Travel Behavior and Transportation Needs of the Disabled: Case Study of Some Categories of Disability in Dublin, Ireland

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ABSTRACT

The arguments in defence of poor attention to those with disabilities in terms of offering equal opportunities to transportation options tend to centre on the high cost of provision or improvement in facilities. The paper examines the current quality of service on a variety of modes and mode ancillaries such as stations and stops as determined by individuals with disabilities. This is followed by an examination of the measures required by the disabled to improve the quality of service. The evaluations are done with 4 types of disability groups and although the samples of individuals involved are small, the findings are incisive and clear. The improvement measures discussed fall into two categories; those that are costly and those that are more to do with a little more consideration being given on the part of the transportation operator when locating, for example, timetables at a lower level at bus stops to facilitate wheel chair users or announcing stops as buses approach them. Low cost solutions it would seem, in a lot of cases, could be considered marginal changes to work practices or decision making but the impact they could have on quality of service indicators for the disabled, such as accessibility, would be considerable.

INTRODUCTION

The Greater Dublin Area (GDA) consists of the capital city, Dublin, and the counties of Dublin, Kildare, Wicklow and Meath and is located on the eastern side of Ireland. In 2002 the GDA had a population of 1.5 million. The population of the GDA is growing at a significant rate and by 2016 is expected to reach 1.75 million (1). In the past decade traffic congestion has become a major problem with private car ownership rates at 342 per 1,000 and this is predicted to rise to 480 per 1,000 by 2016 (1).

The Dublin Transportation Initiative (DTI) Final Report was published in 1995 (2). This report was commissioned by the Irish Government to ascertain the best way forward in providing Dublin with an effective transportation strategy. With regard to the provision of public transport infrastructure, the main recommendations of the DTI were to introduce eleven Quality Bus Corridors (QBC) and to construct a light rail transit system. The QBCs are now operating and work on the principle of dedicated lane; traffic signal priority is an aim for the future. When buses are replaced, low floor buses are added to the fleet. Urban and interurban trains have limited accessibility for wheelchairs although the upgraded long distance service from Dublin to Belfast has improved.

The Department of Transport is now recognizing the 'Transport for All' concept as put forward by the National Disability Authority (NDA) (*3*). The purpose of this document is to present research carried out by the NDA highlighting the range of service provision in the transport sector for people with disabilities. The National Development Plan for 2000-2006 (NDP) (*4*) contains commitments to improve transport accessibility such as: that all new and upgraded rail an stations financed under the plan will be accessible to people with mobility and sensory impairments; all light rail vehicles and suburban rail cars financed under this plan will also be accessible to people with mobility and sensory impairments; that all buses for use on urban services purchased by the state from 2000 onwards will be low floored; that a special provision of €13 million will be available to part-finance accessibility improvements to existing public transport infrastructure and facilities; each of the state public transport companies will appoint an Accessibilities Officer to provide a focal point for these issues and to review all significant investment proposals from this perspective; and a Public Transport Accessibility Committee will be appointed by the Minister to advise on accessibility aspects of proposed public transport investment and other public transport accessibility issues (*4*). The main bus operator in Dublin, Dublin Bus, run an employee training course focusing on employee behaviour and performance, disability awareness, equality issues and stress management. Dublin Bus defines a disability as something that a person experiences and not a condition or an illness. A disability is something that a person has on a permanent basis and acquires either at birth or through an accident (*5*). 10% of the Irish population has a disability and between 20%-40% experience mobility difficulties (*5*). Dublin Bus tries to make bus drivers more aware of different types of disability whether visible, hidden or of a social nature. How to correctly approach and assist a person with a disability is explained with correct terms to be used and words to avoid are also highlighted.

There are three aims to the paper; the first is to review the quality of service (QOS) provided by public transport modes; to identify measures required to improve the

QOS and finally to examine whether some of the measures could be implemented at low cost.

BACKGROUND

The Disabled Persons Transport Advisory Committee (DPTAC) (6) in the UK found that disabled people are more likely to be satisfied with the service provided by taxis. Apart from taxis, transport services are not rated very highly compared to other service sectors such as banking and supermarkets. Buses and trains received mixed reactions; 42% of disabled people were happy with buses while 38% were dissatisfied. Only 20% were satisfied with local train services and 13% with long distance and intercity services. This study also found that disabled people tend to travel 1/3 less than the general public although taxi cabs are used much more (67% more frequently) as well as buses (around 20% more frequently). It found that 90% of disabled people travel by car, only slightly less than the general public.

Rosenbloom (7) found that it is difficult to find out the true market of disabled people for taxis due to capacity and quality constraints and that there is possibly a latent demand for these types of services.

It has been found in other research that even in countries which are ahead in terms of developing or improving their transportation infrastructure and services to accommodate the disabled, the long lead time of 10-15 years before implementation is too protracted (8).

Oxley et al (9) found the hypothesis that the personal costs to disabled people in terms of transportation needs are higher due to their disability was not borne out when examined.

SURVEY

The first task was to conduct a pilot survey to determine the main issues in relation to disabilities and the transport system. Following this pilot survey, a questionnaire was designed to illicit information on the following: how the individual currently uses the transportation system, to determine how accessible the individual finds the transportation system, how individuals obtain information about the system and what disability specific improvements one would like to be made to the system. The survey was distributed to disability groups including The National Council for the Blind, The Forum for Disabilities, The Irish Wheelchair Association, Enable Ireland and the Disability Service at Trinity College Dublin. The number of respondents was 47 in total, 16 who were visually impaired, 25 were wheelchair users, 3 had learning difficulties and 3 had walking difficulties.

RESULTS

Travel Behaviour

Figure 1 presents the frequency of public transport use. Only 1 out of the total of 25 wheelchair users use public transport everyday compared with 10 out of the 16 visually impaired people. A further 6 wheelchair users use public transport once per week. 62% of wheelchair users avail of taxi services on a weekly basis and just over 10% daily. The former result here seems to suggest a strong preference of this group for taxis. Somewhat similar percentages were evident for the visually impaired in relation to taxis. About 40% of wheelchair users rely on a car driven by another person on a weekly basis and 35% require this daily. In the case of visually impaired, none of them rely on a car driven by another person. Because there were only 3 respondents in each of the 'learning difficulty' and 'walking difficulty' groups, it is difficult to generalise the findings except to say that all 3 of those in the former use public transport daily. Figure 2 shows the normal mode used by all disability types. In the case of wheelchair users, car is the predominant selection whereas a larger proportion of the visually impaired group normally use public transport. When asked why car travel was preferable to public transport, two main issues emerged common to all disability types; car is easier and less hassle. 29 out of the total of 47 find the public transport system inadequately accessible if they do not live on a route which uses low floor vehicles. Even when low floor buses operate a route, 22 out of the 25 wheelchair users noted that, more often than not, the one wheelchair space on the bus is taken up by a child in a buggy.

Perceived Quality of Service of Transport Modes

The total numbers of people ranking bus accessibility as average and good is similar (see Figure 3); 19 and 18 out of 47 respectively. Nine out of the total consider it poor and 8 of them are wheelchair users. Thirteen out of the 16 visually impaired people gave bus accessibility a ranking of good or very good. From the interviews, it was noted that the visually impaired who live close to a bus route and use it regularly had familiarised themselves with it. Those who use guide dog assistance find the low floor buses more accessible than older buses because there is more room on board for the dog. Verbal announcement of the location of stops (which does not happen generally on buses in Dublin unless requested in advance for a particular stop) would help provide a higher quality of service for the visually impaired.

The results of rankings of bus station accessibility are presented in Figure 4. The majority who answered this question (38 out of 45) rated bus stations as average with 3 ranking them good and 4 poor. Eight out of 16 visually impaired individuals find it hard to get assistance when required. Suggestions that tactile maps showing the plan of the buildings are required and that customer services are often difficult to find were made. Incomprehensible announcements and buses leaving from different gates on different days added to the low quality of service at bus stations for the respondents. Many of the issues mentioned here relate to work practices in public transport companies and low cost solutions.

A similar review of the accessibility of bus stops was also conducted with the group, the results of which are presented in Figure 5. About a quarter of all individuals (12/46) who answered the question rated bus stop accessibility to be poor; representing

36% of wheelchair users.   The arguments for the low ratings focus on a number of issues.   Many bus stops are placed on narrow footpaths beside kerbs reducing their accessibility for wheelchair users.   Sixteen out of the 25 wheelchair users found that timetables are mounted too high to read.   The reason why most of the visually impaired group rated accessibility at bus stops (identified by a pole with a sign on top) as average is that they are difficult to locate with a cane because the poles are tend to be narrow. Timetables are generally not accessible to the visually impaired as Braille timetables are not provided.   In the case of the learning difficulty group, they would like to see the print on timetables in larger font.   Once again, many of the complaints relate to issues which could be improved by marginal improvements, possibly in the low cost category.

The accessibility of trains was also examined and the results are presented in Figure 6. A large number of individuals (48%) rated trains as having poor accessibility. Of all reviews of accessibility presented above, trains prompted the most negative reaction. 20 of the 22 assigning this a low rating are wheelchair users. This is attributed to a number of issues. For long distance journeys, assistance is required in boarding the carriage as there are too many steps up to carriage level. A member of staff at the station is required to move a portable ramp into position to enable access to trains for wheel chair users. Another complaint was that the aisles on trains are too narrow on standard trains although praise was given to an upgraded long distance service between Dublin and Belfast on which new trains are running.   To help accessibility for the visually impaired, a higher degree of consistency in the size of the gap between trains and platforms is needed.   The issue of clearer and larger print on timetables for those with learning difficulties was also raised.   One person mentioned that tactile surfaces should be used because flat ones are slippy. A similar review was done for train stations where most wheelchair users found them inaccessible because of steps and too few ramps.

A common complaint in relation to taxis is the low number of wheelchair accessible vehicles available. Some accessible vehicles in use are vans, which are unsafe as they lack a clamping facility. Taxi driver attitude seems to be a particular problem. The results of the review of taxi accessibility are presented in Figure 7.   Although a large number of wheelchair users (17) considered taxis to offer poor accessibility, the other groups gave quite positive ratings. 13 out of the 16 visually impaired group gave them a rating of good or better.

In relation to airplane accessibility, respondents suggest it is dependent on airline. The visually impaired were found generally to be happy with airplane accessibility because of the consistency of the layout although they would like flight information provided on a Braille template.   People with ambulant disabilities found airplane accessibility to be quite good. Airports are considered to provide a good service in terms of providing assistance to visually impaired. 60% of wheelchair users found them to have average accessibility with some better than others.

Ferries were rated as average by 3 visually impaired and good by 9, compared with 19 of wheelchair users giving them an average rating compared with 3 rating them good.   The others in each category did not answer the question or inserted a non-applicable answer.

The respondents were then asked about road and sidewalks maintenance in relation to their impacts on accessibility. Two out of the 3 individuals who had difficulty walking rated road maintenance to be poor and the other rated it as average.   The 3

individuals with learning difficulties rated it as poor. Thirteen of the visually impaired individuals rated it as poor and 3 average. Wheelchair users had a similar set of views; 21 rating it as poor and 4 average. In relation to maintenance of sidewalks, the individuals with walking difficulties gave the same set of ratings as in the case of road maintenance as did those with learning difficulties. The visually impaired group gave the same set of ratings as they did road maintenance but the responses from the wheelchair users were different for sidewalks: 13 of them gave an average rating, 8 a poor rating and 4 a very poor rating.

The last factor analysed in terms of accessibility was parking availability near stations. Of the group having difficulty walking, 2 gave it a ranking of poor and 1 average. The 3 individuals with learning difficulties gave a ranking of average compared with 1 of the visually impaired giving a poor ranking, 2 an average rating and the rest considered this question not applicable to them. All of the wheelchair users ranked it as average.

The Means by which the Respondents Obtain Travel Information
The respondents were asked if they planned their journeys in advance. All except 6 said yes, 5 said that they sometimes do and 1 wheelchair user said that they had to double-check everything in advance. When asked how do they obtain the information for their trips, 2 of those with difficulty walking always used timetables at home and 1 used the phone to obtain information but they never use internet (accessing the internet using a personal computer), tele-messaging (telephone call centres) or the timetable at the station. The 3 individuals with learning difficulties use a timetable at home or in the station always but never use the internet or text messaging services (sending a text message via mobile phone (cell phone) and receiving a text message reply). The latter are relatively new services in Ireland and only available in the last year so this may be a factor in the responses. Eight of the visually impaired use inquiry desks, 3 use the internet and 8 always use the phone but large numbers, between 12 and 14, never use timetables at stations, timetables at bus stops, internet, text messaging services or timetables at home. Not many of wheelchair users answered the 'always' question here but of those who did, obtaining information by phone was the most popular. In the case of 'never use' 5 said they would never use phone, 11 never use timetables at stops, 4 never use timetables at stations, 22 never use teletext (limited services for public transport anyway) and 12 never use text messaging services.

The next question related to the availability of the various types of information methods to the respondent. Looking at all the respondents together, all of them had phone access, 22 said they had access to station timetables, 21 had access to timetables at stops, 25 had access to timetables at home, all respondents indicated they had phone access, 42 had access to inquiry desks, 40 indicated they had internet access, 14 had access to text messaging services and 27 teletext services. 21 said they did not have text messaging available to them, 22 said they did not have access to timetables at stops, a similar number said timetables at stations were inaccessible and 22 indicated that information services were not available to them via the internet. Travel information provision technologies are improving and it is expected that if a similar study was done again in two years time that there might be some changes in terms of the methods people are using to obtain information.

Fourteen individuals said that the internet provision of travel information needed improvement, 33 said timetables at stops could be improved, 29 said similar about timetables at stations, 19 said the same about paper timetables and 20 said provision of information by phone could be improved. 27 said they felt adequately informed during a journey whereas 19 said they felt inadequately informed or not informed.

SECURITY
12 individuals said they never felt intimidated when travelling but 35 said that they sometimes do. 35 said they felt alone and the majority of the rest, who were all wheelchair users, travelled with someone.

IMPROVEMENTS REQUIRED
Individuals were asked to state the improvements they would like to see to bus services. The solutions identified were divided into three cost levels: high, medium and low. Anything pertaining to changing the layout of buses or trains was considered to be high cost whereas changes to work practices or staff awareness were considered low cost. The provision of talking timetables at stops, more accessible information and lower gradient of ramps were identified as medium cost. Low cost solutions ranged from putting brighter numbers and lettering on buses to stop announcements on vehicles to improving kerbs. The individuals could identify as many solutions as they wished and the results are presented in Table 1. In terms of the total number of requests for improvements, 28 were for high cost solutions, 6 for medium cost and 35 for low cost solutions. The predominant request in the high cost solution category was for more turning space for wheelchair users on buses but low floor vehicles were also an issue. In the medium cost category 4 individuals required more accessible information. In the low cost category, 10 required an easy clamp system to secure wheelchairs on buses, 6 requested stop announcements on vehicles, 5 asked for stop timetables to be presented in larger print and 4 requested brighter numbers on the outside of buses so that they could be identified when approaching a stop. In summary, while there was a high demand for high cost solutions, many of which could be resolved over the long-term by fleet replacements, there was also a high demand for low cost solutions, many of which are related to changes in working practices and the requirement that small things be given some more attention or be thought through from the perspective of a disabled person. These latter solutions are low cost but many as can be seen in Table 1 would make a considerable improvement to the quality of service provision to disabled passengers.

A similar exercise was done for improvements to train services. In the case of improvements to trains (see Table 2), more space on trains was identified by 16 people and 8 required built-in ramping systems; both high cost solutions. Another high cost solution was keeping the distance between trains and platforms consistent better access for disembarking trains which was requested by 11 people. Improving toilets and providing more parking close to the station were also proposed. A low cost solution suggested by 12 people was to announce stops and other low cost solutions included better staff awareness and clearer signs.

CONCLUSIONS

1.   The study focuses on a small sample and therefore the results can only be considered to be indicative. A further larger scale study would be required to validate the results.

2.   Car travel was found to be preferable to public transport by disabled individuals because it was easier and less hassle. A large proportion of the sample found that the public transport system was inadequately accessible if they do not live on a route using low floor vehicles. Even when low floor buses operate a route, the wheelchair space is usually taken up by a child in a buggy.

3.   The total numbers of people ranking bus accessibility as average and good is similar; 19 and 18 out of 47 respectively. 9 out of the total consider it poor and 8 of them are wheelchair users.   13 out of the 16 visually impaired people gave bus accessibility a ranking of good or very good.

4.   Many bus stops are placed on narrow footpaths beside kerbs reducing their accessibility for wheelchair users. 16 out of the 25 wheelchair users found that timetables are mounted too high to read.

5.   Of all reviews of accessibility done, trains prompted the most negative reaction.

6.   Although a large number of wheelchair users considered that taxis offer poor accessibility, the other groups gave them quite positive ratings.

7.   In the case of suggested improvements to bus and train services, some of the proposals, such as more space on vehicles and in-built ramping systems, would be considered high cost solutions. However, quite a number of suggestions were low cost and of the type relating more to better work practices or a little more thought e.g. about the height of timetables at stops, announcing stops on board the vehicle on approach to them and better staff awareness for disabled. It would appear from the findings of the survey that acting on these low cost solutions could improve the quality of service of public transport for disabled individuals considerably.

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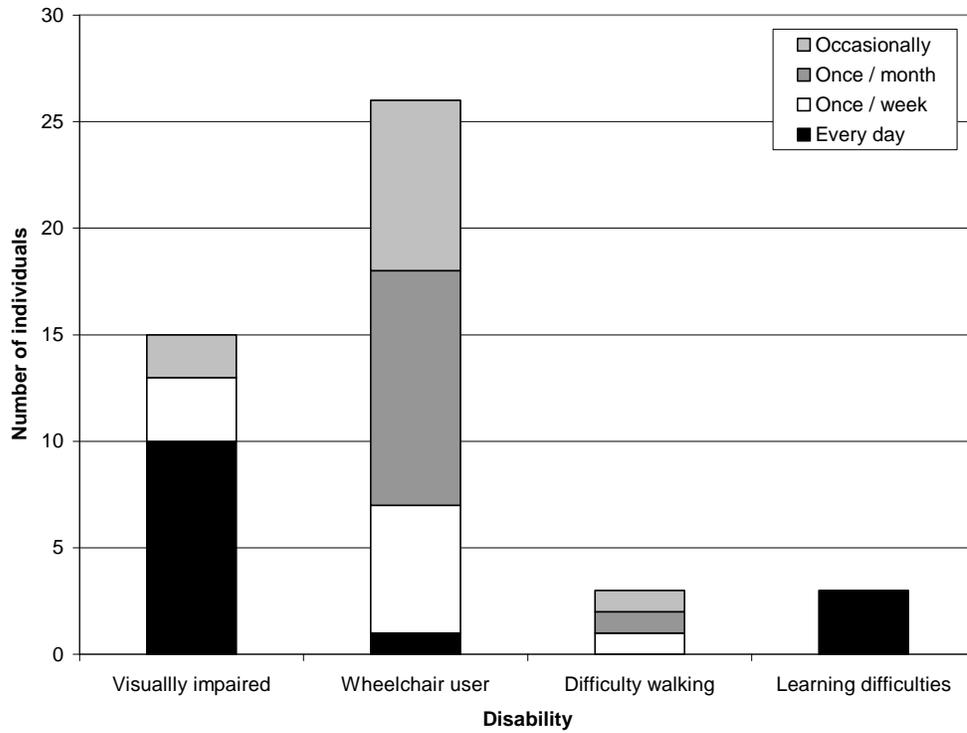**Figure 1. Frequency of public transport use**
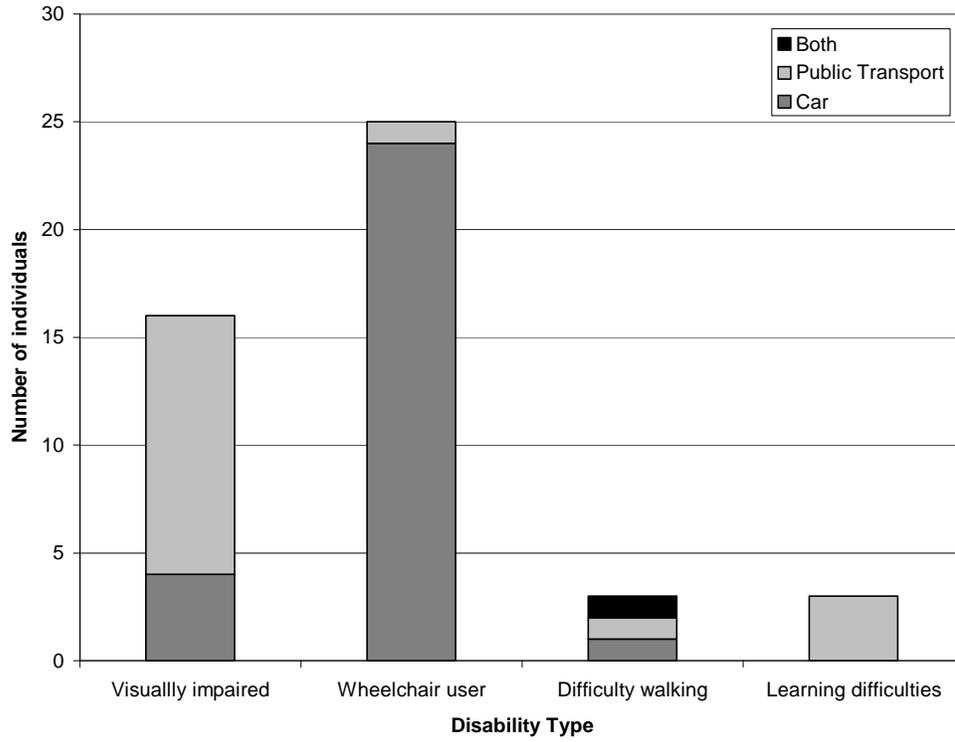
Figure 2.   Modes of transport used
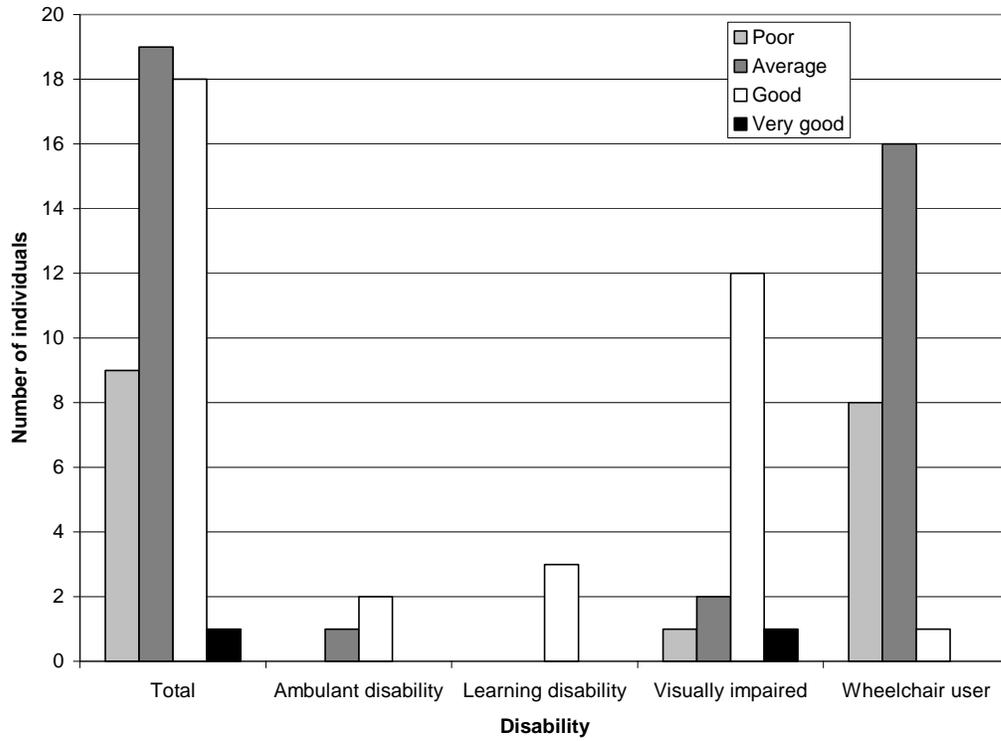
Figure 3. **Bus accessibility ratings**

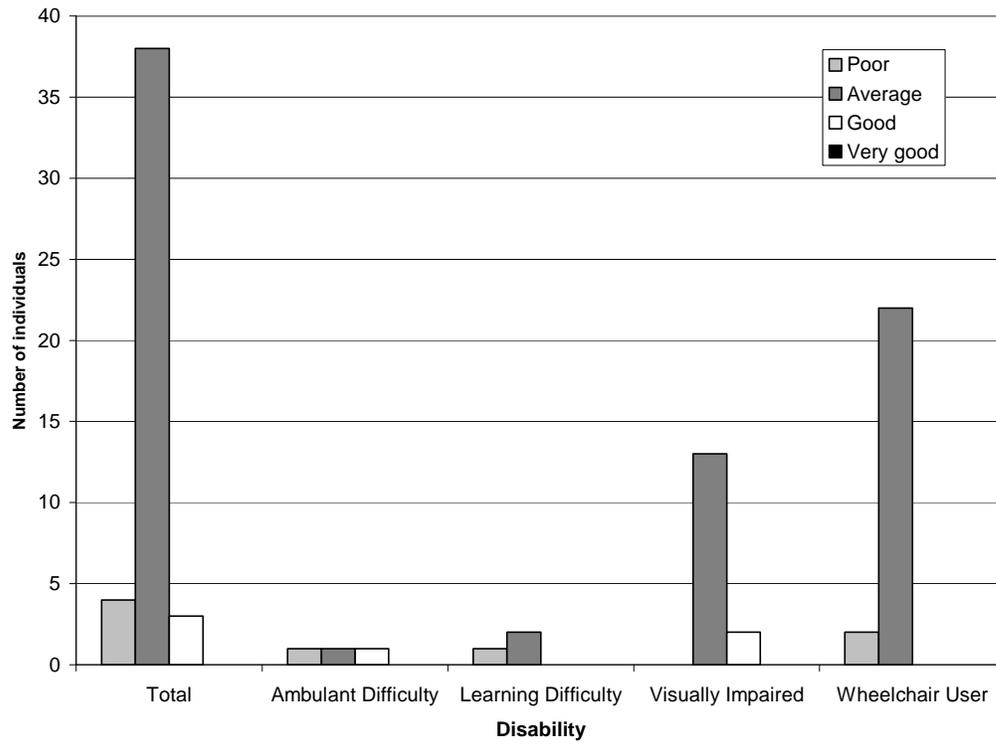**Figure 4. Bus station accessibility ratings**

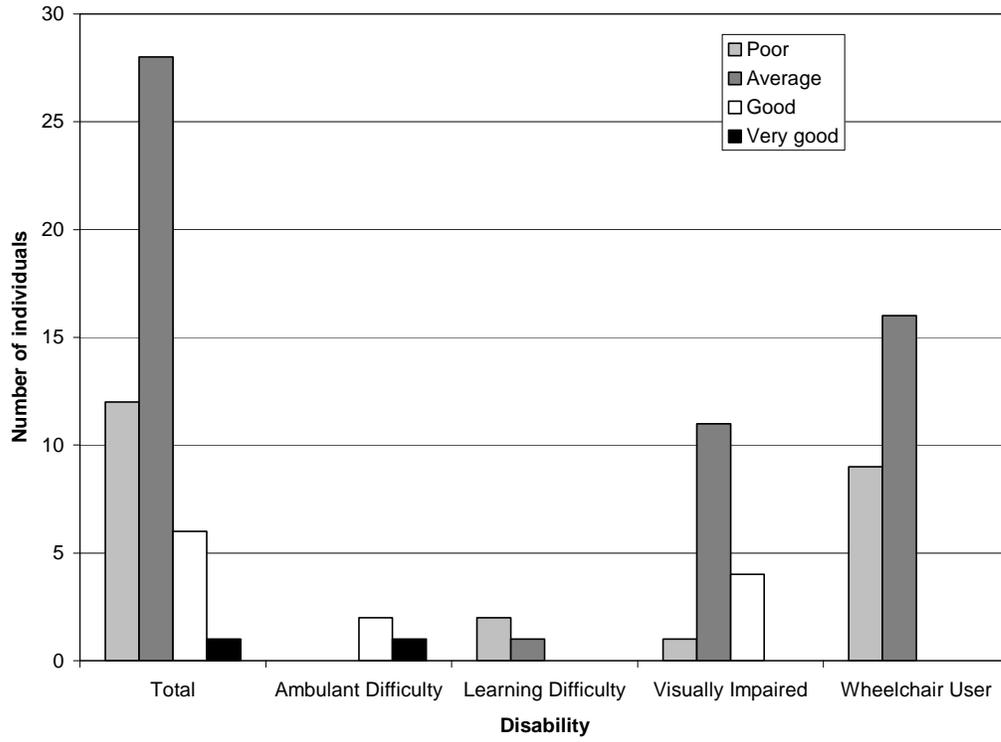**Figure 5.   Bus stop accessibility ranking**
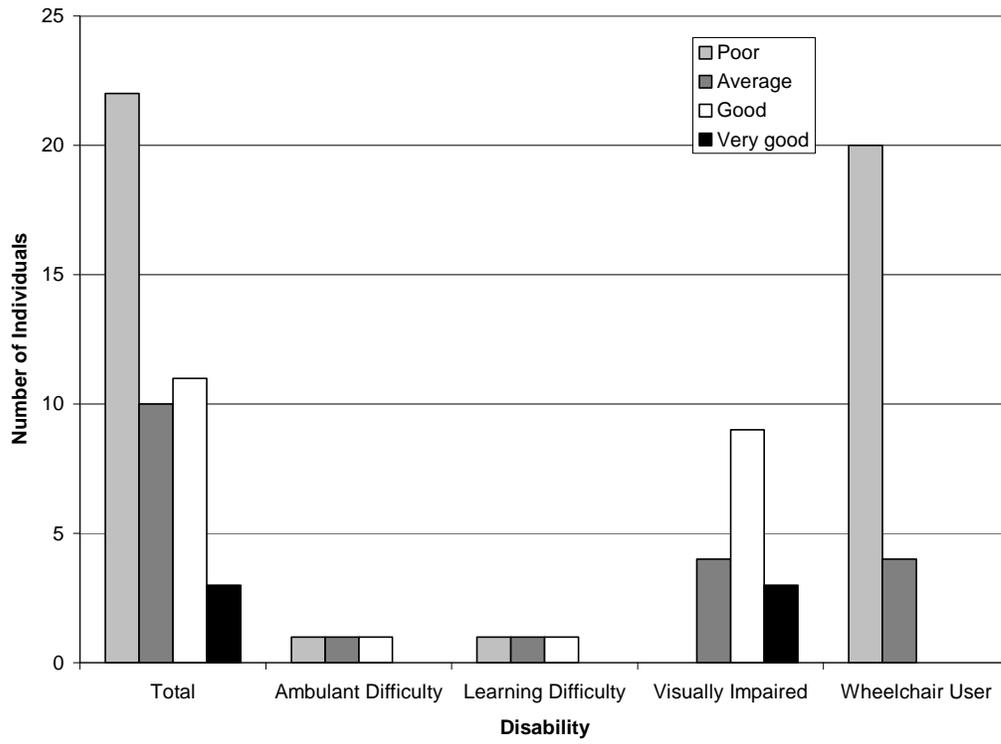
Figure 6. Train accessibility ratings

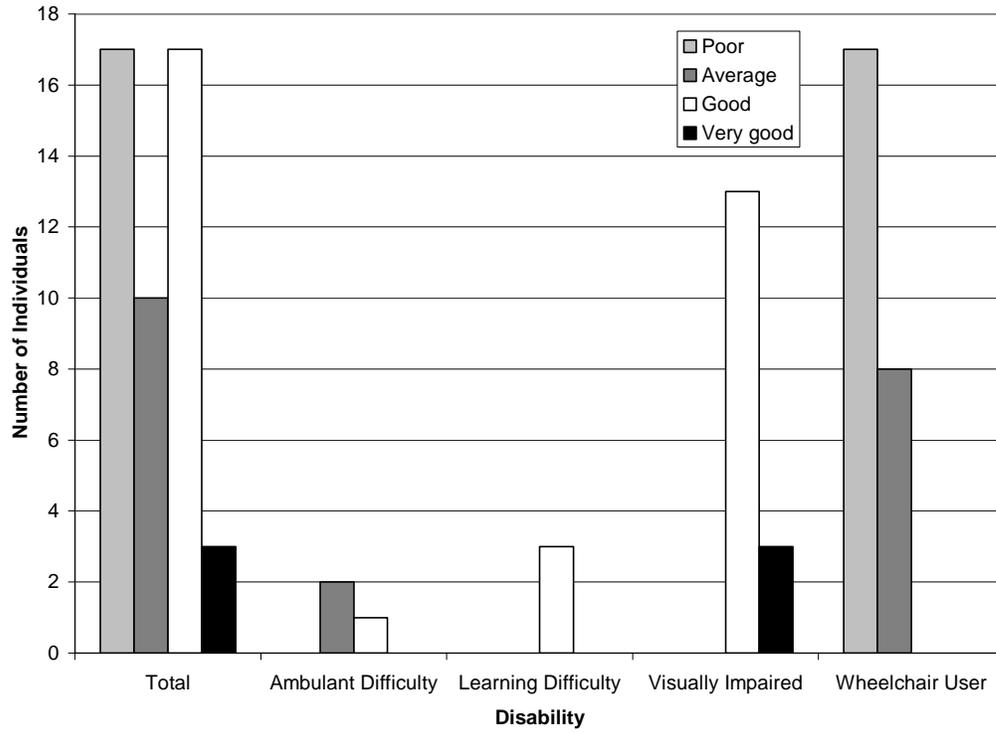**Figure 7. Taxi accessibility ratings**

Table 1. Suggested improvements to bus services

High Cost	No of individuals	Medium Cost	No of individuals	Low Cost	No of individuals
Low floor	5	Talking timetables at stops	1	Hand rail closer to door	1
Smart card tickets	1	More accessible information	4	Stop Timetables in larger print	5
More toilets on buses	1	Lower gradient of ramps	1	Brighter numbers and lettering of buses	4
More turning space on buses	16			Stop announcements on vehicles	6
Wider walkways	1			Better staff awareness	2
Enforced provision of seats	1			Put stops beside ramps, not kerbs	1
for disabled.				Better driver training	3
Real-time passenger information	1			No inaccessible buses on advertised accessible route	1
All bus routes to be accessible	2			Improve kerbs	1
				Easy clamp system for wheelchair sercurity	10
				Improve bus stop environment	1

Table 2. Suggested improvements to train services

High Cost	No. of Individuals	Medium Cost	No. of Individuals	Low Cost	No.of Individuals
More space	16	Improved toilets	10	Announce stops	12
Built-in ramping system	8			Better staff awareness	12
Distance between train and platform consistent	1			Clearer signs	2
Access off trains improved	11			Parking availability closer to station	2