available) etc. Persons with Locomotor Disabilities tend to budget for more time as compared to the other two groups. They are followed by Persons with Visual Disabilities. The Deaf persons budget the least buffer time. In addition to the nature of disability, its extent, the overall duration of travel, the mode(s) of transport involved, familiarity of the route, etc. also influence the quantum of buffer time budgeted.

The travel windows of the PwD mirror those of the general public. The majority of daily trips are undertaken to commute to/from work or training centres. These establishments operate during regular business hours. As a result, the PwD travels during peak times. Most PwD do not have the flexibility to opt for different work/training hours, as explained by the interviewees of this study. The trips undertaken to meet social commitments also exhibit a similar pattern. This is because the commitments are scheduled during regular windows of time - such as in the evenings after business hours.

COVID-19 IMPACT

The ability to travel independently is predicated on reliable and timely access to information. During the pandemic, reliable information on the management of COVID-19 was often unavailable in accessible formats on a timely basis. This included information around restrictions on transport and mobility during lockdowns and steps to maintain safety and hygienic travel conditions (Goyal, Raghavan and Kothari 2020). For instance, Deaf and Hard of Hearing individuals did not have timely access to aforesaid information in sign language – which is their primary language for communication. Lack of timely access to information has diminished the confidence and ability of Persons with Disabilities to undertake travel independently.

The ability to travel has become even more restricted for PwD who require support from family members, carers, or other staff such as private drivers. Family members have been known to take up additional domestic responsibilities during the COVID-19 pandemic. This has limited their ability to support the PwDs. Furthermore, family members may be living with comorbidities putting them in the high risk population. As a result, they may be unable to provide adequate support safely. Similarly, hired carers or support staff have been in short supply on account of reverse migration, reluctance to take up support work on account of corona phobia , etc.

Before COVID-19, PwDs regularly relied on non-disabled people (including strangers) for assistance to tackle various forms of inaccessibilities. However, during the pandemic, many non-disabled individuals have been reluctant to provide assistance ([Goyal 2020). PwDs also feel anxious about requesting assistance on account of health risks.

Persons with Disability mention budgeting even more time to negotiate various inaccessibilities on account of COVID-19 changes in transport operations. This includes entry into stations through
a limited number of doors, a limited number of travellers allowed in a vehicle, difficulties around getting help from other non-disabled people on account of social distancing norms, etc.

The fear around COVID-19, uncertainty around the accessibility of transportation, and difficulty/risk in getting help from non-disabled people have led family members to strongly discourage PwD from undertaking any travel. Persons with Disabilities view this as a major setback in their efforts to live an independent life and getting equal access to myriad economic, educational, social, recreational as well as healthcare opportunities and being net contributors to society.
3.2. METRO AND LOCAL TRAINS

In Delhi, the Metro seems to be a popular choice for travelling for Persons with Disabilities. The attention to making the built environment accessible, availability of Metro Sahayaks for assisting, coupled with the overall safety, reliability, convenience and affordability makes this a popular choice.

Similarly, Mumbai locals are used by many Persons with Disabilities. However, the built environment is not accessible for many Persons with Locomotor Disabilities (PwLD).

3.2.1. Key points at a glance

<table>
<thead>
<tr>
<th>Sr</th>
<th>Areas of concern</th>
<th>Level of difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PwVD</td>
</tr>
<tr>
<td>A. TRIP PLANNING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Physical accessibility of the built environment around a Metro or Local station</td>
<td>Mid</td>
</tr>
<tr>
<td>2</td>
<td>Availability of accessible transportation to and from a station</td>
<td>Mid</td>
</tr>
<tr>
<td>3</td>
<td>Design and accessibility of the built environment within a station</td>
<td>Mid</td>
</tr>
<tr>
<td>4</td>
<td>Difficulty in independently getting up to date information around physical accessibility of a station</td>
<td>Mid</td>
</tr>
<tr>
<td>5</td>
<td>Inaccessibility of digital resources</td>
<td>High</td>
</tr>
<tr>
<td>6</td>
<td>Availability of accessible toilets</td>
<td>Mid</td>
</tr>
<tr>
<td>B. GETTING TO THE METRO/LOCAL TRAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Inaccessibility of bus system to get to a station</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>Ability to independently and safely navigate within a station</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Delays in getting assistance resulting in increase of overall trip time</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Non-functioning elevators</td>
<td>Mid</td>
</tr>
<tr>
<td>5</td>
<td>Need for women Sahayaks in Metros</td>
<td>Mid</td>
</tr>
</tbody>
</table>
### Areas of Concern

<table>
<thead>
<tr>
<th>Sr</th>
<th>Areas of Concern</th>
<th>PwVD</th>
<th>Deaf</th>
<th>PwLD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>C. Boarding a Train</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Safely and independently boarding a train in rush hour</td>
<td>High</td>
<td>Mid</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Difficulty in getting a safe seat after boarding</td>
<td>High</td>
<td>Mid</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Difference in the level of the platform and the floor of Mumbai Local train</td>
<td>Mid</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td><strong>D. In-Transit Experience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Risk of pickpocketing</td>
<td>Mid</td>
<td>Mid</td>
<td>Mid</td>
</tr>
<tr>
<td>2</td>
<td>Risk of harassment of women</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Non-disabled individuals boarding the compartment reserved for PwD in Mumbai Local</td>
<td>Mid</td>
<td>Mid</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td><strong>E. Disembarking from the Train</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Delays and anxiety if the Metro Sahayak is not present at the destination station once the train has arrived</td>
<td>High</td>
<td>NA</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Non-functioning elevators</td>
<td>Mid</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td><strong>F. Payment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Varying levels of inaccessibility of digital payment modes</td>
<td>High</td>
<td>Low</td>
<td>Mid</td>
</tr>
<tr>
<td></td>
<td><strong>G. Others</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Challenges in filing a complaint</td>
<td>Mid</td>
<td>High</td>
<td>Mid</td>
</tr>
</tbody>
</table>
3.2.2. The barriers experienced by PwD - explained

A. Trip planning

A Metro or Local train ride is a segment of a larger journey which may involve the use of more than one mode of transport. Therefore, a PwD’s planning and preparation exercise would involve considerations beyond the experience between the two train stations. This section will, however, focus on the core Metro/Local train experience with brief mentions of the other considerations. Readers are requested to refer to other sections of this report to develop a holistic understanding of this process.

Nearest boarding and destination stations, line (example: for Metro - yellow, pink, etc.), platform number on which the train will arrive, expected fare, train times and frequency, expected duration, etc. are a few of the attributes/details considered by a PwD in planning for a trip on a new or unfamiliar route. While these details are also relevant for a non-disabled person, for a PwD, some of them have an added accessibility consideration.

<table>
<thead>
<tr>
<th>Select attributes</th>
<th>Examples of accessibility considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearest boarding and destination station</td>
<td></td>
</tr>
</tbody>
</table>
- Will I be able to get suitable (accessible) transportation options to and from the stations?
- How far will the pick-up/ drop point of, say a bus/auto rickshaw, be from the station entrance/exit and how is the walkability of the approach path (if any) to/ from the station entrance/exit?
- Is the built environment around the station accessible?
  - Is the footpath around the stations easy to navigate if I am, say, a wheelchair/crutches user or a blind person?
  - Will there be ramps and will I be able to independently enter/exit the station on, say my wheelchair/crutches/etc.?
- As a person living with blindness or low vision, do I need to be aware of any construction activity, road crossing, etc. around the station which can put my safety at risk?
- How crowded will the station be and how easy/ difficult will it be to navigate within the station? |
| Line and platform number | 
- Do I need to change lines; if yes, will the intermediate station be accessible?
- Will I need to use stairs/ escalators/ elevators at any point in my journey to get to the relevant platform?
- Will the trains be running on both sides of the platform or only one?
  - relevant for persons living with blindness or low vision from a safety perspective |
| Other | 
- Will there be accessible toilets available at or near the station?
- Will I have access to charging points within the station or other establishments (shops, restaurants, cafes, etc.) near the station in case my motorized wheelchair is low on charge? |
Based on the interviews, it is observed that accessibility of the built environment and navigation are top of mind considerations for Persons with Visual or Locomotor Disability. PwVD and PwLD also budget a buffer time to accommodate unforeseen accessibility challenges for new and frequented routes.

PwD opt to check with family, friends, colleagues and fellow travellers to get the details mentioned above. Some also use digital resources such as Google Maps to get relevant information. However, checking with other travellers belonging to the same disability group has been the most reliable channel to get information on accessibility considerations such as the ones mentioned above, according to 100% of the interviewees. This is because this information is rarely available online and because it is unlikely that a non-disabled person will have these considerations on top of mind.

The low adoption of digital resources by Persons with Disabilities as indicated by the interview responses may be attributed to a few factors. PwDs opt for person-to-person inquiry to get information around the accessibility of the built environment. They might also be getting other relevant information from these interactions, thereby making the use of digital resources redundant. Varying levels of inaccessibility of different official and third-party apps and websites could be another possible reason for low adoption.

B. Getting to the Metro/ Local Train

Metro/ Local train stations are typically accessed through a bus, rickshaw, taxi, or personal vehicle. Some interviewees also indicated walking to the station as a possible option. However, bus and walking is not an option available to people living with locomotor disabilities. They opt for other modes such as taxi or personal vehicles so they could be dropped as close to the station entrance as possible. Additionally, the walkability of the area around the station is a concern for people with visual and locomotor disabilities.

The experience of a person after s/he reaches the station is largely influenced by a few factors such as the nature and extent of disability, previous experience in travelling by Metro, familiarity with the route and the station, etc. For instance, members of the Deaf community are able to navigate to the desired platform independently and seamlessly. However, they might experience some difficulty in communicating with the ticketing clerk at the time of purchasing a ticket/token or refilling their smart card/pass (as the case may be). Sometimes, the Deaf communicate with the clerk by writing down their requirements using a smartphone or on paper. Some Deaf people are able to use spoken language to varying degrees. They may voice their requirements using a combination of written communication and hand signals. Many Deaf and Hard of Hearing individuals also rely on lip reading to understand other people.

Persons with Visual or Locomotor Disabilities often need some assistance. In this case, they request for it at the customer service counter at the Metro station. A Metro Sahayak (helper), who is trained to assist PwDs, is assigned to escort them through the station and seat them in the correct Metro train. The Metro staff takes down the traveller’s name, contact number along with the destination station so as to assist him/her seamlessly throughout the journey. A Metro-provided wheelchair is available in case the PwD wants to make use of it. Some Persons with Locomotor Disabilities might opt for it (say, in case they are unable to walk long distances).
Interviewees with visual disability at times encounter a Metro Sahayak who insists that they sit in a wheelchair so that the Sahayak can wheel them to the Metro train safely. However, the PwVD have to assert that they need only an escort and not a wheelchair. This suggests scope for engaging in user need discovery so that the assistance process may be updated to provide the desired assistance effectively and safely.

Additionally, assigning a Sahayak takes time which increases the overall trip time.

Persons with Disabilities using a wheelchair have to pass through a separate gate because the regular ticket gates are not able to accommodate a wheelchair. The separate gate is usually locked and it takes some time for the Metro staff to retrieve the keys and open it.

At times when the elevators in a station are not functional, the wheelchair users are carried up a flight of stairs by Metro personnel. In addition to this being undignified, it also presents safety risks.

Women interviewees of this study have only had male Sahayaks assigned to them. While they acknowledged that the Sahayaks were well trained and respectful, the Metro authorities might want to consider recruiting more women for this role. This could help in making women travellers with disabilities feel safer and more comfortable.

While Delhi Metro is fairly accessible, other local train systems such as the Mumbai local have considerable scope for improvement. Accessibility of the built environment needs to be enhanced significantly. Most stations are not equipped to support Persons with Locomotor Disabilities, especially wheelchair users. Further, a facility similar to a Metro Sahayak would be a helpful addition to Mumbai locals.

Interviewees with visual disability, who have travelled using Mumbai locals, explain that they have to navigate through the station by themselves. They heavily rely on ambient noise, smell, and other sensory inputs for clues. Mumbai local stations also have beepers installed on the platform where the compartment reserved for PwD is expected. However, these beepers might sometimes be non-operational. In addition to listening to ambient noise and relying on other sensory inputs, Persons with Visual Disabilities routinely take help from the people around them to ask clarifying questions or get directions.

C. Boarding the train

The floor of the Metro train is aligned with the platform. This facilitates easy and safe boarding for persons with disabilities as well as for non-disabled travellers. Deaf persons are able to board unaided and independently. However, it might be difficult for a pregnant Deaf woman to safely board the train during rush hours, as pointed out by an interviewee. During rush hour, all travellers are trying to board the train quickly. At such times, a pregnant woman has to engage in constant oral communication and advocacy alerting fellow travellers of her condition and requesting that she not be pushed ahead. However, such oral communication would be difficult for a Deaf woman resulting in a safety risk. In certain instances, when a Metro train is routed to a different platform but the display board is not updated (only audio announcements are made), the Deaf people are left clueless.

Metro has dedicated seats for the PwD. However, as experienced by the deaf interviewees of this survey, the fellow travellers refuse to vacate the said seat for them as they don’t look disabled. Persons with Invisible Disability, such as low vision, also experience this difficulty. Self-advocacy and asserting one’s right is important to get the dedicated seat in such instances.

When Sahayaks are assisting a PwD, they make the traveller sit in the compartment immediately behind the driver’s cabin. They ensure that the PwD boards before other travellers and are seated safely. In case no empty seat is available, the Sahayak requests other travellers to vacate a seat for the PwD. If the traveller is using her/his own wheelchair, s/he has the flexibility to travel sitting in it or can transfer to a regular seat. If the PwD was assigned a wheelchair by the Metro, the same is taken back after the PwD being assisted is seated safely. The Sahayak also informs the driver that a PwD is travelling in the compartment, identifies the traveller for the driver, and informs them of the station where the individual would disembark. He also informs the staff at the station the PwD will have to disembark on. As the train approaches the disembarking station, the driver is expected to inform the staff at the said station so that a Sahayak can be sent to assist the PwD in disembarking.

The compartment immediately behind the driver’s cabin is reserved for women. Some male PwD reported feeling undignified and awkward when made to travel in the women’s compartment.

In the case of the Mumbai locals, the train floor and the platform are not aligned. As a result, Persons with Locomotor and visual Disabilities face challenges in boarding the train. There is a compartment reserved for PwD in each train. However, often, non-disabled individuals also board it making it crowded. It can also result in a Person with Disabilities being unable to board the train for lack of sufficient space. Lastly, often an incoming train is rerouted to a different platform number barely minutes before its arrival time. In such a situation, it becomes very challenging for a PwD to quickly and safely go from one platform to the other.
D. In-transit experience

Travelling in a Metro is generally regarded as safe and convenient, as reported by persons interviewed for this study. A few of the interviewees, however, mention the risk of pickpocketing. In such events, the Deaf interviewees find it difficult to communicate effectively to ask for help. Similarly, they have difficulty verbally communicating with the staff to file a complaint. In addition to pickpocketing risk, interviewees also reported instances of harassment experienced by Women with Disabilities.

The interviewees who have travelled using the Mumbai local too have experienced similar risks as above. In addition to this, there is a compartment reserved for PwD in each train. However, often, non-disabled individuals also board it resulting in over-crowding. This negatively affects the travel experience of PwD.

All the interviewees reported keeping their assistive technology and devices in their possession while travelling in a Metro or a Local train.

E. Disembarking from the train

Interviewees have reported using a variety of methods to keep track of the current location of the train and approaching station. On Metro trains, Persons with Visual Disabilities pay attention to audio announcements; Deaf persons focus on the display indicator within a compartment; and Persons with Locomotor Disabilities take cues from both. In addition to this, some interviewees also keep track of time elapsed and the expected trip duration to gauge when the train will arrive at their destination station. Sometimes, they also request fellow-travellers to inform them when the desired station is approaching.

It is important for the PwD to be ready to disembark quickly and safely. They generally start moving towards the exit a few minutes before the train is due to arrive at the desired station. Persons with Visual and Locomotor disabilities request for passage verbally. The Deaf people tap on men’s shoulders or women’s bags to get their attention. They generally sign that they are Deaf and then request for space for passage.

If a Sahayak had assisted the PwD in boarding, he is expected to send a message with the PwD’s details at the destination station. Before the train reaches the station, the driver is also expected to alert the staff at the destination station requesting for a Sahayak to be present and to assist the PwD. Once the train comes to a stop, the Sahayak assists the PwD to disembark safely. If the PwD was provided a wheelchair at the boarding station by the Metro, the Sahayak is responsible to bring a wheelchair at the destination station too. The Sahayak then assists the PwD to navigate out of the station to the next Metro train (in case of a line change) or the rickshaw or a bus stand, and helps him/her board (where possible). Many Persons with Locomotor Disabilities might have arranged for a personal vehicle to pick them up. In such a case, the Sahayak assists them to the said vehicle.

In certain instances, the Sahayak is not present at the destination station or does not have a wheelchair with him. This might be on account of several reasons including communication gap between the driver and the staff at the boarding and the destination stations. This results in significant challenges for the PwD and a delay in the Metro schedule. Sometimes, when the Sahayak is not present at the station, the Metro continues to the next station with the PwD traveller. The PwD then has to disembark at a subsequent station and travel back to the desired one resulting in serious inconvenience and loss of time. Yet another difficulty arises if the lift is not functioning at the station. In such a case, they have to be carried down by the Sahayak. This is not dignified and poses serious safety risks. Lastly, the built environment outside the station is often not accessible. Discontinuous or broken footpaths, encroachments by street vendors, unruly traffic, etc. pose challenges around navigation.
In the case of Mumbai Local, the PwD travellers use similar cues to keep track of the train’s location and approaching station. Persons with Visual Disabilities pay attention to audio announcements and Deaf persons focus on the station name displayed on the approaching platform. Persons with Locomotor Disabilities who travel using the local take cue from both audio announcements and displays on the platforms. As a Sahayak is not available, a PwD has to disembark independently. However, they might be assisted by fellow travellers. Because the platform can come on either side in the Mumbai Local, and because it doesn’t have automated doors, Persons with Visual Disabilities need to clarify which side is the station expected to come with other sighted travellers before disembarking. As the floor of the train and the platform surface may not be aligned, they use their white cane to gauge the distance to the platform. However, this might not be possible always, especially in the peak hours, when other travellers are in a hurry to disembark or board the train. The lack of alignment between the station and the floor of the train also poses difficulty for Persons with Locomotor Disabilities. Lastly, just like Metro stations, the built environment around the Mumbai Local stations also have a scope for improvement to make them more accessible.

F. Payment

Most interviewees reported using a Smart Card (for Metro) or a season pass (for Mumbai Local). The persons interviewed preferred topping up the Smart Card in cash as they find cash payments to be more convenient and perceive them to be safer (lower risk of digital fraud).

Persons with Visual Disabilities struggle in the identification of certain currency denominations. Their preference for cash despite this challenge can be attributed to varying levels of inaccessibility of digital payment modes.

G. Other

In case of a bad experience, some PwDs resist filing a complaint. This can be attributed to the perceived time and effort required in filing it. Deaf persons don’t want to file a complaint because of the challenges in communicating their grievances. Most people in a Metro or Local station don’t understand sign language and this presents a language barrier for Deaf people.

3.2.3 COVID-19 IMPACT

By the time of FGDs, Metro services had only partially opened up and Mumbai local trains were formally opened up only for essential workers. Thus, the observations shared by the FGD interviewees are likely to be affected by the limited opportunity to travel.

Availability of reliable and timely information pertaining to accessibility considerations, as elaborated in section A above, continues to be a challenge. The difficulties get compounded on account of the operational changes introduced to contain the spread of COVID-19. For instance, Entry in stations is allowed from a select few gates. There are restrictions on the number of people allowed in the station at any point of time. Protocols and Standard operating procedures also are revised. Adequate information around these changes is often not easily available in the accessible format (including sign language) constraining the ability to sufficiently plan a trip. As
a result, PwDs have to adapt to new procedures, develop familiarity with new operational norms, and learn to negotiate with new points of inaccessibility - many a time without prior preparation.

Persons with Visual Disabilities create spatial representations of the environments in their head. It takes a few months to create a reliable spatial representation of large environments such as a train station. Changes to the environment such as the closure of entry/exit gates, new walking paths, protective screens, and other measures introduced to contain the spread of COVID-19 distorts the spatial representations for PwVDs making independent navigation extremely difficult (Wilkinson, 2020).

PwVDs heavily rely on the sense of touch for navigation increasing their exposure to COVID-19. They are also at a disadvantage as visual indicators such as floor markings in stations, etc. are not visible to them (Wilkinson 2020). As a result, they may be unable to practice social distancing effectively. PwVDs are also unable to know if the people around them are following hygiene norms such as wearing masks and maintaining a safe distance. Similarly, PwVDs are unable to see visual indicators of safety measures such as sanitizer dispensers. Other people often perceive PwVDs as belonging to a high risk category for COVID-19 and are afraid of being around them (Krishnan 2020). All this leads to anxiety and reduction of confidence to travel independently.

While Delhi Metro continues to provide assistance by way of Metro Sahayaks, on the ground, PwDs share experiencing longer wait time to receive assistance as compared to pre-COVID times. This further increases their overall travel time. The interviewees appreciated the support provided by the agents but also expressed a need to be provided information on measures to ensure the health and hygiene of the staff. This information will inspire confidence in PwD in requesting for assistance and undertaking travel when necessary.

Before COVID-19, when a lift broke down or there were other infrastructural inaccessibilities, people carried a wheelchair user up a flight of stairs. The safety risks around carrying a PwD have increased on account of COVID-19. Therefore, it is all the more important to ensure that the facilities such as elevators are well-maintained and don’t suffer from breakdowns.

Communication barriers have increased during COVID-19 pandemic. The Deaf and Hard of Hearing individuals, who relied on lip reading, face challenges on account of masks. Before COVID, these individuals also communicated by writing on a notepad or smartphone. However, this has become risky as multiple people end up touching the notepads or smartphones increasing the risk of getting exposed to COVID-19.

There is a need to ensure that the built environment outside the operational entry and exit gates is accessible for PwD.

As the emphasis on digital transactions increases, it is even more important to ensure that the digital payment systems being used are universally accessible.

Earlier, many PwDs did not file complaints as mentioned above. It is important that the complaints and feedback mechanisms be made fully accessible so that PwDs can provide their feedback to the Metro/local operators.
3.3. BUSES

Buses provide valuable connectivity throughout a city at an affordable price point for citizens. Persons with Visual Disabilities and the members of the Deaf community are able to use and benefit from the Bus system. However, Persons with Locomotor Disabilities have not been able to rely on the bus system to the same degree as their disabled and non-disabled peers. Based on this study, we believe that very few Persons with Locomotor Disabilities opt to travel by bus. As a result, we have been unable to develop an up-to-date and holistic understanding of their bus travel experience. Nevertheless, we have captured inputs from interviewees with locomotor disabilities based on their travel experience over the years.

3.3.1. Key points at a glance

<table>
<thead>
<tr>
<th>Sr</th>
<th>Areas of concern</th>
<th>PwVD</th>
<th>Deaf</th>
<th>PwLD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>A. TRIP PLANNING</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Physical accessibility of the built environment around a bus stop</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Availability of accessible transportation to and from a stop</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Difficulty in independently getting up to date information around physical accessibility of a stop</td>
<td>Mid</td>
<td>Mid</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Inaccessibility of digital resources</td>
<td>High</td>
<td>Low</td>
<td>Mid</td>
</tr>
<tr>
<td>5</td>
<td>Availability of accessible toilets</td>
<td>Mid</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td><strong>B. GETTING TO THE BUS STOP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Poor walkability of the area around the bus stop on account of discontinuous footpaths, street vendors, stray animals, etc.</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Inability to access the shade and seating area at a bus stop, especially during bad weather such as rains or summer time</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Sr</td>
<td>Areas of concern</td>
<td>Level of difficulty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------------------------------------------------------</td>
<td>---------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PwVD</td>
<td>Deaf</td>
<td>PwLD</td>
</tr>
<tr>
<td>C. BOARDING A BUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Lack of precision-docking by drivers</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Bus not stopping for PwD travellers, or driving away before they can board</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Unavailability/unpredictability of low floor buses &amp;/or non-operational ramps</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Safely and independently boarding a bus during rush hour</td>
<td>High</td>
<td>Mid</td>
<td>High</td>
</tr>
<tr>
<td>5</td>
<td>Difficulty in getting a safe seat after boarding</td>
<td>Mid</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>D. IN-TRANSIT EXPERIENCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Risk of pickpocketing</td>
<td>Mid</td>
<td>Mid</td>
<td>Mid</td>
</tr>
<tr>
<td>2</td>
<td>Risk of harassment of women</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Getting a safe seat on the bus or a safe and effective way to accommodate a wheelchair</td>
<td>Mid</td>
<td>Mid</td>
<td>High</td>
</tr>
<tr>
<td>4</td>
<td>Keeping track of current location of the bus, route changes (if any) and the upcoming stop</td>
<td>High</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>E. DISEMBARKING FROM THE BUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Drivers not doing precision-docking resulting in safety risks upon disembarking</td>
<td>High</td>
<td>No</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Inaccessibility of the built environment at the destination stop</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Difficulty in independently getting accessible and affordable transportation from the bus stop</td>
<td>High</td>
<td>Mid</td>
<td>High</td>
</tr>
<tr>
<td>F. PAYMENT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Communication challenges with the conductor while purchasing a ticket</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>G. OTHERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Challenges in filing a complaint</td>
<td>Mid</td>
<td>Mid</td>
<td>Mid</td>
</tr>
</tbody>
</table>
3.3.2. The barriers experienced by PwD - explained

A. Trip planning

A bus ride represents a segment of the larger door-to-door trip. However, instead of focusing on the entire journey, this section will focus on the core experience between two bus stops. A PwD might walk or use another mode of transport to travel to or from a bus stop. This report will cover the same to the extent necessary to understand the context of the journey.

Different bus routes which can be taken to reach the desired destination, relevant boarding and destination bus stop, bus type (low/high floor), bus times and frequency, expected duration, etc. are a few of the attributes/details sought by a PwD in planning for a trip on a new or unfamiliar route. While these details are also relevant for a non-disabled person, for a PwD, some of them have an added accessibility consideration.

<table>
<thead>
<tr>
<th>Select attributes</th>
<th>Examples of accessibility considerations</th>
</tr>
</thead>
</table>
| Boarding and destination stop | • Can I walk to the boarding and from the destination stops?  
  • If not, will I find accessible transportation?  
  • If not, will I have to arrange for one?  
  • How is the walkability of the area around the bus stop?  
  • Is the built environment around the bus stop accessible?  
  • Is the footpath around the stations easy to navigate if I am, say a wheelchair/crutches-user or a blind person?  
  • As a person living with blindness or low vision, do I need to be aware of any construction activity, road crossing, etc., around the bus stop which can put my safety at risk?  
  • How crowded will the bus stop be and how easy/difficult will it be to navigate around it? |
| Bus type                   | • As a person with a visual disability, will there be people who would assist me in identifying a bus and boarding it?  
  • As a person with a locomotor disability, will I be able to board the bus?  
  • Will a low floor bus arrive at my desired time?  
  • Will the ramp be functional and will the conductor and/or driver be able & willing to open it?  
  • Will I be able to signal my desire to board the bus to the driver and position myself in front of the door quickly enough before the bus leaves? |
| Availability of accessible toilets | • Will there be an accessible toilet at or near the bus stand/depot? |

Most interviewees of this study opted to check with family, friends, colleagues and fellow travellers to get the aforementioned details. Furthermore, a few interviewees also use digital resources such as Google Maps to get relevant information.
However, all interviewees mentioned that checking with other travellers belonging to the same disability group is the only channel to get information on accessibility considerations such as the one mentioned above. This is because this information is not available online and because it is unlikely that a non-disabled person will have these considerations on top of mind. For a person with a locomotor disability, a high floor bus may arrive instead of a low floor bus at the planned time even if one has made the necessary inquiries beforehand.

The low adoption of digital resources by the Persons with Disabilities as evident from the interviews may be attributed to a few factors. PwDs opt for person-to-person inquiry to get information around the accessibility of the built environment. They might also be getting other relevant information from these interactions making the use of digital resources redundant. Varying levels of inaccessibility of different official and third-party apps and websites could be another possible reason for low adoption. Lack of real-time information on bus position and expected arrival times could be yet another reason for the same.

Interviewees with visual disabilities mentioned that information about bus numbers is embossed in braille on bus stops. However, one does not want to touch the surface as it is often unclean, unhygienic, and covered by spit marks.

B. Getting to the Bus Stop

Generally, interviewees with visual disabilities and Deaf interviewees walked to a Bus stop or travelled in a rickshaw or a personal vehicle.

The walkability of the area around the bus stop was flagged as a concern for Persons with Visual Disabilities. Discontinuous and broken footpaths, encroachment by street vendors, presence of stray animals such as dogs and bullocks increase the risk of a fall and injury. Depending on the extent of mobility training, personal confidence, experience, and traffic situation, PwVDs rely on sighted assistance to cross a busy street (where necessary). Taking cues from the ambient environment and crosschecking with people around is necessary for the identification of a Bus stop.

Walking is not an option commonly available to Persons with Locomotor Disabilities. They generally travel to the Bus stop in a rickshaw or taxi. Inaccessibility of the built environment was also a concern for these travellers. As an example, the absence of curb ramps makes it difficult to climb on and off the footpath, and by extension, get inside a bus stop. This makes waiting for a bus difficult for a person who is unable to stand for a long time or in case of bad weather conditions such as rains.

C. Boarding the bus

Interviewees explained that the lack of precision-docking - stopping the bus in the designated box in front of the bus stop - poses many challenges. Drivers stop the bus roughly close to the bus stop. The non-disabled travellers rush towards the bus so that they can quickly get in. However, it is difficult for a person with visual or locomotor disability to demonstrate similar agility. As a result, they face challenges in boarding the bus safely.

Interviewees with visual disability explained that they pay attention to ambient sounds to understand when a bus approaches the stop. Ideally, the conductor is expected to announce the bus at every stop. However, many-a-times this does not happen. Therefore, Persons with Visual Disabilities need sighted assistance to
identify the desired bus. They often request fellow travellers at the bus stop to alert them when a particular bus arrives. In case the bus of the assisting fellow travellers comes before the PwD in question, the PwD has to find and request someone else for help. Once the Persons with Visual Disabilities are alerted of an oncoming bus, they have to swiftly position themselves near the front entrance of the bus so that they can alert the driver of their disability and board it. Again, they have to rely on sighted assistance to position themselves safely. Interviewees further mentioned that they request assistance from a person standing nearby for the same. The entire exercise from identifying to boarding the bus becomes all the more complicated if two or more buses arrive at the same time.

The Deaf people have a relatively easier time in boarding. However, they have often disallowed boarding from the front entrance as their disability is not visible. Communicating with other travellers to check if a particular bus goes to the desired destination, for instance, can be challenging. The interviewees either voice the name of the destination (if possible) or write down their question and show it to the people around.

Persons with Locomotor Disabilities especially have a hard time boarding a bus. Depending on the nature and extent of the disability, they may be able to board only a low floor bus. In such a case, they might be compelled to leave a bus if it is high-floored. If a low-floor bus indeed arrives at the stop, the conductor is expected to open up the ramp so that the person in question can enter the bus safely. However, the conductors are often unsure how to open the ramp. In other instances, the ramp can’t be opened on account of mechanical faults. Further, people who are able to board a high-floor bus often do so with a lot of difficulties. All these variables make a bus trip extremely inconvenient and unreliable for a person with a locomotor disability. This could be responsible for the low bus ridership of this community.

Many women interviewees shared instances wherein a man tried to misbehave or harass under the guise of offering assistance. A woman living with a disability in such cases may not be in a position to protest or defend herself. Women also mentioned that while men - in general - were respectful, a few bad actors can negatively impact their perception of safety.

Interviewees also mentioned that some drivers and conductors don’t like to have disabled passengers on the bus. As a result, they often don’t stop a bus for a PwD to board it. In other instances, they will drive the bus away before the PwD can board. This is especially common if two or more PwD passengers are waiting at a stop. The interviewees speculate that the reason for the driver and conductor’s behavior is that the PwDs don’t have to purchase a ticket. They can get a special pass which entitles them to ride a bus without paying the fare for each trip.

D. In-transit experience

Interviewees had a mixed perception of the safety and convenience of a bus trip. Most interviewees were satisfied with the way drivers drove the bus. They rarely experienced rash driving, sudden braking or sharp turns. However, they found the travel experience to be inconvenient as the bus was often overcrowded. The interviewees also flagged a risk of pickpocketing. In addition to this, woman interviewees shared experiences of abuse and sexual harassment during a bus ride.

Finding a safe seat during a bus ride was a problem for persons who lived with an invisible or a non-obvious disability. For instance, Deaf people and persons with a low vision shared instances where the fellow passengers refused to vacate a seat reserved for PwD. Women interviewees also shared that men were more likely to vacate the seat for them (reserved or otherwise) than other women. In such instances, self-advocacy and requesting the conductor to help in finding a seat were important as per most interviewees.

It is especially difficult for a person in a wheelchair to travel by bus. Interviewees in wheelchairs reported a lack of safety restraints and floor locks to secure a wheelchair. Further, accommodating a wheelchair could be all the more difficult in peak times when the bus is likely to be overcrowded.

All the interviewees surveyed mentioned that they keep their assistive technology and devices in their possession while travelling by bus.

Keeping track of the current location and upcoming stops was a challenge for Deaf people and Persons with Visual Disabilities. Conductors are expected to announce upcoming stops and route changes. However, they regularly fail to do so. Interviewees also complained that automated announcement systems which were installed in some buses also don’t function well. Deaf interviewees expressed difficulty in monitoring the external environment to get a sense of the current location. They explained that inquiring with fellow travellers is not always possible because of the communication barrier. Interviewees also mentioned using apps such as Google Maps and Eye-D, keeping track of expected trip duration vs. elapsed time, checking with fellow travellers, visually inspecting the surrounding area outside the bus, requesting the conductor to alert before stop and conductor announcements (when done). Persons with Visual Disabilities seem to make use of smartphones and apps more than other groups. Similarly, Deaf persons rely more on visual cues.

Generally, PwDs are seated near the front door of the bus. Therefore, it is relatively easy for them to go to the front door. In case other people are blocking their way, persons with visual and locomotor disabilities request for passage verbally. Deaf people tap on the men’s shoulders Persons with visual and locomotor disabilities or the women’s bag to get their attention, sign that they are Deaf, and then ask for passage. After the bus has stopped, Persons with Visual Disabilities reconfirm with other travellers that the bus has indeed stopped at their desired destination and not at, say, a traffic signal. This is to avoid disembarking at the wrong location. All interviewees mentioned alerting the driver that they have a disability and requesting him not to drive away before they disembark safely. This is especially important for persons with visual and locomotor disability. However, sometimes, the driver starts driving away before the PwD has fully disembarked, thereby, increasing the risk of an injury or even a fatal accident. From time to time, fellow travellers assist these persons in disembarking safely.

The built environment around the destination stop again may not be accessible. This problem is further compounded when drivers don’t do precision-docking. The Persons with Disabilities have to promptly move to a safe place after disembarking so that they are not hit by other vehicles such as another oncoming bus or a speeding biker. Bad roads, possible construction activity, a rising tendency of people to drive on the wrong side of the road, etc. only make this more challenging. Persons with visual and locomotor disabilities face these issues more so than Deaf persons.

E. Disembarking from the bus

Interviewees rely on a combination of means to know when their desired destination has arrived. This includes apps such as Google Maps and Eye-D, keeping track of expected trip duration vs. elapsed time, checking with fellow travellers, visually inspecting the surrounding area outside the bus, requesting the conductor to alert before stop and conductor announcements (when done). Persons with Visual Disabilities seem to make use of smartphones and apps more than other groups. Similarly, Deaf persons rely more on visual cues.
After disembarking, Persons with Disabilities might need to find a rickshaw or a taxi. The experience associated with these modes of transport is covered in section 4.4 of this report.

PwD travellers might also need to take another bus to reach their ultimate destination stop. In such a scenario, all the considerations in terms of trip planning and boarding become relevant once again. For Persons with Locomotor Disabilities, this might be another point of failure. Even if they were able to get a low floor bus for the first leg, getting one for the next leg might be difficult.

The PwD travellers might also arrange for someone such as a friend, family member, or colleague, to pick them up from the bus stop so that they don’t have to get into the hassle of finding the next transportation. However, relying on someone is not an option that is available to everyone.

F. Payment

Persons with Disabilities are entitled to purchase a disability concession pass which allows them to board any bus without paying the ticket fare. Most interviewees travelling by bus were using this pass.

Some Deaf interviewees who did not have the aforementioned pass purchased the ticket in cash. They try to voice (if possible) the name of the destination stop or write it down for the conductor. However, they mentioned that conductors sometimes misunderstand the destination name and issue a wrong ticket. If a Ticket Collector inspects their ticket in such an instance, a penalty is levied on them.

G. Other

When asked if the interviewees know where to file a complaint in case of a bad experience, most of them mentioned that it could be filed at the bus depot. However, given the additional time, expense, and effort required in travelling to the depot to file a complaint, interviewees expressed reluctance to file it. Deaf persons don’t want to file a complaint because of the challenges in communicating their grievances. Most people in a bus depot don’t understand sign language and this presents a language barrier.

3.3.3 COVID-19 IMPACT

Availability of reliable and up-to-date information as outlined in section A above continues to be an issue. FGD participants mentioned that PwD continued to rely on other non-disabled people to get information about revised bus schedules. Information pertaining to accessibility considerations that were critical for trip planning for PwDs had to be obtained through offline inquiry with family and friends and disabled peers.

Most Deaf persons, Persons living with Visual Disability and some Persons with Locomotor Disability walk/wheel to the bus stop. The FGD participants reported that in addition to negotiating roads with poor walkability, they also have to experience challenges in dealing with stray animals. Reduced availability of food has made these animals more aggressive (Mitra 2020), (Ramakrishnan, 2020) posing a greater safety risk for PwD.
Before COVID-19, Persons with Visual Disability depended on non-disabled individuals or passersby for assistance in crossing a busy road, identifying the bus stop, identifying the bus number, etc. as elaborated in the sections above. However, since the COVID-19 pandemic, FGD participants with visual disability shared that getting assistance has become difficult. People have Coronaphobia and view PwD as high risk individuals. Furthermore, as buses are operating at reduced capacity, providing assistance to a PwD could mean missing one’s bus leading to massive inconvenience. As a result of this, PwVDs have been experiencing numerous challenges on the above counts.

Before COVID-19, many Persons with Disabilities interviewed for this study had indicated that some bus drivers and conductors are reluctant to have disabled passengers. Therefore, they did not stop to let the disabled person board the bus. The FGD participants reported that this phenomenon has increased during the pandemic. While the participants partly attributed this to a prejudice against the disabled passengers (as elaborated in section C above), they also acknowledged that the buses might not have stopped because they already had a maximum number of passengers allowed on board.

Finding a safe seat which was challenging even in the pre-COVID period, continues to be an issue – especially for the Deaf and Hard of Hearing and persons living with low vision who’s disability is invisible or non-obvious.

Deaf participants explained that they rely on lip reading to understand what the other person (such as a co-passenger or a conductor) is saying. However, communication is hindered on account of masks posing difficulties. Before COVID-19, they also used to write/type their desired stop or question on a notepad or smartphone. However, now, they feel apprehensive about doing so. They wish to avoid handing the notepad, pen, or the smartphone to the other person for reading the question or for them to write down or type their response.

Persons with Visual Disability participating in the FGD explained that they are not able to visually verify if the people around them are following the prescribed hygiene norms. This makes them feel anxious during a bus trip.

The FGD participants also expressed challenges around (1) checking with other passengers or the conductor the current location of the bus or (2) confirming if the bus has indeed stopped at the desired destination as against a traffic signal as elaborated in section E above. They further explained that not everyone may have access to a smartphone with location apps or a reliable internet coverage necessitating some form of human communication.
3.4. AUTO-RICKSHAWS, TAXIS, AND MOBILITY AGGREGATORS

Auto-rickshaws (autos), Taxis and mobility aggregators (collectively referred to as Intermediate Public Transport or IPT) are important components of the urban transport system. They provide first and last mile connectivity as well as the flexibility to organise door-to-door travel at the desired time. Just like the non-disabled people, persons with disabilities also depend on these services for their day-to-day transportation. These services are especially valuable when the fixed-route transport services are not suitable for a particular trip.

3.4.1. Key points at a glance

<table>
<thead>
<tr>
<th>Areas of concern</th>
<th>IPT Mode</th>
<th>Level of difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility Aggregators</td>
<td>Auto-Rickshaws</td>
<td>Taxis</td>
</tr>
<tr>
<td><strong>A. TRIP PLANNING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walkability of the path to an auto/ taxi stand or to a street for hailing a ride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for assistance in hailing an auto/ taxi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of a suitable accessible vehicle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting a sensitive driver who is able and willing to follow instructions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>B. GETTING TO THE BOARDING/ PICK-UP POINT OR BOOKING A CAB/ AUTO USING A MOBILITY AGGREGATOR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor walkability of the path to an auto/ taxi stand or the street on account of discontinuous footpaths, street vendors, stray animals, people driving on the wrong side of the road, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inaccessibility of the app</td>
<td></td>
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<tr>
<td>Identifying an auto/ cab (booked through a mobility aggregator) once the driver arrives at the pick-up location</td>
<td></td>
<td></td>
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<tr>
<td>Communication challenges with an auto/ cab (booked through a mobility aggregator)</td>
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</tbody>
</table>

* Deaf users appreciated the in-app chat functionality available in certain mobility aggregator’s apps
<table>
<thead>
<tr>
<th>Areas of concern</th>
<th>IPT Mode</th>
<th>Level of difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>PwVD</td>
</tr>
<tr>
<td>C. BOARDING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assistance in boarding a vehicle</td>
<td>🚕 🏎️ 🚖</td>
<td>Low</td>
</tr>
<tr>
<td>Safety – especially for women - in finding an auto/ cab</td>
<td>🏎️ 🚖</td>
<td>High</td>
</tr>
<tr>
<td>Fare negotiation</td>
<td>🏎️ 🚖</td>
<td>Low</td>
</tr>
<tr>
<td>D. IN-TRANSIT EXPERIENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety – especially for women travellers</td>
<td>🚕 🏎️ 🚖</td>
<td>High</td>
</tr>
<tr>
<td>Need for assistance during transit</td>
<td>🚕 🏎️ 🚖</td>
<td>Low</td>
</tr>
<tr>
<td>E. DISEMBARKING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finding the correct destination/ drop location</td>
<td>🚕 🏎️ 🚖</td>
<td>Mid</td>
</tr>
<tr>
<td>Orientation after disembarking</td>
<td>🚕 🏎️ 🚖</td>
<td>Mid</td>
</tr>
<tr>
<td>Assistance in disembarking from a cab</td>
<td>🚕 🏎️ 🚖</td>
<td>Low</td>
</tr>
<tr>
<td>F. PAYMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcharging or premium on account of disability</td>
<td>🏎️ 🚖</td>
<td>Low</td>
</tr>
<tr>
<td>G. OTHERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Challenges in filing a complaint when an auto or taxi is not hailed through a mobility aggregator</td>
<td>🚕 🏎️ 🚖</td>
<td>High</td>
</tr>
<tr>
<td>Challenges in filing a complaint when an auto or taxi is hailed through a mobility aggregator</td>
<td>🚕</td>
<td>Low</td>
</tr>
</tbody>
</table>
### 3.4.2. The barriers experienced by PwD - explained

#### A. Trip planning

#### IPT

Broadly, where to hail/board a vehicle, expected trip duration, and expected trip fare are top of mind while planning for a trip using IPT. In addition to this, the driver’s sensitivity and the ability to follow instructions become important factors. The accessibility considerations associated with these aspects are given below.

<table>
<thead>
<tr>
<th>Select attributes</th>
<th>Examples of accessibility considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Where to hail or board an IPT vehicle</strong></td>
<td><strong>Auto/ Taxi</strong>&lt;br&gt;· Is there a stand where I can get an auto or a taxi or will I have to hail it on the street?&lt;br&gt;· How do I get to the stand/street; will the roads be accessible/walkable?&lt;br&gt;· As a person with visual disability, will I find someone to assist me to hail an auto/taxi?&lt;br&gt;&lt;br&gt;<strong>Mobility aggregators</strong>&lt;br&gt;· As a Deaf person, how will I converse on a phone independently if/when the driver calls me to confirm pick-up or drop location?</td>
</tr>
<tr>
<td><strong>Accessibility of the vehicle</strong></td>
<td><strong>IPT</strong>&lt;br&gt;· As a person in a wheelchair, will I be able to enter and exit from the vehicle safely and independently?&lt;br&gt;<strong>Taxis and Mobility aggregators</strong>&lt;br&gt;· As a wheelchair user, I need space in the boot to store my wheelchair safely. Will the vehicle I get (taxi) or the one I am matched with (cab aggregators) have enough space in the boot?</td>
</tr>
<tr>
<td><strong>Expected fare</strong></td>
<td><strong>Auto/ Taxi</strong>&lt;br&gt;· As a Deaf person, I find it difficult to negotiate on account of communication barriers. Will the auto/taxi driver overcharge me?&lt;br&gt;· Will the driver charge me an additional amount to store my wheelchair or other mobility aids?&lt;br&gt;&lt;br&gt;<strong>IPT</strong>&lt;br&gt;· Will the driver be willing and able to assist me, if necessary?&lt;br&gt;· As a wheelchair user, I need to give the driver instructions on how to store and retrieve my wheelchair safely. Will he be able to follow the instructions?&lt;br&gt;· Can I trust the driver, and will I be safe with him?</td>
</tr>
</tbody>
</table>
In the case of autos and taxis, PwDs generally check with family, friends, colleagues to get the attributes/details mentioned above. While autos can be hailed from an auto stand or the street across Delhi-NCR and Mumbai, the same flexibility is unavailable for taxis. Unlike Mumbai where kaali-peeli (black and yellow) taxis operate, Delhi-NCR does not have a fleet of local taxis plying in the city for point-to-point trips. Usually, one contacts one of the many transport operators in the city to book a fixed hours fixed km taxi. The contact information of these operators is discovered through friends and family or an online search. Many-a-times, an online search result is also accompanied by reviews. However, it may be hard to find a review posted by a Person with Disability. Therefore, one may find difficulty in ascertaining the quality of service which can be expected by a passenger with disability. Further, conversing on the phone to book a cab is challenging for Deaf people. Therefore, they have to take help to complete the booking process.

For mobility aggregators, PwDs primarily rely on the respective apps to get the necessary information. In addition to this, some PwDs may use Google Maps to get information around the expected trip duration and the expected trip route for all of the above modes.

Persons with Locomotor Disabilities, especially wheelchair users, are unable to hail a shared taxi. This is because they might need space to accommodate their wheelchair in the cab. As a result, they are forced to hire a dedicated taxi for each trip, thus increasing the trip cost.

B. Getting to the boarding/pick-up point or booking a cab/auto using a mobility aggregator

Auto and taxi

Availability of autos is dependent on the time of day and the weather. Auto stands are found across Delhi-NCR and Mumbai. In addition to these stands, one can also hail an auto from the street. One has to walk up to a stand or the street to hail an auto. Walkability of roads and footpaths are important considerations. Broken footpaths, potholes, open gutters, etc. pose difficulties for most people but especially for persons with disabilities. Stray animals such as dogs, cows, and bullocks increase the risk of injury further. For instance, dogs feel threatened when they see the white cane and start aggressively barking at the Person with Visual Disability. The situation worsens even more when people start driving on the wrong side. Persons with a Visual Disability may not realise that there is an oncoming vehicle. Many Persons living with Low Vision may not carry a white cane. As a result, the oncoming driver would not realise that the person in front of them may not be able to see them in time. All these factors increase the risk of an accident.

When near a stand or street, Persons with Visual Disabilities often need sighted assistance to identify and hail an auto. Additionally, they might need sighted assistance to locate an auto stand in a new or unfamiliar area. They take help from passersby, security guards (if any), say of their office/ housing society, etc. to hail an auto. In frequented locations, auto drivers might be aware of one’s disability and offer a ride by themselves. Although people are helpful and respectful in general, relying on strangers can be risky. Women interviewees have narrated instances where men have tried to take them to secluded locations while pretending to find an auto for them.

Unlike Persons with Visual Disabilities, Deaf persons are able to identify an auto stand, or hail an auto on the street. In order to communicate the desired destination, they write down the drop location on a paper or on their mobile phone. In case the driver is unable to read, the Deaf persons take help from a passerby. Some Deaf people who can voice out the drop location do so. Written and verbal (to the extent possible) communication is also supplemented with hand signals. The Deaf persons regularly find themselves paying a higher fare. This is because they struggle to bargain with the driver due to the communication barrier.
Persons with Locomotor Disabilities might be able to travel using an auto depending on the nature and extent of their disability. Even if they are able to board, travel and disembark from an auto, they may be unable to walk to a nearby auto stand or street. In such a case, they also rely on friends, family, security guards (if any), attendant (if any), etc. to hail an auto and pick the person from their location.

For persons with disabilities, the experience of hailing a taxi in Mumbai is similar to hailing an auto. However, in Delhi, one might have to call and book a taxi with a tour operator as mentioned in the section above. Thus, in Mumbai, while a PwD might have to walk to the taxi stand or the street or take help in hailing one, in Delhi, it will come at the specified pick-up location. One may need to coordinate with the driver for giving last mile directions, or to follow-up in case the driver is late. Deaf persons have to rely on help from non-disabled people for phone coordination.

Mobility aggregators

For booking a cab/auto, the interviewees of this survey reported using the apps of the respective mobility aggregators. They value the ability to specify the desired pick-up location. While many of them are able to use the app independently, they indicate that there is considerable scope for making the apps more accessible. Thus, the PwDs reported - having to depend on other non-disabled persons to operate the app from time to time to overcome the app’s inaccessibility.

Persons with Visual Disabilities face difficulty in understanding the current location of the cab/auto on the map as it is approaching the pick-up location. They often need assistance in locating the cab/auto once it has arrived at the pick-up location – especially in a crowded area such as a mall or a train station. They regularly tell the driver that they can’t see or that they are blind and need assistance in locating the cab/auto. However, some drivers are unable to understand this constraint even if one explains the same in the local language. In order to help the driver, identify them (PwVDs), they tell the driver the colour of their dress/clothes, or explain that they will be holding a white cane, or share the name of a landmark, say a shop name, if the area is familiar. If the driver is still unable to locate them, the PwVDs request the driver to blow the car/auto horn, or put on parking lights (in case the PwVDs lives with low vision). The PwVDs also take help from passersby, security guards (if available), etc. to locate the vehicle.

The Deaf interviewees express frustration about the phone calls made by the drivers to check for the pick-up location, to ask for directions, or to inform that the driver has arrived at the pick-up location. Given their inability to have a phone conversation, they regularly have to take help from someone to manage calls. Interviewees did value in-app chat support available in apps of certain mobility aggregators to make communication more accessible. However, they also mention that many drivers opt to call to get the aforesaid information making the facility redundant.

Persons with Disabilities share the need to be matched with only those cabs which can accommodate their assistive equipment such as a wheelchair. Very often the cab has insufficient room in the boot or lacks an overhead carriage to store the wheelchair safely. As a result, they are only left with the option of storing it on the rear seat which might not be acceptable to some drivers. The challenge around matching with an appropriate cab result in avoidable ride cancelations and lost time for the customer as well as the driver.

Except for the convenience of calling a cab/auto at the desired pick-up location, the experience of Persons with Locomotor Disabilities is fairly similar to that of other PwD as outlined in the section above.
C. Boarding

For a Person with a Visual Disability and a Deaf person, the process of boarding or entering an auto-rickshaw or a taxi is very similar to a non-disabled individual. However, Persons with Locomotor Disabilities might need some assistance depending on the nature and extent of the disability.

Auto-rickshaw

Interviewees using a wheelchair explain that boarding an auto rickshaw is often difficult for them. The relatively constrained space and the raised height of the seat from the ground make it difficult to transfer from the wheelchair to the auto. The wheelchair user might need some assistance to position the wheelchair, lifting oneself to transfer to the seat and disassembling (if necessary) and storing the wheelchair safely. The assistance to lift the person is generally provided by a trusted family member, friend or an attendant. This is all the more important in the case of women users who are likely to prefer assistance from another woman over a man. In case one opts to take help from the driver, s/he gives detailed instructions to them to execute the transfer safely. Similarly, one gives precise instructions for disassembling and storing a wheelchair. While the process is simple enough, the wheelchairs are expensive and routinely cost over INR 100 thousand. Further, any damage or replacement often takes weeks disrupting the life of a wheelchair user.

Taxi

The process to board a taxi is roughly similar to boarding an auto when it comes to positioning a wheelchair, lifting oneself to transfer to the seat and disassembling (if necessary) and storing the wheelchair safely. The height of the seat from the ground is an important factor influencing the ease of transfer. Generally, a seat at the same level as the wheelchair is ideal. The wheelchair users prefer to keep the wheelchair in the boot of the car. However, this might not be possible if there is a CNG cylinder in the boot of the taxi. In such a case, the wheelchair is placed either on the overhead carriage or the rear seat. Many drivers are reluctant to place the wheelchair on the rear seat as they are worried about damaging or ripping the seat covers. This often results in a refusal to go on the trip by the driver forcing the wheelchair user to find another taxi.

Mobility aggregators

The experience of boarding a cab/auto booked through a mobility aggregator is similar to the process mentioned above.
D. In-transit experience

**Auto and Taxi**

Travelling in an auto or a taxi is considered to be safe and convenient for the most part. The interviewees mentioned that they converse with the driver (to the extent possible) and try to gauge if they would feel safe and comfortable to travel with them in the vehicle. Women interviewees specially mention that they have to be very alert and assertive throughout the ride so that the driver does not take them for granted. They also narrate instances wherein they felt unsafe because, say the driver took them through a longer route. Women interviewees living with visual disability explain that inability to visually monitor their current location and route disempowers them. They use apps such as Google Maps to ensure that the driver is taking them through the correct route. However, they explain that this might be difficult in an area with poor network coverage, or if the phone battery is discharged. They further express their frustration at the fact that even if they realize that the driver is taking them off-route, they are not in a position to, say, jump off and sprint to safety on account of their disability. These concerns also hold good for Persons with Locomotor Disabilities.

The interviewees living with a locomotor disability also mention that, depending on the nature and extent of the disability, they might need assistance in repositioning themselves, in case they shift in their chair on account of poor quality of roads, or sharp turns. This is because they might be unable to reposition themselves independently because of, say inadequate strength in the upper body.

While Persons with Visual Disabilities and Deaf persons keep their assistive devices, such as white cane, in their possession, Persons with Locomotor Disabilities store their devices in the boot of the car, on the rear seat or the overhead carriage (if available).

**Mobility aggregators**

Generally, the availability of safety features such as GPS tracking, the ability to share one’s trip, and the ability to place an emergency call increases the confidence of Persons with Disabilities to travel using an auto/taxi attached with a mobility aggregator.

Persons with Disabilities keep their assistive devices in their possession or store them as elaborated above.
E. Disembarking

IPT

Means to keep track of current location &/or approaching destination

<table>
<thead>
<tr>
<th>Means to keep track of current location &amp;/or approaching the destination</th>
<th>PwVD</th>
<th>Deaf</th>
<th>PwLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking-in with the driver</td>
<td>Yes</td>
<td>Difficult</td>
<td>Yes</td>
</tr>
<tr>
<td>Visually inspect the area outside the auto/taxi</td>
<td>No*</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-visual cues in familiar places such as:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Particular sequence of turns</td>
<td>Yes</td>
<td>Rarely</td>
<td>Rarely</td>
</tr>
<tr>
<td>- Ambient noise, say bhajan in a temple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apps such as Google Maps</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Expected trip duration Vs. elapsed time **</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* Persons with Low vision might be able to visually inspect the surroundings depending on the nature and extent of the vision loss

** Might be challenging for shared trips

Upon reaching the destination, the Persons with Visual Disabilities rely on the driver to describe the surrounding area and to identify the direction of their intended location such as a particular building entrance. They also take help from the driver to get an orientation of the surrounding area. Only once the PwVD are confident that they are in the right place, do they pay the driver (in case of cash payment).

Interviewees with a visual disability and Deaf interviewees have shared instances when drivers have dropped them at a location away from their actual destination. They suspect that this could be on account of a genuine misunderstanding or because the driver wanted to save some time/effort. PwVDs mention that in many such instances, the driver intentionally misguides them and confirms the presence of a landmark, when it is not actually there. The Deaf interviewees mention that in such instances, they are not able to effectively verbally protest about the incorrect drop location. As a result, they are forced to resign and pay for the trip.

Interviewees with locomotor disability mention that they try to disembark as close to their destination as possible, say a hotel entrance. Further, they actively visually inspect the surroundings at the drop location to identify an accessible place to disembark. If they use any assistive devices such as a wheelchair, they request the driver or a person nearby to assist in retrieving the same. Similar to the boarding phase, they give precise instructions to assemble a wheelchair and position it near them. Depending on the nature and extent of disability, upper body strength, and the difference between the height of the seat and the wheelchair, the PwLD might be able to transfer from the seat to the wheelchair independently or might need some assistance. Just as in the case of boarding, they might rely on a driver, or might request for a trusted family member, friend, colleague or an attendant.
to be present at the drop location. It might take more time for a PwLD to disembark as compared to a non-disabled person. As a result, the drivers who are waiting behind the PwLD’s vehicle often get impatient and start honking.

**F. Payment**

**Auto and Taxi**

It is common to pay for trips in cash. This is partly from habit and partly because the drivers refuse to accept digital payment.

Some interviewees have reported feeling like they were overcharged or had to pay a premium on account of their disability. For instance, Deaf interviewees mention that they often end up overpaying as they are unable to effectively negotiate due to the communication barrier. Similarly, interviewees living with locomotor disability – especially wheelchair users – mention that the drivers expect a tip for assisting them to board and disembark from the cab, or to store and retrieve the assistive devices.

**Mobility aggregators**

The availability of on-demand transport options have increased the accessibility and flexibility around travel for many Persons with Disabilities. However, the premium charged by the aggregators to balance demand with supply sometimes make these options uneconomical for them. The interviewees mentioned that this affects them disproportionately as the other modes of transport, which might be available at a lower price point, are often inaccessible. Furthermore, shared trips through Mobility Aggregators are often not a feasible option on account of various challenges described above. At such times, they are forced into accepting the premium and book a ride with an aggregator.

The PwD use cash as well as digital mediums such as mobile wallets. There is no clear preference for a mode of payment. Cash is preferred out of habit. Interviewees also mention lack of confidence in the safety of digital payments and varying degrees of inaccessibility of mobile wallets and other digital payment modes as the reason for not opting for them.

No interviewee of this study has reported being overcharged or paying a premium on account of their disability by a Mobility Aggregator.

**G. Other**

**Auto and Taxi**

Interviewees reported having bad experiences, but did not file a complaint. One of the main reasons for this was that the interviewees were unsure where to register a complaint if necessary.

**Mobility aggregators**

Interviewees are happy about the ability to register a complaint via the app. However, they flagged a scope for making the complaint filing process more accessible. A few interviewees also mentioned tweeting their complaints on the official company handles. The turnaround time for complaints such as fare adjustment was satisfactory in most cases.

Generally, the customer service responses are templatized and drafted mainly to communicate with non-disabled persons. As a result, the customer support team often lacks the context, training, or empathy when responding to a grievance influenced by a person’s disability.
3.4.3 COVID-19 IMPACT

The FGD participants reported preferring a private vehicle over an Auto or Taxi (not attached with a Mobility Aggregator). They further explained that in cases where they have to use an auto or taxi, they would opt to travel with a driver known to them.

Before COVID-19, conversing with the driver was an important strategy to determine if the PwD would feel safe travelling with them. Having a conversation with the driver has become difficult due to the use of masks and protective separations between the driver and the passengers. The inability to gauge a driver through conversation and the uncertainties around hygiene standards maintained in the vehicle lead the PwD to prefer travelling by an Auto or a Taxi driver whom they know well.

The FGD participants living with a visual disability shared difficulties in hailing an auto or a taxi from the street. Before COVID-19, they relied on non-disabled passersby for assistance in hailing an auto or taxi (as explained in Section B above). However, the PwVD mentioned that other non-disabled people are reluctant to assist them on account of social distancing norms and Coronaphobia.

The participants expressed a higher level of confidence in travelling in an Auto or a Taxi attached with a Mobility Aggregator. This is attributable to the sanitization protocols instituted by them.

Challenges in walking/wheeling to an Auto or Taxi on account of poor quality of roads and footpaths as outlined in Section B above continue to pose difficulties. The FGD participants reported that in addition to negotiating roads with poor walkability, they also have to experience challenges in dealing with stray animals. Reduced availability of food has made these animals more aggressive posing a greater safety risk for PwD (Mitra 2020) (Ramakrishnan, 2020).

The FGD participants also expressed challenges in hailing an Auto or a Taxi on account of their reduced number on the road. They also reported that many Auto and Taxi drivers charge higher fares on account of their disability and the need to store their assistive equipment such as wheelchairs.

Communication has become more difficult during the pandemic. The Deaf and Hard of Hearing persons for example depend on lip reading to comprehend what the other person is saying. However, this is not possible on account of the masks. Similarly, the Deaf and Hard of Hearing people used to write/type their message on a notepad or smartphone as explained in section B above. However, They feel apprehensive about using this strategy as they feel reluctant to hand their notepad or mobile to the other person on account of risks pertaining to COVID-19. This in turn compromises their ability to specify their destination or to negotiate for fare independently and safely.

In the case of Mobility Aggregators, when the driver called to verify certain details or to announce their arrival, the Deaf and Hard of Hearing individuals often had to rely on other non-disabled people to facilitate phone conversation as elaborated in Section B above. However, given the risks around the spread of COVID-19, these individuals feel nervous about handing their phone to others. This may lead to various issues including avoidable trip cancellations.
Before COVID-19, Persons with Visual Disability sort assistance from other non-disabled people around them for locating the taxi as elaborated in Section B above. However, this is difficult on account of the presence of fewer people and the reluctance of people to assist on account of Coronaphobia.

Depending on the nature and extent of their disability, Persons with Locomotor Disability may require assistance in boarding an auto or a taxi as outlined in Section B above. The FGD participants explained that such assistance may not be readily available anymore. The risk around COVID-19 may prevent drivers, friends and family members to offer assistance to the PwLD.

Upon boarding an Auto or a Taxi, PwLDs get their assistive equipment stored in the boot (if possible), on the overhead carrier (if available), or the seat next to them as elaborated in Section B above. The drivers may be reluctant to handle the assistive equipment on account of Coronaphobia. Even when the driver agrees to store the equipment, the PwLD share their anxiety around the cleanliness and hygiene of the storage area such as the boot. As a result of the reduced availability of hired help such as a private driver (as explained in Section 5.1) and challenges around getting assistance in traveling in an Auto or a Taxi, the ability of PwLD to travel independently has been severely reduced.

Persons with Visual Disability relied on the driver to get an orientation at the drop location and to reconfirm if they have indeed reached the desired destination. The FGD participants with visual disability explained that getting an orientation or confirmation has become relatively difficult on account of the communication challenges. Furthermore, the drivers seem to be in a hurry to finish the trip and get the next customer. As a result, many drivers get somewhat impatient and irritated if one tries to get orientation or confirmation about the drop location.

The issues around fare payment as explained in Section H above continue to exist. The FGD participants shared that even though their preference for digital transactions has increased during the pandemic, they continue to struggle as most drivers still prefer cash payment. Furthermore, varying levels of inaccessibilities with respect to various digital payment modes prevents PwD from having equal ability to make a digital payment.

The FGD participants also highlighted the need to adapt the complaint filing process and to make it more disability sensitive. They explained that complaints are an important means to provide feedback to the authorities and for ensuring that the transport system continues to operate with the highest standards of safety, hygiene and service quality.
CHAPTER 4

RECOMMENDATIONS

RECOMMENDATIONS AT A GLANCE

01. Mandate collection of up-to-date gender age and disability (GAD) disaggregated population and transport data.

02. Notify/update standards of accessibility for physical and digital infrastructure across the trip chain.

03. Ensure that the Country’s disaster response, especially with respect to transportation, is disability inclusive.

04. Specify universal accessibility as an essential criterion in the technical requirements for procurement of goods or RFP for tenders.

05. Announce fiscal incentives for accessible transportation thus encouraging the industry to invest in the development and production of accessible transport solutions.

06. Institute a National Centre of Excellence (CoE) for Inclusive Transport within a mainstream apex body.

07. Automobile companies and transport operators to publish an accessibility policy along with an annual roadmap for accessibility improvements based on notified standards.

08. Senior management, tech teams and customer facing staff of automobile companies and transport operators to undergo disability sensitisation training.

09. Develop accessible tech tools to crowd-source areas for improving accessibility of mobility systems and to empower citizen volunteers to develop solutions.

10. Conduct regular independent professional accessibility audits of transport systems covering the entire trip chain.

11. Establish an annual National Award for Best Accessible Transport Product/Service to honour actors improving accessibility of mobility systems.
ON THE MOVE: Urban travel experiences of Persons with Disabilities and a path to build more inclusive transport systems

The inaccessibility of urban transportation may be traced back to a few reasons. Accessibility is often not considered at the planning stage of transportation projects. Universal access guidelines (where available) are not consistently applied at the time of execution. The key decision makers often don’t have a sound understanding of the accessibility needs of Persons with Disabilities. Furthermore, even if laws for protecting the rights of Persons with Disabilities exist, there is a scope to improve their enforcement. There needs to be a concerted effort from different actors of the transportation ecosystem in order for the accessibility of urban transportation to improve. Here are a few recommendations in this direction that might be helpful.

DETAILED RECOMMENDATIONS

01

**Mandate collection of up-to-date gender age and disability (GAD) disaggregated population and transport data.**

The GAD disaggregated data should be collected for all modes of transport.

The disaggregated data will facilitate data driven policy making.

**SUCCESS PARAMETERS**

- a. Census 2021 - GAD disaggregated population
- b. Ridership - GAD disaggregated
- c. Number of accidents disaggregated by type of accident, gender, age and disability
- d. Number and nature of complaints (GAD disaggregated)

**STAKEHOLDERS RESPONSIBLE**

- a. Ministry of Home Affairs
- b. Ministry of Road Transport and Highways
- c. Ministry of Railways

**TIMELINE**

- 12 - 18 Months
- Start: Immediately
- Complete

**NATURE OF EXERCISE**

- Continuous

**SUPPLEMENTARY NOTES**

- a. The Washington Group Short Set (6 questions | 1.5 minutes to administer) may be used for collecting disability disaggregated data. If necessary, the Washington Group Extended Set (35 questions | 10 – 12 minutes to administer) may be used to collect more detailed information including information around cognitive functioning.
- b. There is a scope for using the Unique Disability ID infrastructure for transport planning and policy making. Disbursing travel support in form of Direct Bank Transfer based on UDID may incentivise more PwD to get UDID. This will enrich the database leading to better quality and breadth of information. This information may also be published in an anonymised aggregated format to private operators for their strategic and operational planning purposes.
- c. It is important to proactively engage with Disabled Person’s Organization while designing various measures for data collection and developing policies, and for training surveyors in data collection.
The standards of accessibility for the physical infrastructure should include built environment and the vehicles. The standards of accessibility for digital infrastructure should include information & communication as well as payment systems.

**SUCCESS PARAMETERS**

- a. Number of standards notified/updated
- b. Annual progress report on implementation of standards

**STAKEHOLDERS RESPONSIBLE**

- a. Ministry of Social Justice and Empowerment
- b. Ministry of Road Transport and Highways
- c. Ministry of Railways
- d. Ministry of Finance

**SUPPLEMENTARY NOTES**

- a. Standards to make transportation more accessible will help in expectation setting between operators/businesses, customers and government.
- b. Operators/businesses will be able to factor in accessibility improvements in their strategic (long-term) and operating (immediate/short-term) plans.
Ensure that the Country’s disaster response, especially with respect to transportation, is disability inclusive.

**TIMELINE**

12 - 18 Months

- Start Immediately
- Complete

**NATURE OF EXERCISE**

Continuous

Senior members of Disaster Management Division, Ministry of Home Affairs, should attend training and sensitization on:

a. challenges experienced by PwD across the trip chain.

b. Relevant national (or in their absence international) accessibility standards for built environment, transportation and information and communication.

**SUCCESS PARAMETERS**

Percent of the members who have undergone training and sensitisation program

**STAKEHOLDERS RESPONSIBLE**

a. Ministry of Home Affairs

b. Ministry of Social Justice and Empowerment

**SUPPLEMENTARY NOTES**

An understanding of the mobility requirements of Persons with Disabilities will enable the formation of disability inclusive disaster response plans and programs. Such programs will facilitate equal access to transportation for PwD and enable them to continue to contribute to their families, communities and the country.
Universal accessibility should be a fundamental principle of public procurement (including procurement for mobility systems).

**SUCCESS PARAMETERS**

**a.** Number of orders/contracts/tenders issued where universal accessibility was an essential criterion

**b.** Number of orders/contracts/tenders awarded even when the goods or tender did not meet universal accessibility criterion

**STAKEHOLDERS RESPONSIBLE**

**a.** Ministry of Finance

**b.** Ministry of Social Justice and Empowerment

**c.** Ministry of Road Transport and Highways

**d.** Ministry of Railways

**SUPPLEMENTARY NOTES**

**a.** Update General Financial Rules 2019 to stipulate that Every authority delegated with the financial powers of procuring goods in the public interest shall have the responsibility and accountability to bring universal accessibility in matters relating to public procurement.

**b.** Technical requirements of goods or works should cite national accessibility standards, or international standards in absence of national standards, as an essential criterion.

**c.** European Union and United States of America’s public procurement policies can be useful case studies for incorporating universal accessibility requirements.
Announce fiscal incentives for accessible transportation thus encouraging the industry to invest in the development and production of accessible transport solutions.

**TIMELINE**

18 Months

**NATURE OF EXERCISE**

Continuous

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**05**

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**SUCCESS PARAMETERS**

a. Number of schemes/programmes in operation for individuals and operators/businesses to promote accessible transport
b. Funds allocated per year
c. INR value of incentives disbursed per year
d. Number of PwD benefitted

**STAKEHOLDERS RESPONSIBLE**

a. Ministry of Finance
b. Ministry of Social Justice and Empowerment
c. Ministry of Road Transport and Highways
d. Ministry of Railways

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**SUPPLEMENTARY NOTES**

a. for the supply side incentives, the incentives could be staggered and tied to results/milestones.
b. experts have been advocating to waive off GST on assistive technology products to make them more affordable for individuals; similar benefits may be extended to businesses.
c. the Government should subsidize travel for all Persons with Disabilities (including using intermediate public transport) by facilitating direct deposit of subsidy in bank account via direct benefit transfer mechanism.
Institute a National Centre of Excellence (CoE) for Inclusive Transport within a mainstream apex body.

**TIMELINE**
- **18 Months**
  - **Start 18 months from now**
  - **Complete**

**NATURE OF EXERCISE**
- Continuous

The CoE would be responsible to develop India-specific solutions for improving the safety, reliability, accessibility, and affordability of transport systems. These solutions could range from fiscal, technical, to operational, and beyond.

**SUCCESS PARAMETERS**
- a. Number of research projects
- b. Number of thought leadership products published
- c. Number of partnerships
- d. Number of patents

**STAKEHOLDERS RESPONSIBLE**
- Ministry of Human resource development

**SUPPLEMENTARY NOTES**
Improving accessibility and inclusivity of transportation requires multiple stakeholders to come together including policy makers from different ministries, municipal bodies, universal design & accessibility experts, transport operators, automobile manufacturers and Persons with Disabilities. A Centre of Excellence for Inclusive Transportation within a mainstream apex body such as the National Institute of Design will help in bringing different stakeholders together.
Automobile companies and transport operators to publish an accessibility policy along with an annual roadmap for accessibility improvements based on notified standards.

**TIMELINE**
- **12 Months**
  - Start 18 months from now
  - Complete

**NATURE OF EXERCISE**
- Annual

**SUCCESS PARAMETERS**
- **a.** Number of automobile manufacturers & transport operators which have published an accessibility policy
- **b.** Number of automobile manufacturers & transport operators which have published an annual roadmap
- **c.** Year-on-year self-reported progress by automobile manufacturers & transport operators in comparison with the published roadmap

**STAKEHOLDERS RESPONSIBLE**
- Automobile manufacturers & transport operators

**SUPPLEMENTARY NOTES**
- a. The policy should articulate a non-discriminatory framework towards PwD.
- b. It should outline the accommodations or facilities currently available to PwD and the time bound targets for improving accessibility of physical, digital, payment and information & communication infrastructure.
- c. The policy should address considerations around women’s and PwD’s safety, disaster response and emergency services.
- d. The policy/roadmap may also commit to the use of accessible (apps & websites) to publish information such as (i) bus/train schedules, (ii) accessibility considerations such as availability of low floor buses, (iii) real-time tracking and emergency response facility, (iv) directions to nearest accessible toilets, (v) use of QR code to provide contextual information, etc.
Senior management, tech teams and customer facing staff of automobile companies and transport operators to undergo disability sensitisation training.

The training should include Relevant national (or in their absence international) accessibility standards for the built environment, transportation, information and communication systems and payment systems.

**TIMELINE**
- **Start 18 months from now**
- **Complete 18 Months**

**NATURE OF EXERCISE**
- Continuous

**SUCCESS PARAMETERS**
- a. Percent of members of senior management who have undergone training and sensitization
- b. Percent of tech team members who have undergone training and sensitization
- c. Percent of customer-facing staff who have undergone training and sensitization

**STAKEHOLDERS RESPONSIBLE**
- Automobile manufacturers & transport operators

**SUPPLEMENTARY NOTES**
- a. Training must ensure an adequate number of well-trained persons for all parts of the passenger’s journey, or product development lifecycle are available and must occur frequently enough to account for the turnover of personnel.
- b. PwDs should be involved in the development and delivery of training and sensitization programs.
- c. The ubiquity of smartphones and internet access can enable deployment of these training modules at scale as well as monitor their completion rates.
Develop accessible tech tools to crowd-source areas for improving accessibility of mobility systems and to empower citizen volunteers to develop solutions.

This would speed up the identification and resolution of digital and physical accessibility issues across the trip chain.

**SUCCESS PARAMETERS**
- Number of accessibility issues identified across the trip chain
- Number of issues resolved

**STAKEHOLDERS RESPONSIBLE**
- Ministry of Electronics & Information Technology
- Ministry of Social Justice and Empowerment
- Ministry of Road Transport and Highways
- Ministry of Railways
- Automobile manufacturers & transport operators

**SUPPLEMENTARY NOTES**
- IBM’s Social Accessibility Project has developed a web browser plug-in that allows end users to:
  - Flag problem pages,
  - Empowers sighted users to voluntarily add a mark-up layer,
It then fuses the results to generate an accessible version of the page.
Similar tools could be used to speed-up identification and resolution of accessibility issues in apps and websites used throughout the trip chain.
- An accessible app/website may be developed/used to empower the users to identify accessibility issues in the physical infrastructure or vehicles - inspired by PM Modi’s July 2019 suggestion to develop an app to get direct user feedback on accessibility challenges.
Conduct regular independent professional accessibility audits of transport systems covering the entire trip chain.

This would help to ensure that the highest standards of accessibility are maintained throughout the trip chain on an ongoing basis.

**SUCCESS PARAMETERS**

- a. Number of audits conducted per year
- b. Number of issues identified per year
- c. Number of issues resolved per year

**STAKEHOLDERS RESPONSIBLE**

- a. Ministry of Road Transport and Highways
- b. Ministry of Railways
- c. Automobile manufacturers & transport operators

**SUPPLEMENTARY NOTES**

Improving accessibility and inclusivity of transportation requires multiple stakeholders to come together including policy makers from different ministries, municipal bodies, universal design & accessibility experts, transport operators, automobile manufacturers and Persons with Disabilities. A Centre of Excellence for Inclusive Transportation within a mainstream apex body such as the National Institute of Design will help in bringing different stakeholders together.
Establish an annual National Award for Best Accessible Transport Product/Service to honour actors improving accessibility of mobility systems.

**TIMELINE**
- **12 Months**
  - Start 18 months from now
  - Complete

**NATURE OF EXERCISE**
- Annual

**SUCCESS PARAMETERS**
- a. Number of applicants for the award per year
- b. Number of awards given per year

**STAKEHOLDERS RESPONSIBLE**
- Ministry of Social Justice and Empowerment

**SUPPLEMENTARY NOTES**
- a. A new category of award for best accessible transport product/service may be introduced under the Scheme of National Award for the Empowerment of Persons with Disabilities.
- b. A national award will raise the importance of accessible transportation and encourage more players to invest in the same.
ANNEXURE 1. DEFINITIONS

1. **Accessibility**: is the “ability to ‘access’ the functionality, and possible benefit, of some system or entity and is used to describe the degree to which a product such as a device, service, environment is accessible by as many people as possible. The concept of accessible design ensures both ‘direct access’ (i.e. unassisted) and ‘indirect access’ meaning compatibility with a person’s assistive technology (for example, computer screen readers)” (Disabled World, 2019).

   A transport system is accessible to a particular group of Persons with Disabilities, if, by its physical design and its operating procedures, it can be used by that group without requiring them to do anything that their impairment makes impossible (Mitchell, 1995).

2. **Accessibility audit**: “is an important tool to identify barriers and can help to improve accessibility for people with disabilities, and provides the basis for an access improvement plan or strategy” (Agarwal et al, 2016).

3. **Assistive devices and technologies**: “are those whose primary purpose is to maintain or improve an individual’s functioning and independence to facilitate participation and to enhance overall well-being. They can also help prevent impairments and secondary health conditions” (The World Health Organization, n.d.).

4. **Barrier**: “means any factor including communicational, cultural, economic, environmental, institutional, political, social, attitudinal or structural factors which hamper the full and effective participation of persons with disabilities in society” (Rights of Persons with Disabilities Act, 2016).

5. **Blindness**: refers to “a condition where a person has any of the following conditions, after best correction—
   (i) total absence of sight; or
   (ii) visual acuity less than 3/60 or less than 10/200 (Snellen) in the better eye with the best possible correction; or
   (iii) limitation of the field of vision subtending an angle of less than 10 degrees” (Rights of Persons with Disabilities Act, 2016).

6. **Built environment**: refers to “the elements of the environment that are generally built or made by people as contrasted with natural processes” (Davidson et al, 2004).

7. **Carer/attendant**: refers to “any person including parents and other family members who with or without payment provides care, support or assistance to a person with disability” (Rights of Persons with Disabilities Act, 2016).
8. **Communication**: “includes means and formats of communication, languages, display of text, Braille, tactile communication, signs, large print, accessible multimedia, written, audio, video, visual displays, sign language, plain-language, human-reader, augmentative and alternative modes and accessible information and communication technology” (Rights of Persons with Disabilities Act, 2016).

9. **Deaf**: means “persons having 70 DB hearing loss in speech frequencies in both ears” (Rights of Persons with Disabilities Act, 2016).

10. **Exclusion**: “is a process and a state that prevents individuals or groups from full participation in social, economic and political life and from asserting their rights. It derives from exclusionary relationships based on power” (Beall et al, 2005).

11. **Hard of hearing**: “person having 60 DB to 70 DB hearing loss in speech frequencies in both ears” (Rights of Persons with Disabilities Act, 2016).

   *Note: For the purpose of this report, a reference to “Deaf” includes a reference to “Hard of hearing”.*

12. **Impairment**: “is a reduced physical or mental faculty. It becomes disabling when the individual is prevented from participating fully in society because of environmental and social barriers” (Agarwal et al, 2016).

13. **Infrastructure**: is the basic physical and organisational structure needed for the operation of a society or enterprise or the services and facilities necessary for a society to function. The term typically refers to the technical, organisational and service structures that support a society, such as roads, bridges, tunnels, water supply, sewers, energy supply, telecommunications & information systems, transport systems, health, education and social support systems etc.

14. **Intermediate Public Transport**: can be understood as an ancillary service to public transport. It fills the gap between human walking, carrying and large scale transport. The carrying capacity of such intermediate modes of transports range from 50 kegs to 1000 kegs, which is greater than humans but less than large scale public transport systems. Intermediate Public Transport (IPT) can cover the range of 1 km to 20 km, but are mainly used for short distances.

   *Note: For the purpose of this report, Auto-rickshaws (autos), Taxis and technology-enabled platforms or mobility aggregators are collectively referred to as intermediate public transport.*

15. **Locomotor disability**: refers to “a person’s inability to execute distinctive activities associated with movement of self and objects resulting from affliction of musculoskeletal or nervous system or both” (Rights of Persons with Disabilities Act, 2016).

16. **Low floor bus**: “is a vehicle that, between at least the first and second doors, has a floor that is low and even enough to dispel the need for steps either in the passage between the doors or their immediate vicinity” (Schneider et al, 1991).

   In India, for a low floor bus, the maximum height of the first step from the ground should not be more than 400 mm and the maximum floor height (in an unleaded state) should not exceed 400 mm or 650 mm (depending on certain criteria) (Ministry of Urban Development Urban Transport Division, 2008).

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17. **Low vision:** is “a condition where a person has any of the following conditions, namely: — (i) visual acuity not exceeding 6/18 or less than 20/60 up to 3/60 or up to 10/200 (Snellen) in the better eye with best possible corrections; or (ii) limitation of the field of vision subtending an angle of less than 40 degrees up to 10 degrees” (Rights of Persons with Disabilities Act, 2016).

18. **Person with Disability(s):** “means a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders their full and effective participation in society equally with others” (Rights of Persons with Disabilities Act, 2016).

19. **Safety:** refers to “freedom from the occurrence or risk of injury, danger, or loss” (dictionary.com)

20. **Sensory disability:** refers to “conditions that include blindness, deafness, low vision, and hearing loss (as defined for “deaf” or “hard of hearing” above), speech disability and loss of sensory perception on account of other health conditions such as a spinal cord injury.

*Note: For the purpose of this report, sensory disability refers to blindness, low vision, hearing loss and speech disability.*

21. **Speech disability:** refers to “a permanent disability arising out of conditions such as laryngectomy or aphasia affecting one or more components of speech and language due to organic or neurological causes” (Rights of Persons with Disabilities Act, 2016).

22. **Transport infrastructure:** includes “road and pedestrian environment, bus, bus shelters and terminuses, railway stations and rolling stock, rapid transit systems (bus, metro, monorail, etc.) water ways and integrated public transport systems (cycle and auto rickshaws, feeder, non-motorised vehicles, tricycles, mobility scooters, etc.) (Agarwal et al 2016. P vii).”

23. **Transport system:** includes road transport, rail transport, air transport, water transport, para transit systems for the last mile connectivity, road and street infrastructure, etc. (Rights of Persons with Disabilities Act, 2016).

24. **Trip chaining:** “at its most basic level, includes a stop on the way to another destination” (Shah s. & Raman A. 2019).

25. **Universal design:** “means the design of products, environments, programmes and services to be usable by all people to the greatest extent possible, without the need for adaptation or specialised design and shall apply to assistive devices including advanced technologies for particular group of persons with disabilities” (Rights of Persons with Disabilities Act, 2016).

26. **Visual disability:** includes blindness and low vision

27. **Walkability** “is the extent to which the built environment supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network.” (Southworth M. 2005. P. 2). For Persons with Disabilities, this relates to “footpath presence, connectivity, and conditions (cracks or unevenness) along with appropriately placed and designed kerb ramps, crossings, and pedestrian refuges” (Stafford, 2017).
ANNEXURE 2. GLOSSARY

DEOC: Diversity and Equal Opportunity Centre

DFID: Department for International Development

FGD: Focused Group Discussion

GAD: Gender, Age and Disability

GDP: Gross Domestic Product

ILO: International Labour Organization

IPT: Intermediate Public Transport

MA: Mobility Aggregator

NAB: National Association for the Blind:

NCPEDP: National Centre for Promotion of Employment for Disabled People

PwD Act: Persons with Disabilities (Equal Opportunities, Protection of Rights, and Full Participations) Act, 1995

PwDs: Persons with Disabilities

PwLD: Persons with Locomotor Disability

PwVD: Persons with Visual Disability

RPWD Act: Rights of Persons with Disabilities Act, 2016

SDG: Sustainable Development Goals

UN ESCAP: United Nations Economic and Social Commission for Asia and the Pacific

ANNEXURE 3. LIST OF QUESTIONS FOR UNSTRUCTURED INTERVIEW

The following list of questions were used to conduct an unstructured interview with the interviewees. The interviewees were taken through the questions in Part 2 separately for each mode of transport within the scope of this study. The interviewees were requested to answer the questions based on their personal experiences. Where the interviewees shared insights based on experience of other Persons with Disabilities, the same was categorically stated by them and noted by the interviewer.

**Part 1: General questions**

1. What is your full name?
2. Which organization nominated you for this study?
3. In what capacity are you associated with the aforesaid organization?
4. If you are comfortable sharing, what is the nature and extent of your disability captured?
5. How often do you travel independently in a month?
6. What assistive technology/devices do you use?
7. What are other commonly used assistive technology/devices used by persons living with a similar disability?

**Part 2: Different phases of the trip**

A. **Trip planning**
   1. What information do you try to get for planning a trip?
   2. How often do you try to get this information?
   3. How do you get it?
   4. Can the information be obtained independently?
   5. Is there any information which you don’t get easily?
   6. If yes, how do you manage your trip planning in absence of it??
   7. Any other challenges associated with trip planning?

B. **Getting to the boarding spot**
   1. (only for auto and cabs)
      a. Do you hail a taxi or auto on the street?
      b. If yes, do you face any challenges?
      c. How do you overcome the challenges?
   2. How do you get to the boarding spot (platform/bus stop/pick-up location, etc.)?
   3. What challenges do you face?
   4. Is the journey to the boarding spot generally accessible?

C. **Boarding**
   1. How do you identify a vehicle at the boarding spot? Please describe the process you adopt.
   2. Please describe your process to board the vehicle.
   3. Are you able to board the vehicle independently?
   4. Do you face any challenges at the time of boarding? Please describe them.
   5. Do you find the boarding process to be safe?
   6. How easy is it to find a safe seat in the vehicle before it starts moving?
   7. Do you use designated seats for PwD (relevant only for metro, local and bus)?
   8. How and where do you store your assistive technology/devices?
   9. Have you experienced any challenges in storing your assistive technology/devices?
  10. Have you experienced any communication challenges? If yes, please elaborate.
  11. Have you faced any other challenge at the time of boarding?
D. In transit experience
1. Do you find the travel process to be safe and convenient? Please elaborate.
2. Do you need any assistance during transit?
   a. If yes, could you elaborate on for what do you need the assistance?
   b. Who provides the assistance
3. Have you experienced any communication challenges during the transit phase?
4. Have you experienced any challenges pertaining to assistive technology/devices during this phase?
5. Have you faced any other challenges in the transit phase (which we have not already discussed)?

E. Trip end and disembarking
1. How do you know when the destination is approaching? Please describe the process.
2. Please describe the process for disembarking from the vehicle
3. Do you find the disembarking process or the drop location to be generally accessible?
   a. If not, how do you disembark from the vehicle?
4. Do you face any challenges immediately after disembarking?
   a. If yes, please elaborate
   b. How do you deal with them?
5. Do you require any assistance at the time of or immediately after disembarking?
   a. If yes, who provides assistance?
6. Do you face any challenges in retrieving the assistive technology/devices and getting them ready for use?
7. (if applicable) please describe the process to get back on the wheelchair or other assistive device.
8. Do you experience any other challenges at the time of or immediately after disembarking (which you have not already shared)?

F. Payment and other considerations
1. How do you generally pay the trip fare?
   a. Cash, card, wallet, other (please specify)
   b. Do you experience any difficulties in fare payment? Please elaborate.
2. Did you have any fraudulent experience in relation to fare payment
3. In case of an unsatisfactory or bad experience
   a. Do you feel like you know the process for registering a complaint?
4. If you have registered a complaint
   a. How easy was it to get it registered?
   b. What was the Turn Around Time (TAT) for resolution?
   c. Did you experience any communication challenges for filing the complaint or during the resolution process?
5. Have you experienced any other challenges (which you have not already shared)?
ANNEXURE 4. REFERENCES


The UN ESCAP. (2012). Incheon strategy to “make the right real” for persons with disabilities in Asia and the Pacific.


