Journey by Visually Impaired Public Transport Users: Barriers and Consequences

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Abstract

Accessibility to public transport is increasingly recognized as having a significant impact on the livelihood of people who are visually impaired. There is a wealth of knowledge on the issues that exist in the environment but budgetary constraints mean not every issue can be addressed. As such, many barriers to transport access still exist in the urban environment and public transport systems, which often leads to social exclusion; despite advancements that have been made to better cater for the needs of disabled people. This paper attempts to identify and prioritize the key issues that require addressing from the perspective of visually impaired public transport users that would bring the greatest mobility benefits in their journeys from origin to destination. A series of semi-structured interviews were conducted to identify these key issues. A total of 17 visually impaired participants were involved in this study, including 6 with total blindness and 11 with partial vision, in varying degrees. The main barriers were due to bus driver's unawareness of disabled people's needs, obstructions on footpaths, poor information, poor bus infrastructure, poor bus services, and barriers from construction. The consequences of being unable to travel independently caused many of the participants to feel frustrated, isolated, stressed, and resentment. The results revealed that improving bus driver training, more strategically placed pedestrian crossings, and more availability of real-time information would bring the greatest mobility benefits.

1. Introduction

People with disabilities continue to be among the most marginalized group in any society by being unable to enjoy the freedom of mobility to the same extent as able-bodied people. With mobility being one of the preconditions for participating in society, mobility disadvantaged individuals are often excluded and some are unable to perform typical journeys. Around 15% of the world's population is estimated to be living with some form of disability (World Health Organization 2011).

Accessibility to public transport (PT) is increasingly recognized as having a significant impact on the livelihood of people with disabilities. Barrier-free access to PT can transform their lives from one of isolation and dependency to one of social integration and independence (United Nations 2007). The "social model of disability" (Barnes 1991) conceptualizes that one's disability is contingent upon an inaccessible environment, not an impairment. In this paper, the focus will be on people with visual impairments whose ability to travel and freedom of movement are impeded by their sensory disabilities. To the authors' knowledge, there is still a lack of understanding about the key barriers met by visually impaired commuters during their PT journey i.e. from home to destination.

The aim of this study is the identification of the key barriers which adversely affects a visually impaired PT users' journey, and how these should be prioritized from their perspective that would bring the greatest benefit to their mobility. This study was undertaken in key cities around New Zealand (NZ), predominantly in Auckland and Dunedin, as well as Christchurch, Wellington, and Whanganui, where a total of 17 participants volunteered to take part in a semi-structured interview. Until the key issues are addressed, the cycle of social exclusion will continue as they remain vulnerable and consequently limited in the extent to which they can partake in society.

2. Data collection and analysis

2.1. Background of NZ's PT System

Auckland is NZ's largest and most cosmopolitan region with a population of around 1.6 million. It is the most developed city in terms of the PT system which consists of three modes: bus, train, and ferry with an integrated ticketing and fare system using the AT hop card. Wellington and Christchurch also offer multiple modes of transport options for commuting purposes, but not to the extent of advancement as Auckland. However, in Dunedin and Whanganui, the PT system is not as advanced as that of the previous three cities with commuters primarily using buses to get around.

2.2. Semi-structured interviews

The study adopted a qualitative approach using semi-structured interviews. The main purpose of this interview was to uncover the major issues that disabled travellers face in their PT journey and to explore its impact on the user. Semi-structured interviews allow the interviewer to probe for more details while still maintaining structure in order to collect in-depth qualitative data. The interview maintains a conversational tone, such that participants have the freedom to express their views and the chance to explore issues that are important to them (Bryman, Bell 2015). The interviews were designed to take approximately between 30 minutes – 1 hour to permit enough time to explore these issues in depth and the responses were audio-recorded.

2.3. Sampling strategy

The participants were all volunteers and consisted of people with a vision impairment and who currently use or have used PT for the majority of their journeys. They were recruited primarily using the snowball sampling method and through organisations representing disadvantaged

groups. Email and phone contacts were provided to potential participants to directly contact the interviewers. The goal was to recruit a sample size in the range between 12 - 20 participants as this was when thematic saturation of information was found to occur; thereby, ensuring the validity of the interview data (Guest, Bunce et al. 2006, Crouch, McKenzie 2006).

2.4. Description of the key questions

To ensure research validity and the prevention of bias, the researchers abstained from asking leading questions that could dictate the direction of the discussion with preconceived notions. These questions were divided into 7 different sections as shown in Table 1, with each focusing on a various aspect of the journey for visually impaired users.

Table 1: Key questions asked in the interview

Theme	Questions
Trip Information	When and for what purposes do you use PT?
Barriers	When considering a typical journey from when you leave your home to when you reach your destination using PT, what parts of the journey present the biggest barriers and why are they an issue?
Consequences	What are the consequences of not being able to make a journey due to barriers in a PT journey? • How does this make you feel? • What impacts does not being able to participate have on your life?
Key issues	What would be the top 3 issues/barriers you would address that would bring the most improvements to your mobility?
Good qualities of a journey	What are the qualities that make a good journey?
Total Mobility Scheme	Have you used the TMS before? • In what situations do you use it and how helpful is it? Would you prefer to use the TMS or travel independently and why?
Socio-demographic aspects	Age, gender, ethnicity? What would you identify your impairment as? • Do you experience any additional difficulties?

2.5. Description of participants

A total of 17 visually impaired participants were involved in this study, including 6 with total blindness and 11 with partial vision, to varying degrees. 12 out of 17 participants were females. The data showed that majority of the participants were in the age range of 45-64 with 8 participants. 12 out of 17 participants identified themselves as NZ European, 4 as European and 1 participant as Mixed-European/African. Participants were primarily from Auckland and Dunedin with 8 and 6 participants respectively; whereas there was only 1 participant each from the city of Christchurch, Wellington, and Whanganui respectively.

Visually impaired participants have low vision in varying degrees due to different conditions that affect their vision, such as Retinitis Pigmentosa, Macular Degeneration, vision on one side of their eye, and total blindness, including those who require the use of a cane and guide dogs.

2.6. Transcribing and coding in NVivo

Audio recordings from interviews were transcribed and coded using the qualitative data analysis software program *NVivo 11 for Windows (Version 11.4.1.1064)*. The process of thematic analysis as described by Braun and Clarke (2006) was followed. This involved a

process of coding across the entire data set and then collating the codes into themes. Each transcript was read where relevant words, phrases, sentences were coded. A code was considered relevant if it was: repeated in several places; new; explicitly stated by the participant as important or; relevant to literature. Themes from within the data were identified using an inductive approach, where the themes were strongly linked to the data collected. Therefore, no predetermined coding frame was used. Instead, it was developed as the data was coded and subsequently applied to all transcripts.

3. Results

The results from this study were organized into 6 themes, based around the key questions asked in the interview.

3.1. Trip Information

17 participants involved in this study currently use or have used PT in the past, which included one respondent who used it with the accompaniment of somebody else. 4 participants used PT less than once a week, 7 participants used it 1 to 3 times a week and 6 participants were frequent users of PT using it more than 3 times a week.

The results highlighted the main purpose of using PT was for recreational purposes, which includes exercise, visiting the Blind Foundation and the library. Appointments such as medical-related, education, shopping, visiting friends and family, and work were the next most common journeys. However, for frequent PT users, their trips were mostly associated with work and educational purposes. These were derived based on the number of times keywords, relating to these trip purposes, were mentioned in the interview responses.

3.2. Barriers in a public transport journey

Participants described the barriers that were present in their PT journey and the number of times the issue was mentioned was recorded, depicted in Table 2.

Table 2: Main barriers in a public transport journey

Theme	No. of times mentioned	Description
Bus Driver's Unawareness	18	Buses not stopping despite people waiting at stops and not turning up (8). Followed by the driver forgetting to stop (5) the bus, poor driver attitude and competency (4), and driver language barrier
Bus Infrastructure	6	Steps on bus seats too close, faulty stop button, lack of bright colour to indicate edge, bus buzzers not in the same place and hop card reader does not beep loudly
Bus Service	5	Distance to and from bus stops (3), lack of shelters on bus stops, poor paths to bus stops and no direct bus route to the destination.
Construction	4	Footpath closures, cones obstructing footpath, removal of tactile and noise
Footpaths	12	Particularly obstructions in footpaths from recycling bins, cars and low-hanging branches (5). Followed by undulating footpaths (2) and audio not working for crossings (2). Poor street lighting, lack of footpaths, audio not working for crossings and lack of pedestrian crossings.

Theme	No. of times mentioned	Description
Information	13	Poor presentation of information (5) such as contrast, small print, and content of bus routes. Lack of information to choose correct bus from multiple buses (3). Lack of real-time information (2), Lack of audio announcements on buses and ticketing machines (2) and lack of info on google maps.
Other	3	Lack of national standard for consistency in design like buttons, designs etc. Paying extra for transfer of multimodal PT and lack of knowledge around white canes.

3.3. Consequences

The consequences of not being able to make a journey due to the barriers in PT included being late or not able to go to various appointments; forced to use a taxi; requiring much more planning and thus depriving them of flexibility as they cannot make spontaneous and convenient trips; and social isolation. As a result, respondents described feeling isolated, stressed, resentment and frustration.

3.4. Qualities of a good journey

If the issues surrounding PT were addressed, 71% of the respondents indicated that they would travel more using PT than they are currently. The other 29% of respondents mentioned it would not affect their frequency of using PT because that is their only source of transport.

3.5. Key issues that require addressing

The key issues from the perspective of visually impaired PT users that would bring the most improvements to their mobility if addressed is presented in this section. The issues were grouped as narrowly to keep them as specific as possible. Bus driver training and better attitude of bus drivers (5); better location of crossings (4); real-time audio announcements (4); good presentation of information (3); and revising of the benefits system (2).

3.6. Total Mobility Scheme

16 out of 17 participants in this study were found to be covered by the Total Mobility Scheme (TMS). One participant was not aware of the eligibility of the TMS and therefore was not included. Everyone covered by this scheme found it very helpful as the scheme reduces the price of taxi fares by 50%. The taxis were mainly used as an alternative mode of transport for when travelling by PT is inconvenient particularly for appointments, where they cannot afford to be late, and for areas that lack a reliable PT route.

4. Discussion

The results from this study showed that many barriers still exist for visually impaired PT users in their journeys. The main barriers were due to bus driver's unawareness of disabled people's needs, obstructions on footpaths, poor information, poor bus infrastructure, poor bus services, and barriers from construction. These findings were consistent with the issues and barriers identified in previous literature which adds support to previous findings. This suggests that, despite advancements that have been made over the years to better cater for the needs of disabled people, issues which have been identified in the past still exist. The consequences resulted in a diminished quality of life with a high reliance on taxis to get around. Despite the

majority of respondents being covered under the TMS, they preferred to use PT instead of taxis to preserve their independence.

The diverse issues present in a disabled pedestrian's journey and budgetary constraints makes it difficult for decision-makers to address every issue known. Bus driver's unawareness was the most common barrier found in this study; paired with the fact that qualities of a good journey can be improved with better bus attitude highlights the importance of improving bus driver training. Bus drivers are often trained to identify blind passengers because they use visible aides such as white canes or guide dogs. However, there appears to be a lack of guidance for bus drivers when it comes to identifying and providing the appropriate assistance to visually impaired passengers without the use of visible aides. Considering that visually impaired commuters rely heavily on PT to meet their mobility needs, it is imperative that policies and standards related to transport services are revised to incorporate these key issues to provide a more inclusive service.

5. Conclusions

The original contribution of this study is the key issues that were identified and prioritized by visually impaired public transport (PT) users. Budgetary constraints mean decision-makers are forced to make a choice between multitudes of potential issues to remedy, and consequently not every issue can be addressed. Therefore, a semi-structured interview was undertaken that involved 17 visually impaired participants to identify the key issues that would bring the greatest improvements to their PT journey, from origin (usually home) to destination, if it were addressed. The findings showed that better bus driver training, more strategically placed pedestrian crossings, and more availability of real-time information would bring the greatest improvements to their mobility. The results also revealed that common barriers such as poor bus driver attitude and competency, footpaths especially obstructions, poor information, and poor bus infrastructure and services continue to still exist. This has resulted in many participants to feel isolated, frustrated, stressed, and resentment which support the findings of previous literature. In conclusion, this study demonstrated the importance of conducting a qualitative research by shedding light on the key issues, if addressed, would enable a more inclusive society for those with visual impairments.

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