Measuring Disablement: Working Paper 1
Disabled People and Public Transport

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This report is one of a series of working papers based on the *Measuring Disablement in Society* project being undertaken by researchers at the Policy Studies Institute with funding from the Economic and Social Research Council. Other working papers cover the topics of accessible environments, barriers to employment, the involvement of disabled people in local planning and the Citizen's Charter.

Introduction: The Centrality of Accessible Transport

Many aspects of modern life - cultural, social, economic, educational and medical - occur in widely dispersed geographical locations (Association of Metropolitan Authorities, 1994). To participate fully in all these areas, full mobility and access to transport are essential. However much progress may be made in improving the accessibility of buildings, public spaces, employment and educational facilities, so much progress will be wasted if the people at whom these improvements are aimed are unable to travel to their chosen destination.

Research has shown that one in eight of the British population have physical or sensory impairments which make travel difficult (Martin, White and Meltzer, 1989), and that railway and underground systems present the most formidable access problems (GLAD, 1986). Of all types of disability, problems with locomotion are the most frequent; the 1989 OPCS survey of disabled adults found that 4.3 million had difficulty with walking. As with most disabilities, these problems increase with increasing age.

Data from the National Travel Survey show that, on average, and including all modes of transport, people who have difficulty in using public transport make only half the trips made by able-bodied people (National Travel Survey, 1985/6). Other research backs up this indication of lower transport use among disabled people (Cosby, N/D; Oxley 1986/1989; Gallon, Alexander and Oxley, 1992), and points towards a 'very considerable unmet need for mobility' among disabled people (Fowkes et al, 1993:8).

For disabled people, the private car appears to be the most frequently used mode of transport - driven either by themselves or another person (Fowkes et al, 1993).

Given that disabled people are, in fact, less likely to own a car (DPTAC, 1989) this in itself suggests poor levels of accessibility of public transport systems.

The OPCS survey (Martin, White and Meltzer, 1989) found that, apart from those people who used buses with difficulty, 1.1 million people in Britain were unable to use buses at all, and research has suggested that one of the main barriers facing would-be bus users is difficulty in boarding and alighting (specifically, problems with steps) (GLAD, 1986; DoT, 1989; Technecon, 1994).

Like other Western societies, Britain has an ageing population. Demographic trends indicate that, over the coming decades, the number of people with restricted mobility will increase as the proportion of elderly - and especially of very elderly - people in the population rises (Salvage, in press). This would indicate that, without improvements in transport accessibility, the number and proportion of people who find it difficult to move between geographical sites will increase significantly.

Disabled People and Public Transport

Why is there a problem?

In an ideal society, all individuals would be able to move around in physical space at will. Provision of public transport in Britain, however, has never allowed this ideal to be achieved or even approached. In a survey by the Consumers' Association, two-thirds of disabled people gave "difficulties using public transport" as one reason for not going out more or travelling further (Which? 1990). The transport systems of today (especially the railways) are to a large extent the inheritance of an unenlightened past. Even thirty years ago, little or no thought was given to the needs of people with disabilities or of the many thousands of transport users whose mobility is restricted by the need to carry heavy luggage or shopping or to manage young children (London Transport, 1993).

It may be easier to improve vehicle design than to make railway stations built in Victorian times accessible to disabled people, but rolling stock can last for 35 years and it would simply be unrealistic to expect transport operators to replace trains and buses all at once (Ann Frye, personal communication.) Many sections of the London Underground remain inaccessible to wheelchair users, and even massive capital investment would not render them accessible.

Apart from historical inheritance, a further factor contributing to transport inaccessibility has undoubtedly been a failure to recognise the interdependency of the various parts of the transport system.

Evidence from various sources suggests that difficulty in getting to the bus stop is one of the main reasons why people find conventional bus services hard to use (Cosby, N/D). This being so, it is clear that provision of the most accessible buses running frequently and to timetable will not ensure that disabled people are able to get to their desired destination by bus. The pedestrian environment may be improved and bus stops placed in easily accessible spots, but unless these stops provide adequate shelter and seating, disabled people will not be encouraged to use them. (Fowkes et al, 1993).

Again, disabled people cannot be expected to make trips if they are deterred by the inaccessibility of a destination and its facilities. Accessible buses to a shopping centre which does not have suitable toilet facilities or can only be entered by means of steps are unlikely to attract disabled customers.

Levels of staff training have been identified as an important factor in encouraging bus use among disabled people (Cosby, N/D; DPTAC, 1989; Fowkes et al, 1993). Bus drivers who pull up too sharply at stops and fail to wait until disabled passengers are seated before moving off can easily dissuade users from frequent travel.

Attention has also been drawn to the importance of information in the provision of accessible transport (Ann Frye, personal communication; Fowkes et al, 1993). However accessible the transport system, it will be of little use to disabled people unless they are aware of the facilities which exist; leaflets at bus and rail stations are unlikely to reach those who have given up using public transport due to its inaccessibility (Which? 1990). This is especially important for disabled people who are socially isolated or have sensory impairments. (There would appear to be little or no research on the transport information needs of disabled people).

Unless disabled people are able to move freely around the physical environment served by public transport systems, able to move freely within those systems and provided with adequate information about them, public transport will remain inaccessible to many of those who need it most.

Imperatives for action

The arguments for improving access to public transport are two-fold:

Moral and ethical arguments

The most powerful arguments for making public transport accessible to all, suggest Fowkes et al (1993) are appeals to the 'normalisation' principle and the principle of equity. (Bell, 1978). These principles, it is suggested, present moral and ethical arguments which are 'undeniable' (Fowkes et al, 1993:1).

Economic arguments: Cross-sector benefits

A second and more practical argument for improving access to public transport is an economic one. While it is true that there is a cost to society in providing the means of personal mobility, there is also a cost to society if the means of mobility are not provided (DPTAC, 1990a) and a recent report suggests that dismantling the barriers to the use of public transport "*may cost society less than keeping those barriers in place*." (Fowkes et al 1993:1). Maintaining those barriers places an unidentified charge in the accounts of sectors other than transport "*and these accounts benefit consequently when mobility is improved*." (Fowkes et al, 1993:4).

It is demonstrated that the provision of accessible public transport has the potential to release significant resources currently spent, inter alia, on domiciliary care services, residential care and hospital out-patient transport. Enabling disabled people to get around would have considerable implications for their ability to earn income and create wealth, as well as reducing social security spending (Fowkes et al, 1993).

These arguments have been taken seriously by the Department of Transport, with an inter-departmental working party being set up to attempt to persuade the Departments of Health, Social Security and Employment to shift money into funding of accessible public transport. However, the recent government consultation document on preventing discrimination against disabled people fails to acknowledge the importance of accessible transport in enabling disabled people to participate fully in social and economic life (Department of Social Security, 1994).

Traditional and modern approaches to transport provision for disabled people

Given a public transport system which fails to meet the needs of disabled people, there are essentially two approaches which can be taken to enable these people to get around.
The approach traditionally adopted in Britain has been what might be referred to as a 'separatist' or 'specialist' approach. The assumption underlying such an approach is that, since transport-handicapped people represent a social minority, it is neither economic nor practical to adapt the entire public transport system to meet their needs. Instead, vehicles are provided which more adequately meet their needs and which can be dedicated to their use.

Since 1981 (The International Year of Disabled People), local authorities have taken an increasing interest in the provision of transport services for people with impaired mobility. Prior to this, a number of voluntary sector initiatives across the UK had recognised an unmet need for travel among elderly and disabled people and had sought to design and deliver accessible transport services (Steer Davies Gleave, 1994).
Today the voluntary sector continues to be involved in this area of transport provision, commonly in partnership with county and/or district councils.

Since 1981 and the creation of the Department of Transport Disability (now Mobility) Unit, policy on transport provision has been shifting from a 'separatist' towards an 'integrationist' or 'universal' approach (DPTAC, 1990a). The argument against separatist provision has included reference to the costs of providing such services, their failure to provide disabled people with mobility comparable to that of able-bodied people and the economic efficiency and social desirability of accommodating as many people as possible on mainstream services (DPTAC, 1990a).

It is beginning to be recognised that the provision of accessible public transport will assist many people other than those who are disabled, including individuals carrying heavy shopping or luggage and women with young children. Much can be done at no great cost by modifying the vehicles and infrastructure of mainstream public transport services, and the manner of operating them, to make them accessible to disabled people; all that is achieved in this way makes the system easier to use for everyone else at the same time (DPTAC, 1990a).

Inevitably, some disabled people will be unable to use public transport systems however accessible they are, so that there is always likely to be a need for specialised transport provision for particular people in particular situations.

In general, however, it appears to have been recognised that an 'integrated' approach promises greater and more rapid progress in spreading mobility (DPTAC, 1990a).

The Legal Framework

While there would appear to have been some moves towards thinking about 'universal access' rather than 'access for disabled people', the legislative framework remains essentially separatist.

The 1985 Transport Act required local authorities to "*...have regard to the transport needs of members of the public who are elderly or disabled*" (Transport Act 1985, Section 63(8)). Furthermore, the Act gave local authorities the power to provide grants to support transport initiatives for disabled people (Section 106(1)) and, in general, councils have responded through voluntary organisations, providing funding for car schemes, dial-a-ride schemes and other schemes devised to enhance travel opportunities for mobility impaired people (Steer Davies Gleave, 1994). Section 4(6) of the Railways Act 1993 imposes a duty on the Rail Regulator in respect of disabled passengers; the Regulator is required to have regard, in exercising his functions, to the interests of people who are disabled (Office of the Rail Regulator, 1994).

Under the Transport Act 1985 (Section 125) a Disabled Persons' Transport Advisory Committee (DPTAC) was established to advise the Secretary of State for Transport on public passenger transport issues affecting disabled people (Office of the Rail Regulator, 1994). The Railways Act 1993 imposes an obligation on the Rail Regulator to prepare and, from time to time, to revise (in consultation with DPTAC) a code of practice for protecting the interests of users of railway passenger services or station services who are disabled - a recent Code is discussed below.

As far as the accessibility of buses is concerned, de-regulation has led to a situation in which accessibility standards vary considerably. In general, transport authorities specify accessibility standards for services they subsidise but have no control over commercial services.

In a recent report on the tendering process for London buses, there was no reference to the need for private companies to meet any sort of access standard (Kennedy et al, 1995).

What Progress Has Been Made?

Since the early 1980s, progress has been made in the development of vehicles, systems and facilities to meet the needs of disabled people (DSS, 1995).

Vehicle Design Specification

Bus Services

In the armoury of public transport services, the local bus has the most important role to play (Fowkes et al, 1993). Traditionally, however, the high entry step and other features have prevented many disabled people from using buses (see, for example, GLAD, 1986 and Which? 1990) and in recent years moves have been made to enhance bus accessibility.

In 1988, DPTAC considered the question of what could be done quickly and relatively cheaply to improve bus accessibility for the highest possible number of disabled people. The result was a specification for buses aimed at making them easier to use for ambulant disabled and elderly people. That specification, which has recently been updated and reissued, has been adopted to some extent in 90 per cent of new buses (DPTAC, 1993). Features covered in the specification include: entrance/exit step heights, doorway-widths, handrails, seating, bell-pushes and signage. Local authorities can exercise control over the type of vehicle used on socially necessary services for which they are responsible and many are already making DPTAC features an integral part of their tender requirements (DSS, 1993). However, since the majority of buses on Britain's roads are now provided on a commercial basis, no direct control is possible either by the Department of Transport or the local authorities.

Legislation on bus construction standards now has to take place through the European Commission (rather than being possible at a national level) and anecdotal evidence would suggest that there is lack of consensus within the Commission on what standards should be adopted, with one group building up codes of practice and guidance and another producing draft construction standards which ignore even the most fundamental access requirements (Ann Frye, personal communication; Heiser, 1995).

If the DPTAC standards are seen as an attempt at a 'quick-and-easy' solution to transport handicap, the introduction of low-floor buses may be seen as an attempt to put the 'universalist' approach into practice. In Germany, buses with no steps, low floors and a 'kneeling' mechanism to facilitate access have been in operation since 1988 (Consultative Committee on Transport, 1991), with the result that many people who had deserted public transport services for more expensive minicabs and taxis returned to using local buses (Harkell, 1993).

In Britain, the Department of Transport has supported trials of wheelchair-accessible low floor buses in London and in North Tyneside (DSS, 1995) and there are also low-floor buses in Liverpool and Tayside (Ann Frye, Personal Communication).

Research among the larger bus operators in Britain has suggested that at least some level of financial subsidy would be required in order to persuade operators to use them (although more than one-third had considered purchasing low-floor vehicles) (Harkell, 1993). What is fairly clear is that any increase in usage among disabled people as a result of more accessible transport provision is likely to be slow; for those who have previously been unable to use public transport, information-provision and confidence building will be essential. Research currently being undertaken by the Transport Research Laboratory on the use of low floor buses (including attitudinal research among non-users) is due for publication in early April 1995 (Andrew Braddock, Personal Communication).

Train Services

A *Code of Practice* produced by the Office of the Rail Regulator in 1994 sets out to offer "*practical advice and guidance on the special needs of disabled people for all engaged in the development of railway passenger services and station services"*. (Office of the Rail Regulator, 1994).

The Code provides design specifications for rolling stock and stations and sets out for train operators the approach the ORR would expect them to follow in meeting their licence obligations. All inter-city services are now wheelchair accessible (at least in terms of door widths and provision of wheelchair standing spaces) and where new rolling stock is introduced on other parts of the system, it too will provide improved access for disabled people (DSS, 1994).

Despite these improvements, much of Britain's rail network remains difficult if not impossible to use for disabled people and the likelihood is that, while rolling stock design will improve, inaccessible infrastructure will continue to preclude many disabled people from using it.

Light Rail/Underground Systems

Recent light rapid transit systems such as those in Manchester and Sheffield (a new one is planned for South London) have been designed to be fully accessible from the start (as were the Tyne and Wear Metro and the London Docklands Light Railway) (DSS, 1995). Traditionally, the London Underground system has remained inaccessible to a high proportion of people with transport handicaps (GLAD, 1986; Which? 1990). In 1993 London Underground removed all restrictions on the carriage of wheelchair users (Access Design, 1993).

The extension of the London Underground's Jubilee Line, currently under construction, is designed to be fully accessible with flat access from platforms and lifts from ground to platform level. The extent to which these improvements meet the needs of disabled people is not known, and there would appear to be a need for research in this area.

Coaches

Coaches have traditionally offered relatively cheap travel across Britain, but disabled people - who can be said to need them more than many other sections of the British population because of their comparatively low incomes - remain excluded from using them.

In recent years, coaches have developed to offer all the facilities of their railway or airline competition - bars, buffets, lavatories and entertainment. However, high-level seating has remained a design priority and the high, narrow steps which make it difficult or impossible for many disabled people to enter the coach remain (Which? 1990).

Taxis

In 1980, soon after the setting up of the Department of Transport Disability Unit (now Mobility Unit), the Department of Transport financed the production of taxi prototypes with a view to developing a new model capable of carrying anyone wishing to use them (including people in wheelchairs). In 1988 the Public Carriage Office of the Metropolitan Police issued revised regulations forbidding the licensing of any new London taxis incapable of carrying wheelchairs.

The regulations also provide that the last vehicle licensed without this capability will be off London's streets by 2000 and many other cities and towns in Britain have followed suit and confined future licences to taxis able to carry wheelchair passengers (DPTAC, 1990a).

While this is a welcome development, it leaves the widely-used minicab industry totally unregulated. There would appear to have been no research undertaken to assess the impact of improved taxi accessibility on disabled people's travel patterns.

Co-ordinated Transport Provision

While the main focus in improving transport access has been on improving 'general' services, there have also been developments in the provision of specialist services.

It was estimated in 1992 that nearly 500m is spent each year in England and Wales providing transport specifically for elderly and disabled people by public transport authorities, social services departments, education authorities, health authorities and voluntary organisations (Department of Transport, 1992). Most such services are separately organised, with little co-ordination between either the planners or providers of such services, with the result that there is under-utilisation of resources, duplication of effort and variable quality of service (Department of Transport, 1992).

Recent research by the London Borough of Richmond in conjunction with the Department of Transport and the London Accessible Transport Unit has investigated the scope for better co-ordination of accessible transport resources. Cross-sector benefits of co-ordinated transport provision were examined and organisational options for co-ordination suggested (London Borough of Richmond upon Thames, 1994). Another scheme designed to co-ordinate transport resources in Devon is discussed in Lavery and Smyth (1994).

Development of technology for people with sensory impairments

Buses

New technologies have been developed and tested to provide people with hearing and sight impairments with appropriate information on bus times, routes, numbers and destinations.

These have included the use of digitised speech to announce bus stop names (London Transport Unit for Disabled Passengers, 1993), bus-shelters with real-time arrival information displays (SMART bus routes in Merseyside) and spoken information at bus stops (DPTAC, 1990b).

Trains

Using funding from the European Commission's Technology Initiatives for Disabled and Elderly People (TIDE) programme, London Underground Limited in partnership with the University of Portsmouth have been working on a way-finding system to help visually-impaired people to use the London Underground system. Laser or microwave beams are used to interrogate fixed beacons in the development of this system known as Orientation by Personal Electronic Navigation (OPEN). (Andrew Braddock, Personal Communication).

New systems of audible announcements are being tried on new trains on the London Underground's Central Line (timing problems are currently being rectified) and new trains on the Underground's Jubilee Line extension will all have both audible and visual information (Andrew Braddock, Personal Communication).

Improving the Infrastructure

The benefits of accessible vehicles are often minimised or lost because of poor standards in the associated transport infrastructure (e.g. bus stops, stations and terminals) (DSS, 1994). Steps have been identified as a particular problem for disabled people wishing to travel by train (GLAD, 1986; Which? 1990).

A research project jointly funded by the Department of Transport and the Passenger Transport Executives led to the issue, in April 1994, of guidelines for the design of accessible transport infrastructure (Barham, Oxley and Shaw, 1994), which are now being promoted to architects, planners and all those involved in the development of such facilities (DSS, 1994).

However influential these guidelines may be, without an accessible pedestrian environment and accessible buildings and public spaces, disabled people may still be unable or disinclined to utilise public transport. The first comprehensive guidelines on the whole pedestrian environment were published in 1986 by the Institution of Highways and Transportation. A revised version of this document was published in 1991.

Such documents, however, remain only guidelines and while the pedestrian environment may be improving across the country, many areas remain inaccessible to people with different types of disability.

Disability Awareness Training

The social barriers in transport systems are being tackled in some areas of Britain through disability awareness training programmes. The Department of Transport has produced a range of training videos aimed at bus and taxi drivers (DSS, 1994) and the Department's Mobility Unit is currently working to produce a National Vocational Qualification (NVQ) package on disability equality training for bus drivers (Ann Frye, Personal Communication).

The British Airports Authority has recently launched its disability awareness training video for airport staff which will be made available to other transport operators (DSS, 1994).

The extent to which such training permeates the entire transport network, and the effectiveness of such training, however, is impossible to assess from the current literature.

Targets for accessible transport

Local and Regional

Given the general trend towards the provision of transport which is accessible to all, there would appear to be little in the way of clear commitment to the provision of such services on a local or regional level. A report on grant funding for accessible transport in Oxfordshire published in 1991 recommends that, within twenty years, all public buses in that area should be of the low-floor 'kneeling' type and that by 2001 "most buses" should have full DPTAC features (Consultative Committee on Transport, 1991). London Transport, however, would appear to have issued no such clear targets, although it currently specifies full DPTAC standards for its bus services (Andrew Braddock, Personal Communication).

Governmental

While the Department of Transport does have targets for the accessibility of public transport, these would appear to be largely statements of intent rather than clear commitments (Heiser, 1995).

Thus, it would appear that insofar as commitment to the provision of accessible transport exists throughout the country, it is not only patchy but also lacking in firm and explicit guidance from government.

In the Disability Discrimination Act, passed in November 1995, the government intends to outlaw discrimination in various areas including facilities for transport and travel "*except where existing physical barriers prevent access*." (DSS, 1994: 43). This statement can hardly be said to issue a message of urgency to those responsible for the provision of public transport and fails to draw attention either to the 'embeddedness' of transport provision in all areas of social and economic life or to the cross-sector benefits of accessible transport provision which are now so well-established.

Gaps in the literature

The vast bulk of available literature on disabled people and public transport focuses on the extent to which improvements on inadequate systems have been implemented.

Up-to-date information on the consumer view and the extent to which improvements have affected disabled people's travel patterns and quality of life appears to be in short supply.

The following areas also appear to be poorly covered in the available literature:

- Consultation with disabled users (national or local)

- The extent and effectiveness of disability awareness training

- Differences between rural/urban areas in problems faced by disabled travellers and the ways in which these have been tackled.

Conclusion

Perhaps the most important issue to emerge from the literature on accessible transport provision is the extent to which different parts of the public transport system (each of which may be the responsibility of a different authority) have to be made accessible before the whole system can be used easily and with confidence by disabled people.

If public transport is to be truly accessible to disabled people, the Department of Transport, local authorities, public transport authorities (PTAs/PTEs and County Councils) and commercial transport operators must begin to work within a framework of universal access on a wide scale. A report by the Association of Metropolitan Authorities published in February 1995 urged transport providers, local authorities and central government to work together to ensures accessible public transport, and made recommendations on how access can be achieved (AMA, 1995).

Barriers identified and measurement proposals

The main issue which was clear from the literature review is the way the different parts of the public transport system and wider environmental features all depend on each other for full access. This effects the way barriers to public transport should be measured.

The diagram below sets out the various types of barriers which disabled people have been found to face in using public transport and suggests ways in which attempts might be made to measure their effects:

Barrier		Possible Measures
a)	Information on service provision (e.g. route and timetable info, access info).	Information formats (e.g. large print, Braille, tape), and how easy it is to obtain. Does this allow confident route-planning?
b)	Buying tickets/making enquiries	Level access. Provision of induction loop. Sign language interpreters.
c)	Getting to public transport points (Bus stops, stations etc).	Accessibility of the pedestrian environment. How near are public transport points to people's homes? User-friendliness of bus stops.
d)	Gaining access to vehicles	Door widths. Step heights. Lift-provision. Level access. Signs. Parking spaces.
e)	In-vehicle access features	Provision of spaces for wheelchairs. Turning spaces. Accessible toilets. Internal door widths.
f)	In-vehicle information (also at stations).	Signs: size, colour, contrast, height. How good are audio announcements?

In order to identify barriers and develop measurements on transport accessibility, the research team are carrying out a process of consultation. Groups consulted to date include the London Transport Unit for Disabled Passengers, DaRT and various local organisations of disabled people. The consultations have so far helped to draw our attention to a number of issues including: different responsibilities for different parts of the transport system; whether transport barriers have been recognised at national level and attempts made to remove them; gaps in current legislation, attempts to change it and restrictions on legal powers;

current research and initiatives on improving access to public transport. (Note: we are aware of the need to recognise differences between urban and rural transport strategies. We have had to limit the research to urban transport in the two case study areas; however we are still keen to address rural transport issues in our overall framework and discussion).

There are two main up-to-date existing sources of information on transport use by disabled people, the National Transport Survey, and the London Area Transport Survey. These will be used to provide more background information on how much different groups of disabled people use different public transport and whether or not this varies throughout the country.

A national survey of transport authorities is currently being developed. This should show, in a broad way, how much of the public transport system is accessible throughout the country and how this varies from region to region. Clearly, some of the identified barriers are easier to measure than others. For example, transport authorities would probably be able to provide information on the number of low-floor buses operating in their areas, but it is more difficult to develop and test ways of measuring the accessibility of the pedestrian environment surrounding transport systems.

The appendix shows the sort of information that will be gathered in the transport survey in order to look at how accessible different parts of the transport system are. At the second stage of the project, we will attempt to assess the extent to which disabled people in the two case study sites are actually able to use public transport in terms of: (a) Perceptions/knowledge of public transport provision and (b) Ability to use public transport systems (e.g getting to the bus stop, getting onto buses, getting onto railway platforms, frequency of accessible buses/trains)

We would welcome any suggestions for extra measures or ideas on different ways of measuring accessibility.

REFERENCES

Association of Municipal Authorities (1994) *Policy Statement on Accessible Transport: A Consultative Document.* AMA, London.

Association of Metropolitan Authorities (1995) *Moving Forward: towards an accessible transport system*. AMA, London.

Barham P, Oxley P and Shaw T (1994) *Accessible Public Transport Infrastructure: Guidelines for the Design of Interchanges, Terminals and Stops*. Cranfield University.

Bell W G (1978) *Mobility for the Elderly and Handicapped*. Loughborough University of Technology.

Consultative Committee on Transport for Mobility Impaired People (1991). *Report on Grant Funding for Accessible Transport in Oxfordshire*.

Cosby S (N/D) *Reaching the Bus Stop: Distance to Bus Stop and Bus Usage*. Greater Manchester Passenger Transport Executive.

Department of Transport (1989) *Making Mobility Happen: Improving Transport Options for Disabled People in One London Borough*. DoT, London.

Department of Transport (1992) *Co-ordinated Planning of Accessible Public Transport.* DoT, London.

Department of Social Security (1994) *A Consultation on Government Measures to Tackle Discrimination Against Disabled People.* DSS, London.

Department of Social Security (1995) *Ending Discrimination against Disabled People*. Cm 2729, London, HMSO.

Disabled Persons Transport Advisory Committee (1989) *Public Transport and the Missing Six Millions: What Can Be Learned?* Report of a Hearing on Education and Training in Transport and Recommendations from It. DPTAC, London.

Disabled Persons Transport Advisory Committee (1990a) *Mobility Policy for Britain's Entire Population*. DPTAC, London.

Disabled Persons Transport Advisory Committee (1990b) *Information on Mobility: Report of a Hearing on Provision of and Access to Transport Information and Recommendations from it.* DPTAC, London.

Disabled Persons Transport Advisory Committee (1993) *Restatement of Recommended Specification for Buses Used to Operate Local Services.* DPTAC, London.

Fowkes A, Oxley P and Heiser B (1993) *Cross-Sector Benefits of Accessible Public Transport*. Cranfield University School of Management.
Gallon C, Alexander J and Oxley P (1992) *Mobility in London: A Study of the Use of Transport Services by People with Disabilities.'* Cranfield University.

Greater London Association for the Disabled (GLAD (1986) *All change: a consumer study of public transport handicap in Greater London*. GLAD, London.

Harkell G (1993) *Low Floor Buses: The Bus Operators' View. A National Survey of Bus Operators' Attitudes Towards Low-Floor Buses*. DaRT, London.

Heiser B (1995) The nature and Causes of transport disability in Britain, and how to remove it , in *Removing Disabling Barriers*, Zarb, G (ed). Policy Studies Institute.

Institution of Highways and Transportation (1986) *Providing for People with a Mobility Handicap* London.

Institution of Highways and Transportation (1991) *Revised Guidelines For Reducing Mobility Handicaps: Towards a Barrier-Free Environment*. London.

Kennedy, D, Glaister, S and Travers, T (1995) *London Bus Tendering.* LSE Greater London Group.

Lavery, I and Smyth, A (1994) *Assessing and meeting the transport needs of disabled people in Ireland*. Annex I in Standing Advisory Commission on Human Rights, *Disability: an assessment of the implications of physical and sensory disability in a Northern Ireland context.* London, HMSO.

London Borough of Richmond upon Thames (1994) *Richmond Accessible Transport Study.* LBRUT, London.

London Transport Unit for Disabled Passengers (1993) *Unit Review 1993*. London.

Martin J, White A and Meltzer H (1989) *Disabled Adults: services, transport and employment*. OPCS Surveys of Disability in Great Britain. London, HMSO.

National Travel Survey 1985/6 Report - Part 1: An Analysis of Personal Travel. London, HMSO.

Office of the Rail Regulator (1994) *Meeting the Needs of Disabled Passengers: A Code of Practice*. London.

Oxley P (1986) *Study of demand for wheelchair-accessible bus service.* Transport Research Laboratory Contractor Report 22.

Oxley P (1989) *The Mobility of Disabled People. Phase 2 of a study on the use of transport by disabled people.* Transport Research Laboratory Contractor Report 157.

Salvage A (in press) *Who Will Care? Future Prospects for the Family Care of Older People in Europe*. European Foundation for the Improvement of Living and Working Conditions, Dublin.

Steer Davies Gleave (1994) *Public Passenger Transport for Elderly and Disabled People.* Executive Summary of a report prepared for Staffordshire County Council. Lewes, East Sussex.

Technecon (1994) *South Yorkshire Passenger Transport Executive: Special Needs Research. Final Report.* Technecon Economic and Transport Consultants.

Which? (1990) *No go? Public transport and disabled people*. Which? June 1990: 347-350.

APPENDIX

Measuring Accessibility of Public Transport Systems

Two basic types of ratings will be required for transport systems. The first will measure the general level of access to the system in each area (e.g. number of accessible busses, provision of timetables in Braille etc). The second, will attempt to measure the scope of access within the system (i.e. how much of the system is accessible).

We can attempt to collect the relevant information listed below by means of a postal questionnaire sent to the appropriate authorities. Where this fails to provide sufficient information, we will need to try and follow this up by phone, letter or visits.

BUSES/TRAMS (Metropolitan and county transport executives)

a) number of wheelchair accessible low-floor buses/trams in each transport authority area

   divided by

   total number of buses/trams currently in operation in each area

b) number of routes running wheelchair accessible low-floor buses/trams in each transport authority area

   divided by

   total number of routes

c) miles covered by routes included in b)

   divided by

   total number of miles covered by all routes

d) Level of provision of assistance for visually impaired/blind passengers

E.g. number of routes incorporating routine location announcements at each stop

provision of timetable/route information in Braille, on tape, or in large print format (if yes, for all routes or just some?)

other measures identified from background desk research or consultation.

e) Level of provision of assistance for hearing impaired/deaf passengers

E.g. number of routes incorporating visual location indicators at each stop

provision of minicom facilities at enquiry offices (if yes, at all offices or just some?)

provision of BSL or SSE interpreters on request (e.g. at bus stations/terminii)

other measures identified from background desk research or consultation.

f) Access at bus stations/terminii

E.g. number of bus stations/terminii with independent wheelchair access to bus stands (divided by total number of stations in the system)

number of bus stations/terminii with assistance for disabled travellers available on request (divided by total number of stations in the system)

number of bus stations/terminii with accessible toilet facilities (divided by total number of stations in the system). Note: if possible, it would also be useful to try and distinguish between facilities which are freely available at all times and those which require special arrangements such as having to find a member of staff with a key

number of bus stations/terminii staffed with sign language interpreters to assist hearing impaired/deaf passengers (divided by total number of stations in the system)

number of bus stations/terminii providing accessible travel information and other assistance for visually impaired/blind passengers (divided by total number of stations in the system)

other measures identified from background desk research or consultation.

Notes:

i) In order to calculate rating c) we would also need to request route information for the relevant routes (ie. route maps). We can then measure the actual mileage ourselves (using OS maps if necessary).

ii) As only a few transport systems include trams, the questionnaire will need to include an appropriate filter(s) leading - where applicable - to supplementary questions on trams.

iii) It may also be useful to include supplementary questions asking about the number of new vehicles and/or routes (if any) which authorities are planning to introduce within the next 2(?) years.

iv) In addition to the specific information listed above, we should also ask each authority if they have any formal policy on making their system more accessible to passengers with physical and/or sensory impairments and, if so, whether they are able to provide further details.

RAIL, UNDERGROUND AND METRO SYSTEMS (Regional operators - e.g. Network Southeast)

a) number of wheelchair accessible trains in each operator's area

divided by

total number of trains currently in operation in each area

b) number of routes operating wheelchair trains in each area

divided by

total number of routes

c) miles covered by routes included in b)

divided by

total number of miles covered by all routes

d) Level of provision of assistance for visually impaired/blind passengers

e.g. number of routes incorporating routine location announcments at each stop

provision of timetable/route information in Braille, on tape, or in large print format (if yes, for all routes or just some?)

other measures identified from background desk research or consultation.

e) Level of provision of assistance for hearing impaired/deaf passengers

e.g. number of routes incorporating visual location indicators at each stop

provision of minicom facilities at enquiry offices (if yes, at all offices or just some?)

provision of BSL or SSE interpreters on request (eg. at stations, booking halls)

other measures identified from background desk research or consultation.

f) Access at stations

e.g. number of stations with independent wheelchair access to all platforms (divided by total number of stations in the system)

number of stations with assistance for disabled travellers available on request (divided by total number of stations in the system)

number of stations with accessible lift facilities divided by total number of stations (underground/metro only)

number of stations with accessible toilet facilities (divided by total number of stations in the system). Note: if possible, it would also be useful to try and distinguish between facilities which are freely available at all times and those which require special arrangements such as having to find a member of staff with a key

number of stations staffed with sign language interpreters to assist hearing impaired/deaf passengers (divided by total number of stations in the system)

number of stations providing accessible travel information and other assistance for visually impaired/blind passengers (divided by total number of stations in the system)

other measures identified from background desk research or consultation.

Notes:

i) In order to calculate rating c) we would also need to request route information for the relevant routes (i.e. route maps). We can then measure the actual mileage ourselves (using OS maps if necessary).

ii) It may also be useful to include supplementary questions asking about the number of new trains and/or routes (if any) which operators are planning to introduce within the next 2(?) years.

iii) In addition to the specific information listed above, we should also ask each operator if they have any formal policy on making their system more accessible to passengers with physical and/or sensory impairments and, if so, whether they are able to provide further details.