



EUROPEAN CONFERENCE  
OF MINISTERS OF TRANSPORT



# IMPROVING ACCESS TO TAXIS







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## INTERNATIONAL ROAD TRANSPORT UNION (IRU)

Founded in Geneva in 1948, the International Road Transport Union (IRU) upholds the interests of the road transport industry worldwide. Through its network of national Member Associations, it represents the operators of buses, coaches, taxis and trucks, from large fleets to individual owner-operators.

The IRU has been working in close partnership with the ECMT since its creation in 1953.

Started by 8 national associations from western European countries, the IRU today numbers 180 Members in 70 countries across all five continents. The IRU established a Permanent Delegation to the EU in Brussels in 1973, a Permanent Delegation to the CIS region in 1998 in Moscow, and opened an IRU Permanent Delegation to the Middle-East and region in 2005 in Istanbul.

The IRU aims to facilitate road transport and use training to promote professional competence of the sector and to further improve the quality of services it offers. It represents the road transport industry to public authorities, private bodies and the media, and promotes co-operation and complementarities with other modes of transport. Its activities fall under two strategic priorities: sustainable development and facilitation of road transport.

The IRU's Active Members are the most representative national road transport associations. The IRU's Associate Members are drawn from industries that have close ties with road transport, including the manufacturers of vehicles, fuels, tyres and information systems.

IRU Members contribute know-how, experience and political weight to the organisation's worldwide network. Their unity gives the sector authority, credibility and strength when addressing governments, inter-governmental bodies, other industrial sectors and civil society.

The IRU group "Taxis and Hire-Cars with Driver", gathers 28 Member Associations from 25 countries, represents the taxi industry within the IRU. Apart from the accessibility of taxis and hire cars with driver, the group's areas of concern for 2007 include the integration of access to profession rules in legislation and the creation of standards for Certificate of Professional Competence training for taxis and hire car with driver.

\* \* \* \* \*

For more information, visit [www.iru.org](http://www.iru.org)



## FOREWORD

Accessibility to transport services and infrastructure is an essential factor in ensuring a high-quality, efficient, sustainable transport system. Both the IRU and the ECMT have for many years worked towards improving transport accessibility in their respective memberships. And considerable progress has been made in making transport services and operations more accessible.

Access to taxis remains a particular challenge, largely due to the structure of the trade and its operations, as well as the design of the taxi vehicle itself. The importance of taxi services in providing reliable door-to-door transport services for disabled and older people, however, has necessitated concerted focus on this sector.

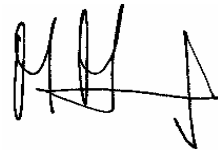
ECMT and IRU recognised this need in the late 1990s, and together produced a study examining economic factors that make improving taxi accessibility difficult<sup>1</sup>. That work revealed the need to explore issues related to the design of the taxi vehicle itself. So in a renewed joint initiative, ECMT and IRU set out in 2005-2006 to focus on how better taxi vehicle design over the long term can benefit users and the trade as a whole. This report is the fruit of this latest joint initiative.

For the first time, this study brings together the perspective of all stakeholders in taxi services, infrastructure and vehicle design. It starts from the perspective of what the user needs, considers what is realistic in the medium- to long-term for vehicle manufacturers and converters, identifies how operators – through comprehensive training in interfacing with disabled clients – can contribute to ensuring full accessibility of taxi services, and proposes ways in which government can promote improvements to vehicle design and infrastructure within this time frame.

In this way, the recommendations emerging from this initiative reflect the range of perspectives gathered in the preparation of the report. Our hope is that they provide a framework for improving taxi vehicle design, services and infrastructure over the medium to long term, and thereby contribute to a higher quality, more equitable and socially sustainable transport sector.



Jack Short, Secretary General  
**ECMT**



Martin Marmy, Secretary General  
**IRU**

## NOTE

1. ECMT-IRU Joint Report on the "Economic Aspects of Taxi Accessibility", ECMT, Paris (2001).



## ACKNOWLEDGEMENTS

The ECMT and IRU would like to sincerely thank the members of its joint Task Force on Improving Access to Taxis for their expertise in the development of this report alongside the members of the ECMT Working Group on Access and Inclusion and of the IRU Group “Taxis and Hire-Cars with Driver”.

Both organisations are particularly grateful to the representatives of car manufacturers and converters – listed in Annex 1 – who lent their insight and perspective to the preparation of the study.

Special thanks are extended to accessibility expert Philip Oxley of the United Kingdom for his expertise in the analysis and drafting of this report.



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## SUMMARY

### 1. Context

Taxis have a key role to play in the provision of door-to-door services for disabled and older people. The combination of the personal service offered by taxis, their wide availability in terms of both time of day or night and area and their door-to-door operations mean that they are of particular value to people with disabilities.

Whilst access to public transport for disabled and older people in recent years has improved considerably, taxis remain a challenge for transport accessibility, primarily due to the structure and organisation of the taxi sector. In particular, the predominant design of vehicles used for this purpose in most countries remains difficult for many disabled and older people to use.

In 1994 ECMT Ministers of Transport approved a Resolution which, among others, recommended that vehicle manufacturers and designers should be encouraged to address accessibility in the design of all taxis. Although progress in improving the accessibility of taxis has been made in some countries, implementing the 1994 Resolution has generally been slow. Only one European country is known to have more than 20 percent of its taxi fleet accessible for wheelchair users. Most countries have less than 10 per cent and, in some cases, none at all.

Given that there are in excess of 45 million disabled people across Europe, including as many as three to four million wheelchair users, it is clearly important that accessibility to taxi services should be improved.

With this objective in mind, the ECMT and the IRU joined forces to examine how the design of taxis can be improved to meet the needs of disabled people. The objective was to develop as realistic a set of recommendations as possible for vehicle design for manufacturers, whilst ensuring that the needs of the user are fully addressed.

The study, which follows up to the ECMT- IRU joint study on the *Economic Aspects of Taxi Accessibility published in 2001*<sup>1</sup>, has therefore been carried out in consultation with major European motor manufacturers, the single purpose-built taxi manufacturer in Europe and specialist conversion companies that adapt mass-produced vehicles for the taxi market. This consultation has been conducted in two special seminars and in discussions with individual manufacturers. In addition to the manufacturers, transport authorities, the European umbrella association for disabled people and national representative organizations for taxi operators have also been closely involved in the preparation of the study.

In this way, the study starts from the point of view of the disabled users' needs. It goes on to take account of what would be feasible so far as the vehicle manufacturers are concerned and what would be acceptable to the taxi trade.

## **2. The ECMT-IRU Taxi Vehicle Design Recommendations**

When considering the design recommendations made in this paper, it should be borne in mind that these represent a template for the future. It is not intended – nor indeed would it be realistic – to expect the design changes to be made immediately or in the near future. Rather they should be regarded as a guide for the medium- and longer-term development of taxis that can be safely and comfortably used by the majority of disabled people. It is recognized that it is impossible to provide for 100% of wheelchair users without reducing the operational viability of the vehicle for the operator and other passengers. There will be a small proportion of people who, because of the size of their wheelchair or the nature of their disability are unable to access taxis or indeed other forms of mainstream public transport. They will continue to need specialist door-to-door services.

The ECMT-IRU recommendations for taxi vehicle accessibility are based on two design levels:

**Type One: Wheelchair Accessible Taxis:** accessible vehicles capable of carrying the majority, but not all, passengers who travel in their wheelchair as well as people with other disabilities.

**Type Two: Standard Accessible Taxis:** vehicles with features designed to make use by disabled people easier, but which would only be able to carry a wheelchair user who can transfer to a taxi seat.

It is recommended that fleets of taxis used for regular services should be composed of a combination of these two types of vehicle. The proportion of each type within the taxi park is likely to vary from place to place, both within and between countries. This is a matter for decision by national and local governments.

The recommendations include specific design guidance for the key features of these taxis. For the wheelchair accessible vehicles these include the height and width of passenger doors, headroom inside the taxi, the space allocated for the wheelchair user and the acceptable ramp gradients for wheelchair access.

The guidance is expressed as a recommended dimension and a minimum acceptable measurement, thus providing a range rather than a single figure. In addition, performance criteria, which describe how each feature should work in practice, have been included in the recommendations. This has been done to ensure that current manufacturers of accessible taxis would not be excluded from the taxi market. However, it is hoped (and expected) that over time, the design of vehicles will move towards achieving the recommended standards.

The recommendations also include guidance on other features that can help to make the use of taxis easier for disabled people. These include seat design, provision of grab handles, colour contrast, interior lighting, induction loops and taxi meters that are clearly visible and which give the fare audibly. These recommendations apply to both Type One and Type Two taxis.

If the two design levels are applied progressively to mainstream taxi fleets the travel opportunities for disabled people will be greatly improved. They will also make the use of taxis easier for many other people.

### **3. Ensuring Taxi Accessibility: Other Essential Factors**

While the actual design recommendations are at the heart of the study, other factors are essential to ensuring access to taxis: these include ways that central and local government might encourage the provision of accessible taxis, the design of infrastructure to make the use of taxis easier and taxi staff training in disability awareness.

#### ***Encouraging the provision of accessible taxis***

This can be done by regulation and by financial incentive, or by a combination of both. National governments may, if they deem it appropriate, introduce regulations requiring the replacement (over time) of non-accessible vehicles with accessible taxis. Alternatively, national government may permit local licensing authorities to require that all, or a proportion, of the taxis in their area should become accessible, again over a reasonable period of time.

Government can also promote better taxi accessibility by introducing financial incentives, for example, by reducing duties or taxes on accessible taxis and/or reducing the cost of a taxi licence for accessible vehicles. The introduction of user-side subsidies - that is, providing disabled people with the money to buy taxi services themselves, so encouraging the trade to provide more accessible vehicles. Local authorities frequently contract taxi services, for example, to take disabled children to school or disabled adults to social service facilities. Where such contracting is done, the provision of accessible taxis could be stimulated by the contracts requiring that the vehicles be accessible.

Which option is appropriate will depend on the circumstances of both the country and the local licensing areas. However, it is considered that national governments should take the lead in this as



leaving it purely to local initiatives would probably result in a patchwork of provision, lacking consistency from area to area.

### ***Infrastructure design***

Providing good infrastructure for taxi services is also important and is mainly a matter for local authorities. Taxi ranks should be provided at railway, bus and coach stations and in major centres. Ranks should be designed so that there is adequate space for wheelchair accessible taxis to deploy their ramps, preferably onto a raised footway so that the ramp gradient is reduced. Seating should be provided, as should appropriate information (e.g. times of operation, taxi telephone numbers etc.) and ranks should be well lit.

### ***Driver training***

Finally, and most importantly, taxi staff should be trained in disability awareness. This applies not just to taxi drivers but to other staff as well, for example call-takers at dispatch centres. Training needs to cover all disabilities - sensory and cognitive as well as physical. Staff should learn how best to assist people with any disability, how to use any equipment on the vehicle and how to ensure that the passenger is carried safely in the taxi.

The study has identified a number of good training guides and instructive videos/DVDs that have been produced in various countries. These can be used as the basis for training programmes, but it is strongly urged that any training programme should involve disabled people themselves. They are the experts in their disability and are best placed to explain to taxi drivers and other staff what kind of assistance is appropriate.

## **4. Key Conclusions and Recommendations**

The two levels of accessibility set out in this recommendation, if applied progressively to the taxi park, should result in much improved travel opportunities for disabled people. A mainstream taxi park composed of Type One and Two vehicles would meet the

requirements of the great majority of disabled people, including a substantial proportion of wheelchair users.

#### **4.1 Authorities**

- National government should promote the introduction, over time, of requirements for taxis to meet the accessibility recommendations.
- National (or local) governments (as appropriate) should also develop action plans indicating the timescales for taxis to meet, initially, at least the minimum requirements and, in due course, the recommended design dimensions. Any guidance or standards set should allow for the continued manufacture and use of current wheelchair-accessible taxis for a reasonable period. To introduce any requirements that preclude the continued use of these vehicles over a reasonable design life would not be in the interests of disabled passengers.
- Concurrently, governments should examine what financial incentives might be appropriate to assist the taxi industry in buying and using these vehicles.
- Local government should also ensure that infrastructure provision plans include necessary improvements to be made as the number of fully accessible taxis increases. They should also ensure that their parking control policies do not conflict with the use of taxis by disabled people.

#### **4.2. Vehicle manufacturers and converters**

- Vehicle manufacturers should take account of the design parameters set out in this paper when planning and developing new vehicles (or major upgrades of existing vehicles) that will be used as taxis.
- Conversion specialists should continue their development of ways of making mass-produced vehicles more easily

usable by disabled people: not just wheelchair users but people with other disabilities, sensory as well as physical.

#### **4.3. Taxi operators**

- Taxi operators should pay particular attention to training their staff in disability awareness. This training should be given to taxi drivers and to other staff - for example, those in booking offices - who deal with members of the public.

In conclusion it should be reiterated that the recommendations made in this paper should not be interpreted as formal standards. But equally the recommendations have been developed from extensive discussions and research with the industries involved and, most importantly, with disabled people. They do not attempt to produce an ideal solution, but to give practical guidance, which if adopted by national governments, will be of considerable benefit to the more than 45 million disabled people who live in Europe.

### **NOTE**

1. ECMT-IRU Joint Report on the "Economic Aspects of Taxi Accessibility", ECMT, Paris (2001).



## 1. INTRODUCTION

In its work programme for 2004-2006, the Access and Inclusion Group of the European Conference of Ministers of Transport (ECMT) included a proposal to revisit the issue of Access to Taxis. This topic was last considered in a joint study by the ECMT and the International Road Transport Union (IRU) on the economic aspects of accessible taxis, which was published in 2001<sup>1</sup>.

Prior to this, the ECMT had considered the subject of taxis and their accessibility for disabled people in 1992<sup>2</sup> and in 1994 Ministers approved a Resolution<sup>3</sup> which, among others, recommended that vehicle manufacturers and designers should be encouraged to address accessibility in the design of all taxis.

Studies undertaken at an international level in recent years on this topic include the European Commission's report on Taxis for All<sup>4</sup>. There have also been national research studies on the design of accessible taxis<sup>5</sup> and a number of countries have produced design guidelines, at least in draft form.

Although progress has been made in several countries in improving the accessibility of taxi services, implementing the 1994 ECMT Resolution has overall been slow. It is therefore opportune to examine more closely factors relating to the design and manufacture of the taxi vehicles and see what practical measures might be taken to increase the production and use of accessible taxis.

As is the case with the recent research studies mentioned above, this paper starts from the point of view of the disabled users' needs. It goes on to take account of what would be feasible so far as the vehicle manufacturers are concerned and what would be acceptable to the taxi trade. When considering the design recommendations made in the conclusion to this paper, it should be borne in mind that these represent a template for the future. It is not intended – nor

indeed would it be realistic – to expect the design changes to be made immediately or in the near future. Rather they should be regarded as a guide for the medium and longer term development of taxis that can be safely and comfortably used by the majority of disabled people.

## NOTES

1. ECMT-IRU Joint Report on the "Economic Aspects of Taxi Accessibility", ECMT, Paris (2001).
2. "Access to Taxis for People with Reduced Mobility" ECMT, Paris (1992).
3. Resolution no 1994/2 on Access to Taxis for People with Reduced Mobility.
4. Oxley, Philip and Stahl, Agneta, "Taxis for All". Final Report to the Directorate General for Transport, European Commission (2001).
5. Richardson, John and Yelding, David. "The Determination of Accessible Taxi Requirements" For Mobility and Inclusion Unit, Department for Transport, London (2004).

## 2. BACKGROUND

While there may be differences of opinion on whether taxis are part of the mainstream public transport, there can be no dispute over their importance as a mode of transport for disabled people. The combination of the personal service offered by taxis, their wide availability in terms of both time of day or night and area and their door-to-door operation means that they are of particular value to people with disabilities. A National Travel Survey in Great Britain in the early 1990s<sup>1</sup> provides a good illustration of this. The study included a survey of the mobility of disabled people which showed, unsurprisingly, that overall, disabled people only made two-thirds the number of journeys by all modes (including walking) of those made by their non-disabled peers. The only mode of transport on which disabled people made more journeys than the non-disabled was taxi: they actually made twice as many as their non-disabled peers.

Since the time of that survey there has been considerable progress in making the major public transport services more accessible to people with disabilities; particularly bus and train. However, much still remains to be done and, even in those countries that have introduced mandatory regulations requiring the provision of (for example) wheelchair accessible local buses, it will be many years before all mainstream public transport is fully usable by disabled people. Even when full accessibility in these terms is achieved, the unique flexibility of the taxi will still mean that it has an important part to play in providing mobility for disabled people.

As was said in the introduction to this report, the principal subject of this study is to examine ways in which the design of taxi vehicles can be improved and made more accessible for disabled people. Clearly this is essential if disabled people are to make full use of taxis, but good design alone is not sufficient to achieve this. This study

therefore considers the other factors that, together with appropriate design, will lead to the development of a service that is genuinely fully accessible.

### NOTE

1. “National Travel Survey: 1991/93. The Development of Transport”, HMSO, London, 1994.



### 3. THE NEED FOR ACCESSIBILITY

Before considering the physical design of taxi vehicles, it is worth spending a little time thinking about what “access” means in this context and what, in broad terms, the demand for accessible taxis might be.

It is a fact that Europe has an ageing population. It is also a fact that many disabilities are age-related. It is estimated that within the EU member countries there are at least 45 million disabled people<sup>1</sup>. The majority of these people – probably around 70 per cent – have a walking problem. About 40 per cent have hearing difficulties and approximately 24 per cent have seeing difficulties. As is obvious from these figures, a significant proportion of disabled people have more than one impairment.

The proportion of disabled people who use a wheelchair is not known precisely, but in the UK for example, it is about seven to eight per cent. This percentage would equate to about 3.2 – 3.6 million people in European Union countries. Some of these people will be able to transfer from their wheelchair when travelling by car, but others will not. For the latter, who are estimated to number between 1.5 and 1.8 million in the EU, the vehicle used as a taxi needs to be fully wheelchair accessible.

From this brief discussion, which has only touched on the major disabling conditions, it is apparent that “access” means different things to different disability groups. It is not simply a matter of physical access, but covers a range of requirements that, for example, will help people with sensory impairments to use taxis. It is also apparent that for the majority of disabled people, full wheelchair access is not a requirement; but for a significant minority it is essential if they are to be able to make any use of taxis at all. This range and incidence of

requirements needs to be taken into consideration when thinking about how the design of taxi vehicles can be improved.

**NOTE**

1. "Employment of disabled people in Europe in 2002", Eurostat, European Communities (2003).

## 4. METHODOLOGY

The study has drawn on a wide range of research studies and on design guidelines that have been developed by various countries.

There has been extensive consultation with European-based motor vehicle manufacturers and conversion specialists. There have also been continuing discussions with disabled people (through the European Disability Forum), with representatives of the European taxi trade and with national governments. A list of the companies and organisations involved is given in Annex 1 to this report.

A number of seminars have been held to examine the issues involved in developing accessible taxis and the report itself has been subject to scrutiny and revision throughout the study by the people and organisations mentioned above.

## 5. THE TAXI MARKET

### 5.1 Numbers and types of vehicles

In the earlier report, “Economic Aspects of Taxi Accessibility” it was estimated that the total taxi fleet in the fourteen European countries that provided data<sup>1</sup> was just under 350 000.

The majority of these vehicles – approximately 290 000 or 84 per cent of the total – were saloon or estate cars, which are derived from common vehicle models. Purpose-built taxis, which are largely in the UK, amounted to 32 000 (just over 9 per cent of the total), with the remaining seven per cent a mixture of Multi Purpose Vehicles (MPVs), minibuses and minivans.

The survey carried out as part of the present study produced data from thirteen of the countries that had also replied to the earlier survey (2000) and a further eight countries not included in the earlier research also provided data. The figures are summarised in Table 1, together with the answers to questions on whether there had been any changes in the total taxi parc (approximately 500 000) in recent years and the types of vehicles used.

In terms of changes in numbers the results are mixed. Nine countries reported an increase in taxis including one country that had a concomitant decrease in private hire vehicles (Ireland). Four countries reported a decrease in taxis including Germany, where the number of private hire vehicles has increased. Six countries reported that numbers were stable or little changed. One country (Poland) did not have historic data available.

Table 1. Total Numbers of Taxis and Changes in Recent Years

Country	Total no. of taxis	Trend	Vehicle types
Austria	14 275	Increase	70% saloons/estates, 20% minivans, 10% MPV's
Belgium	4 100 (+1 000 hire cars)	Increase in hire cars	80% saloons, 10% minivans, 5% MPVs, 5% other
Bosnia & Herzegovina	5 350	Increase	99% saloons, 1% minivans
Czech Republic	11 311	+0.3% 04-05	n/a
Denmark	5 570	Decrease	n/a
Finland	10 000	Stable	66.5% saloons, 19% minivans, 9.5% MPVs, 5% Invataxis
France	46 833	Increase	n/a
Germany	50 027 (+ 25 780 hire cars)	Decrease in taxis. Increase in PHV*	80% saloons, 15% minivans, 2% MPVs, 2% others
Greece	38 000	Stable	99.9% saloons (20 w/c accessible vehicles)
Ireland	14 725 (+4 917 hire cars)	Increase in taxis Decrease in PHV	84% saloons, 9% minivans, 7%MPVs
Hungary	10 333	Decrease	95% saloon/estate 5% minivans
Luxembourg	400-410	Stable	95% saloons, 4% MPVs, 1% minivans

Netherlands	30 000 (inc. private hire)	Increase	33% saloons, 67% minivans etc
Norway	8 280	Increase	87% saloons, 11% MPVs, 2% minivans
Poland	50 800	n/a	Saloons
Portugal	12 970	Stable	94.7 saloons, 5.3% minivans
Slovakia	3 052	Stable	100% saloons
Spain	70 000	Stable	Almost 100% saloons
Sweden	14 034	Decrease	80% saloons, 20% MPVs/minivans
Ukraine	15 772	Increase	n/a
UK	85 125 (plus 136 200 private hire)	Increase in taxis No change in PHVs	47% purpose built, 47% saloons, 6% MPVs/minivans

\* PHV Private hire vehicles.

As is very apparent from the table, saloons/estate cars are the dominant type of vehicle, typically taking 80 per cent plus of the market. Only the Netherlands and the UK show a significantly different profile. There appears to have been a substantial change in the composition of the taxi fleet in the Netherlands. In the earlier report the make-up of the fleet was 62% saloons, 38% MPVs / minibuses whereas the percentages are now reversed. The UK differs as it has approximately 47 per cent purpose built taxis. Current figures on the composition of the French taxi parc are not available, but in the earlier (2000) survey just over 80 per cent were saloons or estates and 19 per cent were minivans.

## **5.2 Licensing and control**

Licensing is the responsibility of local authorities in all countries except the Netherlands and in Ireland. In the latter country, the functions of central and local government in relation to taxi licensing and regulation were recently transferred to a newly established Taxi Regulator. In addition it is also normally the local authority's responsibility to control the number of licences issued, if indeed there are any such controls. Since the last survey, two countries have removed the requirement to control numbers. In the Netherlands this control was removed in 2002 and in Ireland in 2001. In the former country the total number of taxis and private hire vehicles has increased from just under 23 000 to 30 000. In Ireland the number of taxis has increased from approximately 7 600 in 2000 to over 14 000, but the number of private hire vehicles has dropped from just over 9 000 to 4 900. Only Poland of the Central and Eastern European countries has controls on numbers of vehicles. In the UK approximately one-third of licensing authorities control numbers.

The majority of countries control taxi charges, the exceptions being Luxembourg, the Netherlands, Slovakia, Sweden and the Ukraine. All the countries that have responded to the questionnaire have controls on the roadworthiness of vehicles, usually an annual check. Controls relating to the age of vehicles used as taxis are much less frequent. In Belgium there is an age limit on taxis used in Brussels and some towns. There is control on age for taxis in Greece

and in some local authority areas in the UK, Hungary and in Bosnia and Herzegovina; otherwise no countries reported controls of this kind. At the time of the earlier survey, Portugal had a national rule that taxis should not be more than 12 years old, but this no longer applies.

### **5.3 Financial benefits**

Only two (Austria, Bosnia and Herzegovina) of the Central and Eastern European countries in the survey has any financial benefits for the purchase or use of taxis, but most Western European countries do. The benefits are typically reductions in purchase tax, lower VAT and/or reduced road tax. As was mentioned in the earlier report, some of the reductions in taxes are significant, notably in Finland, Denmark, Germany and Spain.

### **5.4 Structure of the trade**

As Table 2 shows, the taxi trade continues to be dominated by owner drivers and small proprietors. Large companies are the exception, with only seven countries saying that such companies exist.

It follows from this that the majority of taxis are bought by individual taxi drivers or small proprietors. The final column shows the proportion of taxi vehicles that are bought new. In most Western European countries that proportion is high, but there are exceptions in Ireland and Greece. Although there are no specific data available for the UK, that country is also something of an exception in that a substantial proportion of taxi vehicles are bought second-hand. Of the Central and Eastern European countries, Austria, Hungary and Slovakia buy 90%, 65% and 30% respectively of their vehicles new; the remaining countries all stated that purchases were mainly of second-hand vehicles.



Table 2. Structure of the Trade

Country	Structure (%)			Vehicles bought by:	Percentage of new vehicles bought
	Indeps Small	Small companies	Large companies		
Austria	50	45	5	Independents	90
Belgium	50	30	20	80% indeps 20% companies	95
Bosnia & Herzegovina	X	X	X	Independents	n/a
Czech Republic	75	20	5	Independents	Mainly second-hand
Denmark		n/a		n/a	Mainly new
Finland	98	2		Independents	100
France	90	<10	<1	Independents	Mainly new
Germany	87		13	Entrepreneurs	90
Greece*	X	X		Independents	35
Hungary	X	X		Mainly independent	65
Ireland	X			Independents	3.5
Luxembourg	90	10		Independents	95
Netherlands*	X	X	X	Companies that employ drivers	95 (approx)
Norway*	X			Independents	85
Poland*	X			Independents	n/a
Portugal	85	15		Independents	n/a

Slovakia	99	1	Independents	30
Spain*	X	X	Mainly independents	100
Sweden*	X	X	Independents	Almost 100
Ukraine	91	9	Independents	Mostly second-hand
UK*	X	X	Mainly independents	n/a

\* Specific figures not available, X indicates the categories that make up the trade.

## 5.5 Provision of taxis for disabled people

One of the questions asked in the survey was on the proportion of wheelchair accessible taxis within the national taxi parc. As the figures in Table 3 show the proportions in most countries are low to non-existent. Only the Scandinavian countries, the Netherlands and the UK have 10 per cent or more of their fleet composed of wheelchair-accessible vehicles. The high figure in the UK reflects the existence of the purpose-built taxis as well as modified taxi vehicles from specialist conversion companies.

A number of the responding countries have schemes that provide subsidised taxi services for disabled people. The nature of the schemes varies considerably and some schemes have a relatively short life. For example in Brussels in 2001 and 2002 grants were made available to a limited number of taxi proprietors when they bought wheelchair-accessible taxis. Subsequently the regional government of Brussels has decided to launch a study into the provision of a taxicard-type system for users of accessible transport.

User-side subsidies, in the form of either Taxicard systems or Special Transport Services (STS) are available in some countries. Finland, Norway and Sweden have STS-type provision, with a considerable part of that service provided by taxis. The Netherlands provides social welfare subsidies for door-to-door transport for specific target groups including disabled people. In Greece a small number of taxi licences have been given to Associations of Disabled People – members of the National Confederation of Disabled People – to serve the needs of people with mobility impairments. However, these vehicles are only permitted to carry disabled people and their companions. In the UK local authorities can, if they wish, introduce Taxicard schemes to provide subsidised transport for disabled people. Spain also has subsidies for disabled people to enable them to use taxis.

Table 3. **Wheelchair Accessible Taxis in National Taxi Parcs**

Country	Percentage wheelchair accessible
Austria	1
Belgium	5
Bosnia & Herzegovina	0
Czech Republic	0
Denmark	n/a
Finland	15
France	n/a
Germany	1.3-1.4
Greece	0.05
Hungary	n/a
Ireland	8.3
Luxembourg	0
Netherlands	20
Norway	10
Poland	n/a
Portugal	n/a
Slovakia	0.05
Spain	2.15
Sweden	10
Ukraine	0
UK	52

There appear to be relatively few examples of national regulations on accessible taxis. In Finland comprehensive reform of current tax legislation is planned for 2006. The new legislation will include quality requirements and may provide the opportunity to specify accessible features for taxi vehicles in the future.

In Austria, a Disability Discrimination Act came into effect from 1<sup>st</sup> January, 2006. It is a general Act, covering the different aspects of non-discrimination for mobility impaired people. From that date, all newly purchased goods (and buildings) must comply with this law.

Public transport vehicles, including taxis, are treated as "goods" and must be accessible without much difficulty to mobility impaired people. The impact on the taxi sector is such that it will lead to the purchase of larger (and more expensive) vehicles, though it may be possible for owner-drivers to get an exemption from this requirement. However, this would not be the case for larger operators.

In Ireland the Taxi Regulator will put in place new regulations to improve accessibility on a phased basis commencing in 2006. These will include improved booking procedures, driver training, improved information, new design guidelines for taxi ranks and improved accessibility standards in all vehicles together with a new specification for a fully accessible vehicle.

In the Netherlands there are no legal regulations concerning the accessibility of taxis, but recently technical recommendations on the accessibility of taxis have been published as part of the Handbook on accessibility of collective passenger transport. Norway has technical specifications for vehicles designed to carry wheelchair passengers as have Portugal and Spain (Standard 26-494 and Criteria CEAPAT).

Sweden, where as mentioned earlier the special transportation services rely to a large extent on taxis, has national technical regulations on accessible multi-purpose vehicles. They specify door openings, step heights, hand rails, interior dimensions, wheelchair space and wheelchair securement systems, wheelchair lifts and ramps. These regulations apply to vehicles used in specialised transport services for wheelchair passengers.

Swedish regulations (V VFS 2003:22) relating to passenger cars (M1) for the carriage of wheelchair passengers distinguish between "Universal" use and "Extended" use. The former refer to wheelchairs that match the ISO 7193:1985 standard, the latter to larger wheelchairs. The dimensions for the door, interior headroom and wheelchair space are the same as those shown for the French experimental standard in the third column of Table 5. The maximum ramp angle, however, is slightly greater at 15 degrees.

In Belgium, the regulation of taxis is devolved to the regional authorities. The region of Brussels has regulations which cover technical standards for accessible taxis. In the UK, the government has powers under the Disability Discrimination Act 1995 to introduce accessible taxi regulations. Proposals for introducing regulations were made, in outline, in 2003. These include the criteria that could be used to decide whether a given area should be required to provide only wheelchair-accessible taxis. Technical design standards that could be applied are being developed at present.

There is another aspect of the taxi market which has a bearing on the question of accessibility; this is the purpose for which the taxi vehicle is used. In general mainstream taxis fall into two categories: those that are licensed “to ply for hire” and those that have to be booked in advance, usually by telephone. There is a further subdivision of those taxis that have to be booked in advance (commonly called “private hire” vehicles in some countries) into regular services with ordinary vehicles and limousine services.

In addition to these services, there are more specialised services (and vehicles) that are used, among others, to provide services for disabled people. Such services may be provided by local authorities (for example Social Service departments to take people to and from day care centres or Dial-a-Ride services) or by charitable or voluntary organisations. In many cases the vehicles used for these services are minibuses or converted minivans and are dedicated to this type of service. As such they can be regarded as paratransit rather than as taxi services.

However, some local authorities contract with taxi services to provide transport for disabled people. An example of this would be home to school transport for disabled children. For services of this kind the vehicles may be “standard” taxis, or wheelchair accessible taxis of various kinds. Both “ply for hire” and private hire operators can be involved in providing these services under contract to local authorities.

This is a complex area: practice varies both between and within countries, but in some places the contracting of taxi services by local authorities may be one way of encouraging the provision of accessible taxis. There is an analogy with the provision of accessible, low-floor buses in the UK before regulations requiring their use were introduced. On services that were subsidised by local authorities, the contract between the authority and the operator specified that only accessible low-floor buses should be used. In some areas (but by no means universally) this led to the introduction of accessible buses earlier than would otherwise have been the case.

### NOTE

1. The fourteen countries were Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Netherlands, Portugal, Romania, Spain, Sweden and UK.

## **6. DESIGN FOR WHEELCHAIR ACCESSIBILITY**

### **6.1 Research on design requirements**

A recent EU case study has been made of the dimensions of people seated in their wheelchairs. The study measured height (from the floor to the top of the occupant's head), length, width and total weight of the wheelchair and occupant. Figure 1 reproduces the results for the height of adults in wheelchairs. As this shows, the range in height for all chairs is from 932 mm to 1 550 mm, with a mean value of 1 287 mm. Thus a door entry height of 1 400 mm would cater for over 90 per cent of wheelchair users, without them having to bend their heads down. A door height of 1 200 mm would cater for fewer than 20 per cent. It is also worth noting that the height of wheelchairs and their occupants has increased. A similar survey mounted in 1999 gave a mean height of 1 255 mm; 32 mm less than the 2005 survey.

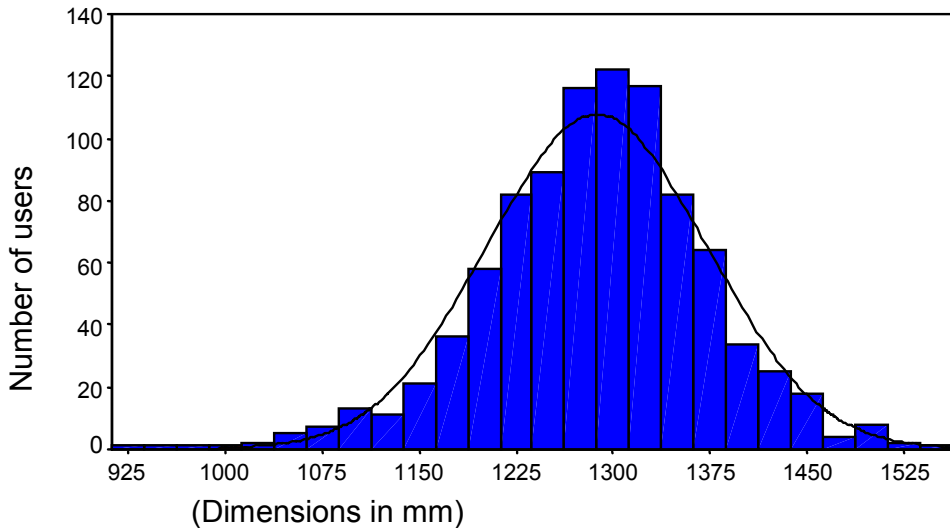
The average overall length has also increased over this period, from 1 084 to 1 113 mm, as has average weight, from 120.5 kg to 130.7kg. The only dimension that has decreased (slightly) is the overall width, which was 627 mm in 1999 and 612 mm in 2005.

It should be stressed that the figures discussed above are average values. Given that there are some differences in the average (standing) heights of adults in European countries - for example, adults in northern Europe (Scandinavia and the Netherlands in particular) are taller than adults in southern Europe - it would be reasonable to expect some differences between countries in the average seated height of wheelchair passengers. However, both data on the standing height of people and the results of the 1999 and 2005 surveys of wheelchair users suggest that heights will continue to increase over the next 5 - 10 years. This increase serves to emphasize the importance of moving design standards, in the longer



term, towards the dimensions recommended in Chapter 14 of this report.

Figure 1. **Overall Height of Wheelchair and Adult Occupant**



Device Type	Survey Year	Units in mm				
		Mean	Min	Max	5%ile	95%ile
Self-Propelled	1999	1 241	956	1 407	1 111	1 352
	2005	1 271	932	1 475	1 138	1 376
Attendant-Propelled	1999	1 190	956	1 374	1 078	1 324
	2005	1 210	953	1 436	1 096	1 300
Electric Wheelchair	1999	1 269	1 005	1 451	1 133	1 374
	2005	1 292	1 006	1 492	1 152	1 408
Electric Scooter	1999	1 340	1 071	1 502	1 202	1 438
	2005	1 349	974	1 550	1 230	1 490
All Chairs	1999	1 255	956	1 502	1 110	1 382
	2005	1 287	932	1 550	1 141	1 428

Source: "A Survey of Occupied Wheelchairs and Scooters", CEDS (2006).

The two ergonomic studies referred to in Chapter 1 were intended to provide guidance on the design of fully accessible taxis: that is taxis that would be able to carry a passenger seated in his or her wheelchair. The design standards suggested by the two research studies are summarised in Table 4. These can be considered as the “ideal” standards required to provide transport for virtually all wheelchair passengers.

It is apparent from the dimensions given in the table that the “ideal” accessible taxi would have to be either purpose built or based on a modified MPV or minibus.

This raises a number of issues. There is the question of the costs of the vehicle, both initial and operating. There are issues relating to how well such a vehicle would meet the needs of all passengers, including disabled people who do not use wheelchairs.

## **6.2 Current and suggested design parameters**

It is instructive to consider how these ideal measurements compare with the actual measurements of current vehicles that are capable of carrying a wheelchair passenger. These are shown in Table 5 (printed over two pages). Also shown in this table are the French Experimental Standards for Type 3 taxis (wheelchair accessible), draft ISO standards (recommended and minimum dimensions), the actual dimensions of the LTI purpose-built taxi and the dimensions for representative taxi conversions based on Peugeot, Mercedes and Fiat vehicles. The Finnish requirements for their wheelchair accessible taxis are also shown. The penultimate column shows the dimensions proposed by Volkswagen and the final column, the dimensions for the Swedish “Universal” wheelchair accessible vehicle.

Table 4. **Ideal Dimensions for a Wheelchair Accessible Taxi**  
(Based on EC and UK Research Studies)

Item	Dimensions (in mm) from	
	Taxis for All	UK Research
<b>Passenger door</b>		
Minimum width	800	850
Preferred width	900	900
Minimum height	-	1 595
Preferred height	1 650	1 745 <sup>1</sup>
<b>Step into vehicle</b>		
Maximum height	-	(150) <sup>2</sup>
Preferred height	-	100
<b>Ramp into vehicle</b>		
Maximum gradient	-	7°(approx 1 in 8)
Preferred gradient	4.8°(1 in 12)	< 5°(approx 1 in 11)
Maximum length	-	850-1 000
Width	800-900 <sup>3</sup>	900 <sup>3</sup>
<b>Floor height</b>		
	230	-
<b>Interior headroom</b>		
Minimum	-	1 625
Optimum	1 800	1 825
<b>Interior manoeuvring space</b>		
Minimum length	1 300	1 340
Minimum width	-	1 300 <sup>4</sup>
Preferred length	1 500	1 440
<b>Seat height</b>		
	420	430-460

Notes:

1. No intermediate heights between 1595 mm and 1745 mm were tested.
2. Acceptable to 70%+ of subjects tested.
3. Ramp width should match door width.
4. Width to provide for manoeuvring space.

Table 5. Comparison of Key Dimensions

Item	Dimensions in mm						
	EC Taxis for All Project: "Ideal dimensions"	UK Research Recommended dimensions	French Experimental Standard (type 3)	Finnish Invatangi	Spanish Standard (UNE)	ISO draft Recomm./ minimum dimensions	LTI Taxi
<b>Passenger door<sup>1</sup></b>							
Width	900	900	800	800	>700	750/700	780
Height	1 650	1 745	1 400	1 400	<1 300	1 400/1 200	1 350
Step [floor height] from road	[230]	100	[450] <sup>2</sup>	[450] <sup>2</sup>		[460]	208 [370]
Interior headroom	1 800	1 825	1 400/1 380	1 400/1 380	1 400	1 400/1 350	1 407
<b>Wheelchair space</b>							
Length	1 500	1 440	1 300/1 200	1 300/1 200	>1 200	1 300/1 200	1 168
Width		1 300 <sup>3</sup>	750/700	750/700	<700	750/700	710
Max ramp angle (approx)	4.8°	7°	14°	14°	10%	8/16°	

**Notes:** In some cases the French and ISO standards have a minimum as well as a recommended dimension: these are shown in italics after the recommended dimension.

- Decision no 18406/2004 (2:series), Public Official Bulletin Series No 206 in Portugal gives minimum door dimensions of 1 150mm height and 680 mm width.
- Represents the maximum acceptable height.
- To allow wheelchair passenger to manoeuvre through 90° when entering the vehicle from a side door. Dimensions for floor/step height may vary between conversion manufacturers.

Table 5 (cont.). Comparison of Key Dimensions

Item	Dimensions in mm			
	Peugeot E7	Merc Vito	Fiat	Swedish "Universal"
<b>Passenger door<sup>1</sup></b>				
Width	745	850	7-800	800
Height	1 270	1 240	1 300	1 400
Step [floor height] from road	230 [475]	[490]	120-250	[450] <sup>4</sup>
Interior headroom	1 400	1 350	1 400	1 400
<b>Wheelchair space:</b>				
Length	1 300	1 400	1 200	1 300
Width	800	800	750	750
Max ramp angle (approx)	16°	13°	17°	15°

**Notes:** In some cases the French and ISO standards have a minimum as well as a recommended dimension: these are shown in italics after the recommended dimension.

4. Maximum floor height 520 mm.

Dimensions for floor/step height may vary between conversion manufacturers.

It is clear that in virtually every case the actual dimensions of current wheelchair-accessible taxis fall short of the ideal dimensions based on research. Both the draft ISO recommendations and the French standards are also well below the ideal dimensions in several areas, notably door height, step height (maximum) and interior headroom.

The LTI wheelchair taxi comes close to meeting the French standards and actually exceeds the ISO draft guidelines on some items. The data for typical taxi conversions shows that the conversions based on mass-produced vehicles also approach or, in some cases, exceed the draft ISO dimensions.

### **6.3 Matching the 'ideal' design standards**

As said earlier, these comparisons serve to emphasise that meeting the ideal standards would mean either designing and developing a completely new taxi vehicle or modifying a light commercial vehicle with a higher roof line. Developing a completely new vehicle is estimated to cost well in excess of £100 million / 148 million EUR. This is not considered to be a viable proposition given the size of the taxi market.

The alternative of converting a light commercial vehicle offers a possibility, but there are disadvantages if a vehicle of this type were to be thought of as a universal replacement for conventional taxis. The responses from the motor manufacturers strongly suggest that they would not be interested in mass-producing a taxi vehicle (presumably based on the chassis/powertrain of a current light commercial van). One major manufacturer in the context of this study suggested that they would only be interested in this if total sales amounted to 1 million EUR, which given the size of the market is clearly unrealistic.

By process of elimination, the only means of producing a vehicle that meets the ideal standards is by post-manufacture conversion. There are a number of problems with this approach. Both vehicle manufacturers and conversion specialists are of the opinion that such a conversion would be too expensive as a “standard” taxi both in first

(purchase) costs and in running costs (both fuel and a relatively high level of capital depreciation). There are also concerns that such a vehicle would not appeal to the majority of taxi drivers and might not appeal to all passengers either.

The cost issues, which are at the heart of these problems, could – at least in theory – be overcome by financial intervention at central or local government level. This issue is considered later in this report, but at this stage it does not seem realistic to suggest that national policies or regulations should require the universal use of such a vehicle. There may, however, be scope for a more limited use of this type of vehicle: again this is a question examined later in this report.

## **6.4 Practical designs for wheelchair passengers**

The next level, below the “ideal” taxi, is the vehicle that is designed or converted to carry passengers in their wheelchair but which does not meet the stated dimensions. London Taxis International (LTI) has had experience extending over ten years in the production of a purpose-built wheelchair accessible taxi. Based on their extensive experience, they consider that their vehicle is able to carry a substantial proportion of all wheelchair users. If the ideal taxi is an unrealistic objective, vehicles of this kind, both purpose-built and conversions, appear to offer the best alternative.

Leaving aside for the moment the question of whether the design standards exemplified by these vehicles should be applied to all taxis or just to a proportion of them, the dimensions themselves merit examination.

The passenger door width and height proposed in the French Type 3 standards are above most of the typical conversions and the purpose-built vehicle. While it would be possible to modify the height of the door aperture in mass-produced vehicles, this would be a very expensive process and could have effects on the crashworthiness of the vehicle. One specialist conversion company estimates that to do this would increase the cost of the vehicle by as much as 30-50%.

Similarly, achieving these dimensions in the purpose-built taxi would involve major re-design work and very substantial costs.

The interior headroom dimensions of typical conversions and the LTI taxi either meet or are close to the French Type 3 and the draft ISO standards. The wheelchair space width of 710 mm in the LTI taxi is below both the French and ISO recommendations (750 mm) but just exceeds the standards' minima, which are both 700 mm. Similarly the length of this space in the LTI taxi is below the recommended length of 1300, but close to the proposed minimum of 1200 mm. These minimum dimensions can also be achieved in some of the vehicle conversions.

The maximum floor (sill) height recommended in the French standard (460 mm) is 90 mm above the level of the LTI taxi. However, some vehicles currently in use as (converted) taxis are based on vehicles with a floor height above 460 mm. Modifying a vehicle to reduce the floor height could again be an expensive option, but it should be possible to reduce the height at least down to 460 mm by using a kneeling suspension system. If this is done, together with the provision of a retractable intermediate step, each step height would be within acceptable limits. In parenthesis, it is noted that it is relatively simpler and cheaper to provide lowering rear suspension rather than lowering side suspension.

The other aspect of a relatively high floored vehicle is the consequent angle of the wheelchair ramp. The shallower the ramp angle the easier it is for the wheelchair user to wheel himself up and/or for the taxi driver to assist him. Steeply angled ramps also increase the risk of a wheelchair tipping over. The research on occupied wheelchairs mentioned at the start of Chapter 6 found that wheelchairs will tip at an angle between 6° and 10°. However, in many places that taxis pick up passengers there is insufficient space to deploy a long ramp, quite aside from the problem of carrying such a ramp on a relatively small vehicle.

Assuming a standard height of pavement of between 125 and 150 mm, the length of ramp required at a 25% (14°, 1 in 4) gradient to



access a 460 mm step would be between 1.2 and 1.35 metres. At the shallower gradient recommended in the UK research study (7°, 1 in 8, 12.5%) the ramp would have to be around 2.5 metres in length. Clearly this is not a practical proposition: using a ramp of this length would only be possible with rear entry. There are a number of problems with having entry at the rear of the vehicle. The wheelchair user has to get down from the pavement onto the road, which is not always safe. There are concerns among disabled users about being trapped inside the vehicle in the event of a rear shunt accident and this type of access is not generally liked by taxi drivers. The use of a shorter and steeper ramp does mean that the taxi driver must assist the wheelchair user in and out of the vehicle.

As an alternative to ramp access, there are lifts available that can be fitted to the rear or side of relatively small vehicles, though this form of access is more usually found on minibuses or minivans.

The dimensions shown under the heading "VW" are typical of some of the smaller vehicles used as taxis and which can carry some wheelchair users. However, two dimensions (passenger door height and interior headroom) are below those that are currently achieved in typical vehicle conversions as well as the purpose-built vehicle. The view of the European Disability Forum is that these dimensions would exclude use by many disabled people and are not acceptable as a medium/long term objective. This opinion is confirmed by the results of the "Survey of Occupied Wheelchairs and Scooters (see Section 6.1).

Given the complexities of design, it is considered that any recommendations made on standards for a wheelchair accessible taxi that will be used as part of the general taxi parc should basically follow the French Type 3 standards. It is also suggested that, as is done in a number of these experimental or draft standards, there should be a recommended dimension and a minimum acceptable dimension. As the recommendations will remain for a number of years, there should be scope and time for new designs to be introduced, which will move away from the minimum levels towards the recommended dimensions.

It is important that the authorities (central or local government) responsible for setting design guidelines for wheelchair-accessible taxis should not introduce them in a way which will preclude the continued use of existing wheelchair-accessible vehicles. Although, as the foregoing discussion has shown, current designs do not meet all the proposed minimum (or recommended) dimensions - particularly in relation to floor and passenger door height - they do represent a significant improvement in access over taxi vehicles produced 10 or 15 years ago. It would be counter-productive for both disabled passengers and the conversion specialists if requirements were made which did not allow a reasonable time for the run-out of existing models and then the introduction of new models that either meet or move closer to the recommended design parameters.

## 7. TAXIS FOR OTHER DISABLED PEOPLE

The discussion in the previous section has concentrated on wheelchair accessible taxis. In many ways these vehicles represent the most difficult challenge, but, as pointed out in Chapter 3, there are many more disabled people who are not wheelchair users. This then raises the question of what might be done in design terms to make the use of taxis easier for non-wheelchair users. There are two related issues – to what extent can major manufacturers introduce changes in either design or standard/optional equipment that would benefit disabled users and to what extent could this be done by post-manufacture adaptations.

It would appear that some slight modifications by mass producing manufacturers are possible, for example, improved interior lighting which is important for passengers with partial sight. However, many modifications are not feasible during mass production. The process then becomes a combination of selecting those mass-produced vehicles that come closest to basic design requirements and modifying them appropriately post-manufacture.

The French Experimental standards attempt to do this with their Type 1 and Type 2 standards. Essentially the Type 1 standards define certain measurements relating to the position of the passenger seat in relation to the passenger door and sill. The standards do not make any provisions for people with visual impairments and, in some respects, may be open to criticism for not being sufficient to make a significant difference to ease of use.

The Type 2 standards take the requirements further. They include the options of swivelling front or rear seat (with possible vertical/horizontal movement) grab handles to assist getting in and out, a

retractable step and adequate knee room. These requirements would be of help to disabled people, but it could be argued that they could be further improved and extended. For example grab handles, which are very helpful for many disabled people, might be colour contrasted and improved lighting could be provided. Post manufacture modification could also include fitting an induction loop.

Some concerns have been voiced during the course of this study over whether it is appropriate to have three levels of accessibility – whether this would introduce too much complexity – and whether the first level would, in practice, make any real difference. It might be argued that there should be two levels, the “lower” of which be analogous to that proposed in the French Type 2 standards but with a requirement for some further features like lighting and induction loops. The experience of the major taxi conversion company in the UK (Allied Vehicles) is that these further features are easy and relatively cheap to fit.

The introduction of the “lower” level vehicle then becomes a matter of selecting from the wide range of mass-produced vehicles those that meet the basic dimensional requirements, and further modifying/adapting them to provide the other features judged worthwhile.

## 8. THE PROPORTION OF WHEELCHAIR-ACCESSIBLE TAXIS

Setting standards or guidelines for the design of accessible vehicles is one matter, but there is also the question of whether such standards should be applied to all taxis or just to a proportion.

For understandable reasons, many wheelchair users and other disabled people would like to see entire fleets of fully accessible vehicles. This does not apply, however, to all disabled people. In the research mounted into the proposed UK regulations for accessible taxis<sup>1</sup> it was found that some disabled people preferred using conventional saloon car taxis because they were easier to get into and out of. This applied particularly to people with arthritis and similar conditions.

One factor which has a bearing on this issue is the extent to which taxis in a given area are hailed on-street or taken at taxi ranks rather than being booked by telephone. In the report “Taxi Regulation in Europe” commissioned by the IRU<sup>2</sup> very wide variations were found between the cities included in the study. At one extreme approximately 90% of taxi use was street work (hail and rank) in Brussels and 70% in Paris and Amsterdam. At the other extreme in Oslo, Geneva and Stockholm the proportion was around 30%.

As a rule street work is not very important in rural areas; most taxis are booked by telephone.

One of the reasons for advocating that the whole taxi fleet should be accessible is that, where the level of street work is high, disabled people (particularly wheelchair users) are at a disadvantage if only a proportion of the taxis are accessible. They will have to wait longer to find a taxi than a non-disabled person or to telephone for one. This argument, however, carries less weight where street work is of less

importance, though of course the argument remains that there must be some accessible taxis within the fleet. The proportion of the fleet in areas such as these that should be accessible is a matter of debate. Among other things the proportion may depend to some extent on the structure of the local taxi trade.

There are other local conditions that will influence the basic demand for accessible taxis, including the availability of other accessible public transport, whether or not the area is one that attracts tourists and the age profile of the resident population. Just as an example to illustrate the differences that exist in the case of population age profiles, the percentage of residents in English local authorities who are of retirement age ranges from a low of 11% to a high of 26%.

As issuing taxi licences is almost always the responsibility of local authorities, it may be that the final decision on the proportion of fully accessible taxis has to be made at this level rather than at a national (or international) level.

However, accepting that circumstances dictate this, it does not absolve central governments from setting out guidelines on how local authorities should reach a decision on the appropriate proportion of fully accessible vehicles.

## NOTES

1. Oxley, P.R. "Review of Taxi Accessibility Regulations, Effects of Compliance". Cranfield University (1999).
2. Bekken, Jon-Terje. "Taxi Regulation in Europe", Institute of Transport Economics, Oslo, for International Road Transport Union, Geneva (2003).

## 9. DISPATCH AND CONTROL OF TAXIS

As was mentioned in Chapter 7, the means by which a disabled person contacts a suitable taxi is important. It may influence the proportion of the taxi fleet that needs to be wheelchair accessible. In an area that has dispatch centres it may be possible to provide a reasonable service for disabled people with proportionately fewer accessible taxis than in an area where there are no dispatch centres, but a number of separate independently operated services. There are no data available on numbers of dispatch centres in more rural areas, but even in the major cities included in the IRU study there were substantial differences, ranging from Helsinki (one dispatch centre) to Dublin and Stockholm (each with 14 centres).

There is increasing use of GPS technology in taxi services. This enables the dispatch or control centre to identify where appropriate vehicles (for example, wheelchair taxis) are when a telephone call for service is received. In its report, “Towards an Accessible Taxi Service for All”<sup>1</sup>, The National Council for the Blind of Ireland advocates the use of this technology as one of the ways in which the level of service for disabled people can be improved. The National Council cites the example of Chicago (USA) where there is one central dispatch centre for all wheelchair accessible taxis, regardless of differing operators and owners. In Australia, the New South Wales taxi industry has introduced a new telephone booking system which has a separate dedicated telephone line for people with speech impediments and people who are deaf or hard of hearing. The use of innovative methods like these not only improves the service for disabled people, but may also lead to a more effective and efficient use of taxis.

In its submission to the Irish Government, the Irish Commission for Taxi Regulation proposed a range of measures which included requiring dispatch companies to provide a minimum level of service for people with disabilities. Taxi operators who provide a fully accessible service would have to be affiliated to a dispatch operator, recognised and licensed by the Commission. In areas where there is no suitable

dispatch operator, the taxi license holder would be required to have an advertised booking service in place to the satisfaction of the Commission. This approach to ensuring that disabled people get a reasonable level of service is to be commended.

## **NOTES**

1. This report is available at :  
[www.ncbi.ie/information/NCBI\\_policy\\_documents/accessible\\_taxi\\_service.php](http://www.ncbi.ie/information/NCBI_policy_documents/accessible_taxi_service.php)



## 10. ENCOURAGING THE PROVISION OF ACCESSIBLE TAXIS

Essentially there are two ways of encouraging the introduction of accessible taxis; by regulation/ setting standards and by financial incentive.

A possible third way is that mentioned in the section on the taxi market, of local authorities requiring operators to provide accessible vehicles for their contracted services.

The wider issue of taxi regulation was considered in detail in the report “Taxi Regulation in Europe” mentioned in Chapter 8. The study was primarily concerned with two aspects: regulation of entry into the taxi market (essentially control or not on the number of taxis permitted to operate) and regulation of quality.

Control over the numbers of taxis can be done either by placing a quantity limit on the number of vehicles that can be used or by placing restrictions on assigned vehicles, drivers or licences per operator. Examples of the former can be found in some UK authority areas and in most other western European countries, the exceptions being Ireland, the Netherlands and Sweden. In eastern European countries the reverse generally applies, with only Poland of the countries included in the survey having quantity controls. Only Denmark has restrictions on the number of licences that can be held by a single operator.

The quality restrictions considered in the study commissioned by the IRU included requirements on professional competence, financial matters and vehicle requirements. The latter, however, referred mainly to seating (usually a maximum number), vehicle tests (usually annual) and compulsory equipment (usually no more than a taximeter and a sign). London was found to have the strictest requirements, including

wheelchair accessibility. No other mention was made in the report of requirements for the carriage of disabled passengers, but since that time Portugal has introduced regulations, including minimum dimensions for the passenger door, for taxis used to carry disabled people, and there are regulations applying to accessible taxis in the Brussels region, in Norway, Spain and in Finland for “Invataxis”. In Greece a very small number of taxi licences have been issued for accessible taxis – the vehicles have to be certified by the Ministry of Transport and Communications. Sweden has national technical regulations on accessible multi-purpose vehicles, which specify among others, door dimensions, step heights and interior dimensions including wheelchair space. These regulations apply to vehicles used in special transportation services for wheelchair users.

In summary, no country has comprehensive (i.e. affecting all taxi vehicles) regulations on accessibility. A minority have regulations that affect vehicles used to carry disabled passengers and a minority of UK local authorities (approx. 12%) have introduced requirements that all taxis within their area should be fully (wheelchair) accessible.

The study commissioned by the IRU concluded that strict quality standards (not including access for disabled people) are important whether or not there are quantity controls, though they are particularly important where there is free entry into the taxi trade.

## 11. SUPPORT FOR ACCESSIBLE TAXIS

This report has discussed various design options and has reached the conclusion that mainstream taxi fleets should comprise some wheelchair accessible vehicles and some that are essentially standard vehicles that satisfy some basic dimensions (primarily related to the relationship between the passenger seats/door/sill/leg-room) with relatively minor post-production modifications. As the suggested design standards for the mainstream wheelchair-accessible taxis will not meet the needs of 100 per cent of wheelchair users, there is also a need to provide a vehicle in line with the “ideal” standards derived from the research studies.

So far as the mainstream taxi parc is concerned the balance between wheelchair-accessible and other vehicles is a matter for the local (licensing) authority but with either guidance or regulation at the national level that is designed to ensure that local authorities make appropriate decisions and carry them through.

Experience in the UK has shown that it is possible to mandate that all taxis in a given area should be wheelchair accessible and to do so without any financial subvention from local or central government. Elsewhere, though, this may not be considered feasible. In many areas, there will be a mix of wheelchair accessible and “standard” (Type 2) vehicles, so the question arises as to whether there should be support for those operators who run the (more expensive) fully accessible vehicles.

Various policies have been tried to encourage taxi operators to introduce wheelchair accessible taxis. Where there is strict control on the number of taxi licences issued, some licensing authorities have permitted additional licences but only for wheelchair accessible vehicles. In places where licence numbers are controlled, the licences

have a monetary value (sometimes quite substantial) and there is some evidence to show that this approach can result in wheelchair-accessible taxis coming into operation. The majority of the countries replying to the questionnaire (Chapter 5) stated that they did control numbers of taxi licences, so this approach may be possible. However, it will depend on continuing control of numbers – and there is some evidence that there is a move away from this form of control. It also depends on the licensing authority ensuring that when a wheelchair-accessible taxi is changed, it is replaced by another wheelchair-accessible vehicle. Finally, although this approach may work in places where the required proportion of wheelchair-accessible taxis is fairly small, it may not be practicable where a substantial proportion of accessible taxis are needed.

The alternatives that remain are financial. One method, where taxi licences are costly to obtain, would be to make the licence for a wheelchair-accessible taxi available at little or no cost. The evidence from Ireland, where a licence costs 6 300 EUR for a saloon taxi and only 125 EUR for a wheelchair accessible taxi, is that this does not provide sufficient incentive, by itself, to encourage either entry or retention in the wheelchair accessible taxi market. This is because the economics of purchasing and operating such a vehicle quickly erode this concession.

It is the initial purchase cost of the vehicle that appears to be the single most important deterrent. Thus measures to reduce this are likely to be the most effective way of increasing wheelchair-accessible vehicles. In those countries where a substantial level of duty is levied on motor vehicles, the removal of this duty would make a significant reduction in the purchase price. In Ireland, for example, the refunding of vehicle duty and the reduction of value-added tax (VAT) could reduce the purchase cost by almost 40 per cent. VAT is subject to several EU directives. It is understood that individual countries can levy a reduced VAT rate on taxi services, or allow operators to deduct the input VAT which has been paid on the purchase of a taxi vehicle. However, some Member States apply limitations to the right to deduct input VAT paid on such purchases. Ireland is a case in point.

Thus, it may be possible to arrange for a substantially reduced level of VAT on the purchase and adaptation costs of wheelchair accessible taxis, so encouraging their provision.

A financial analysis included in the National review of taxi, hackney and limousine services<sup>1</sup> estimated that, without any concessions, the total annual operating costs (running and standing costs) of a wheelchair accessible taxi would be almost 25 per cent higher than for an ordinary saloon taxi. If the vehicle registration tax (VRT) were to be removed or refunded, this difference would fall to approximately six per cent, while if VAT were reduced as well, the total annual operating costs of the wheelchair accessible vehicle could be a little below the saloon car costs.

In countries that do not have a high rate of duty on new vehicles there would have to be some form of direct subvention paid by central government. This would also apply in those countries where taxis are mainly bought second-hand. The Czech Republic, Ireland, Slovakia and Ukraine all reported that the majority of taxis are bought as second-hand vehicles, in Greece about 65 per cent are bought second-hand and the same is probably true in parts of the UK.

There are two other means of providing financial support. One is to, in effect, provide disabled people themselves with the money to buy taxi services- user side subsidies. There is evidence from various "Taxicard" schemes in the UK that subsidising travel by disabled people does increase use of taxis<sup>2</sup>. However, that increase in use will be spread across most or all taxis, not just wheelchair-accessible vehicles.

It may be a useful adjunct to a nationally-based subsidy and would certainly help to improve the mobility of disabled people (subject to such schemes surviving the vagaries of local authority finances) but, of itself, is unlikely to be sufficient to encourage operators to invest in accessible vehicles.

It should be understood that levying an additional charge on the disabled passenger - for example by charging a wheelchair user a higher rate than the standard - is not acceptable.

The other means of encouraging wheelchair-accessible vehicles is the selective use by local authorities of their contracts to provide taxi services for disabled children (to school) and adults (to clinics, day centres etc). As is said in the IRU report:

“...social and distribution issues can often be better addressed by means other than regulation. For instance, public authorities can purchase the services they consider important directly from the taxi industry without setting any regulations. They can also provide some advantages to those performing such services. The latter have often been used to ensure that some taxis are wheelchair accessible.”

As with user-side subsidies, the use of local authority contracts in this way is unlikely, of itself, to encourage sufficient wheelchair-accessible taxis, but, in more rural areas where there is also a limit on the number of licences, it could be effective.

One final issue, which should be considered, is that of time scale: the period over which the required level of wheelchair-accessible vehicles should be achieved. If no time limits are set, there is a real possibility that the idiosyncratic behaviour of many taxi operators will ensure that the objective is never reached. A balance has to be struck between the wishes of disabled people to see adequate levels of accessible taxis as soon as possible and the financial consequences for both taxi operators and government.

In part, the appropriate time span will depend on the frequency with which operators change their vehicles and the life of both purpose-built and “purpose-modified” taxis. A number of countries impose an age limit on taxis but the majority do not. Purpose-built and purpose-modified taxis will have a longer life than standard saloon taxis: the research on the effects of compliance with (the then) proposed regulations on accessibility in the UK found that

purpose-built taxis had a typical life of 14 years, but standard saloon taxis only three to four years. The data in the study for the Irish Taxi Regulator referenced above gave an average age for the national taxi fleet of 6.9 years, though a small number were over 14 years old. Beyond this, there are little data available on the life of taxi vehicles but, if and when it is decided to mandate for the provision of accessible taxis, individual countries should take account of the average vehicle life.

In the context of areas where it is considered appropriate to have a proportion of fully accessible taxis, as mentioned in Chapter 9, dispatch centres have a potentially important role to play. Modern centres using GPS technology can rapidly locate the positions of vehicles and locate appropriate (i.e. wheelchair accessible) vehicles when a request for service is received. However, such centres are by no means universal, particularly in more rural areas, and it may be necessary for governments to consider ways in which such dispatch centres can be encouraged.

In summary, then, there are several ways in which the numbers of wheelchair-accessible taxis could be increased. Both local and central governments have roles to play, but it is the latter who have to take the lead. Left to local initiatives, the result would probably be a patchwork of provision, lacking in consistency from area to area.

The discussion in this section has concentrated on the provision of accessible vehicles within mainstream taxi services. As was mentioned towards the end of Section 5.5, there are also “taxi-style” services operated in many countries that are either entirely or largely dedicated to carrying disabled people. The majority of these services are either directly or indirectly (through financing) supported and controlled by public authorities. For services of this kind, where they use a taxi type of vehicle, it would be appropriate for those vehicles to be designed or modified so that they meet the ideal standards. Thus they should be able to cater for the minority of disabled users who would be unable to use wheelchair-accessible mainstream taxis.

There may be some scope for integrating some of these more specialised services into general taxi provision; that is following the pattern of the Invataxis in Finland. These vehicles, although intended primarily for the carriage of disabled people, can be used by anyone. Whether this is appropriate or not is a matter that should be decided at the local or national level.

## **NOTES**

1. “National Review of Services and Vehicles Standards in Taxis, Hackneys and Limousines in Ireland”. Commission for Taxi Regulation, Dublin (2005).
2. The issue of user-side subsidy schemes is discussed in Chapter 4 of the IRU/ECMT study "Economic Aspects of Taxi Accessibility" - see Chapter 1, Note 1.



## 12. INFRASTRUCTURE

Although the main purpose of this report is to provide guidance on making taxi vehicles accessible to disabled people, there are other aspects of the use of taxis that are important. One of these is the infrastructure within which they operate. Action on this aspect of taxi use is primarily the responsibility of local authorities, rather than central government. The following paragraphs outline good practice in the provision of infrastructure for taxi services.

Where there is sufficient space, taxi ranks should be provided at railway, bus and coach stations and in major shopping centres. The ranks should be located close to the facility being served and should have clear signs within the facility showing where they are.

If possible, some sheltered seating should be provided close to the rank. There should be information on the days/hours during which taxis operate from the rank and, if fares for specific journeys are regulated (for example from an airport to city centre) that information should be displayed.

Information of this kind should be centred around 1400 mm from the ground, with the bottom edge not less than 900 mm from the ground and the top edge up to a maximum of 1 800 mm above ground. Typefaces used should be Sans Serif, at least 16 point in size and should use lower case lettering, which is more readily distinguishable than upper case (capital) lettering. There should be a good colour contrast between text and the background of the sign, e.g. dark blue on white.

A public telephone should be available close to the rank and, if appropriate, a direct telephone to the taxi company/dispatch centre serving the rank. All information should be in raised lettering so that

blind people can read it and the telephone(s) should have all operational parts no higher than 1040 mm from ground level so that they are within reach of a user seated in a wheelchair.

Ranks should be sited so that passengers board or alight onto the footway from the nearside of the taxi. The width of unobstructed footway should be sufficient to allow the deployment of wheelchair ramps and adequate manoeuvring space for the wheelchair user. The length of the ramps used will vary depending on the type of vehicle and the height of its floor. The ergonomic research conducted in the UK recommended a maximum ramp angle of 7° (approximately 1 in 8 or 12.5%) and also suggested that the ramp should not be more than 1000 mm long. This length would imply a total clear footway width of at least 3000 mm to allow for the manoeuvring space. If the footway can be raised this will allow for a less steep gradient on the access ramp.

The recent study by Dublin Institute of Technology<sup>1</sup> recommended a kerb height of 200 mm at ranks used by wheelchair accessible taxis.

As there are increasing numbers of disabled car users, there is likely to be the need for further on-street parking spaces for Blue Badge holders. Local authorities should consider whether such spaces might also be used by wheelchair accessible taxis when picking up or setting down wheelchair passengers, providing that in so doing they are not preventing the use of the space by a Blue Badge holder.

Local authorities should also ensure that taxi drivers are not fined for "illegal" parking when they are setting down or picking up passengers who require assistance.

## **NOTE**

1. See Reference Chapter 11, Endnote 1.

### 13. TRAINING FOR THE INDUSTRY

Training in disability awareness for the taxi industry is essential. No matter how well the vehicle is designed, a taxi journey for a disabled person can be ruined by inappropriate behaviour or actions of the driver. And it is not just the driver who should be trained, but all those involved in the industry, whether it is the owner/manager or the person who answers the telephone at the dispatch centre.

The training - whoever within the industry it is given to – should cover all disabilities; physical, sensory and cognitive. The training programme should not be regarded as just a “one off” session; provision should be made for periodic refresher courses. In Ireland, for example, it is proposed that not only should training be made mandatory from 2008 but that there should be refresher courses every three years thereafter. DVDs and booklets on training for taxi operators have been produced in a number of countries: some examples are described briefly below.

The UK Disabled Persons Transport Advisory Committee (DPTAC) has produced a comprehensive guide to good practice for private hire vehicles (PHV)<sup>1</sup>. Although specifically intended for PHV operators, most of the information contained in the guide is relevant to all taxi services.

The guide includes advice for all call-takers and booking staff as well as for taxi drivers. For example, staff receiving requests for a taxi should be aware that many people who are deaf or hard of hearing prefer to book by SMS text messaging, so companies should consider making this facility available. Staff should also be aware that calls may be made by customers with speech impairments or learning disabilities, so they should be trained in how to deal with such calls.

In the Section dealing with training for drivers, DPTAC sets out the basic principles as:

1. The disabled person is the expert on his or her own disability, so the driver should ask what sort of assistance, if any, is required.
2. Disabled people are not all the same, so assumptions and generalisations should not be made.

The guide continues with advice on appropriate assistance for people with sensory impairments (blind and partially sighted, deaf or hearing impaired and speech impairments), people with cognitive impairments (learning disabilities, mental health problems), ambulant disabled people and wheelchair users. The guide emphasises the importance of including disabled people in the training programme and of making sure that the taxi driver knows how to use any equipment on the vehicle correctly.

Examples of training schemes in the UK are given, together with a brief description of the Southampton City Council's Taxi Quality Partnership.

This is a partnership between the local authority and the city's taxi and private hire industries based on a forum which meets four times a year. From the point of view of the local authority, which is the taxi licensing body, the forum enables any new policy initiatives, such as measures to improve the availability of taxis for disabled people, to be introduced, discussed and implemented.

Go Skills (UK) has prepared a training video for taxi drivers and is encouraging local authorities to set up training schemes in their areas. In Ireland, many drivers undergo training provided by a commercial organisation prior to taking the examination for the public service vehicle driver's licence. It is intended by the Taxi Regulator that a mandatory skills development programme will be undertaken by all taxi drivers. This programme will include disability awareness training

and will be compulsory as from 2008, with short refresher courses every three years.

Both the *Association des Paralysés de France* and the French expert, Christiane Briaux-Trouverie, emphasise the importance of training. Amongst the most important factors in ensuring that disabled passengers have good service are:

1. Ensuring maximum passenger safety.
2. Ensuring that equipment is in good condition and used appropriately. This must include knowing how to secure the wheelchair and the passenger.
3. Communicating well with their passengers, especially those who are blind or hard of hearing.
4. Drivers should drive in a smooth manner, avoiding sharp acceleration and braking wherever possible.
5. Drivers should be aware of their obligations to their passengers. These should include getting out of the taxi and opening the door for passengers and, when appropriate, assisting the passenger between the taxi and (say) his front door or the entrance of a hotel.
6. Accepting assistance dogs. There may be a cultural problem with the carriage of dogs, for example with the Muslim community, but guidance from the UK Shariat Council has clarified religious law and confirmed that it is acceptable for assistance dogs to be carried.

A Finnish training DVD (*“Ammattitaitoa Ja Asennetta”* – “I can hear you smiling”) has been prepared by ELSA, which concentrates primarily on communication skills and attitudes. It covers all the main modes of public transport including taxis and emphasises how important the attitude of transport staff is in ensuring that disabled people travel without worry and in safety. The video makes the point that a good service is a combination of inherent talents, learned skills

and attitude on the part of the staff, but if the attitude is poor, talent and skills count for little or nothing.

The Finnish Ministry of Transport and Communications has also published a booklet<sup>2</sup>, which provides advice on how to meet the needs of disabled people when they are using all forms of public transport including taxis.

## **NOTES**

1. “Making Private Hire Services More Accessible to Disabled People: Good Practice Guide”. Transport & Travel Research for DPTAC, Department for Transport, UK (2003).
2. “Accessible Customer Service in Public Transport”. Published by ELSA-programme/Ministry of Transport and Communication, Helsinki, Finland.

## 14. RECOMMENDATIONS

During the course of the study there have been extensive discussions and consultation with the taxi trade, vehicle manufacturers and government representatives. The purpose of this study is to find ways in which to encourage the development and provision of mainstream taxis that can be used easily and safely by disabled people. If this is to be achieved it will require action in a number of areas, including driver training, financial support and, possibly, regulations, but the design of vehicles used as taxis is at the heart of the study.

It is apparent from the discussions that a degree of consensus is emerging on the approach to achieving accessible vehicles. This consensus applies to both the underlying approach and to the more specific requirements of vehicle design.

It is suggested that the approach to encouraging the development and provision of accessible taxis should:

- i. Recognise that the vehicles used have to be acceptable to the taxi trade: this has implications for both the physical design and appearance of the vehicle and for capital and running costs. The majority of accessible taxis are derived from Multi-Purpose Vehicles, which are more expensive and have a higher fuel consumption than standard (saloon) vehicles.
- ii. Provide worthwhile improvements in accessibility for (at least) the great majority of disabled people, including those with sensory as well as physical disabilities.
- iii. Give guidance on how vehicles can be designed and/or adapted to meet the needs of disabled people, but such guidance should

not be too prescriptive. It should not preclude the use of either appropriate mass-produced vehicles (with varying degrees of post-production adaptation) or purpose-built taxis. Nor should the guidelines make any recommendations that are inimical to innovation.

- iv. Recognise that the development of new vehicles takes time, but there should be scope within the next 5 to 15 years for progress to be made in the design of mass-produced vehicles that will make the provision of accessible taxis easier. National governments should be encouraged to monitor progress towards achieving this at regular (say 5-year) intervals.

It should also be made clear that there is a degree of flexibility in the policies that governments may wish to adopt when seeking to encourage the provision of accessible taxi services. Although there are many similarities between the taxi trades in European countries, particularly in the structure of the trade, there are also some significant differences. These include the regulatory regimes, the costs of vehicles and, in part because of the latter, the proportion of taxis that are bought as new vehicles. Governments will need to consider these factors before deciding on the policies they wish to introduce.

While accepting that this diversity will argue for some differences in the policies and consequent actions of governments, the fundamental objective of improving access to taxis for disabled people must be kept firmly in mind.

The following sections of this report set out recommendations on the key issue of the design of taxi vehicles. These recommendations are for guidance; they are not – nor indeed could they be – formal or mandatory standards. However, it is the expectation of the IRU and the ECMT that these guidelines on good practice will be taken into serious consideration by national governments when they are developing their policies on accessible taxi services. It is also expected that vehicle manufacturers and conversion companies will take account of them, particularly when considering the design of new vehicles.



The IRU-ECMT Task Force, in discussions with the industries, has identified two design levels which can provide the basis for a policy on accessible taxis. These are:

Type One: Wheelchair Accessible Taxis: accessible vehicles capable of carrying the majority, but not all, passengers who travel in their wheelchair as well as people with other disabilities.

Type Two: Standard Accessible Taxis: vehicles with features designed to make use by disabled people easier, but which would only be able to carry a wheelchair user who can transfer to a taxi seat.

Regular taxi services should be available with a combination of these two types of vehicle. The proportion of each type within the taxi parc is likely to vary from place to place, both within and between countries. This is a matter for decision by central and local governments.

The following sections contain design recommendations for these two types of vehicles, starting with the wheelchair accessible taxis. The design dimensions given are for a recommended measure, which is the dimension that would best meet the requirements of disabled passengers. However, it is recognised that, for reasons of cost and practicality, it may not always be possible to achieve the recommended measure, so a minimum standard is also suggested. In effect this gives a range that is considered appropriate. Obviously the nearer the design of the vehicle approaches the recommended measures, the easier it will be for disabled passengers to use the vehicle. The recommendations also contain “performance” criteria; essentially a description of how the design features should work in practice.

### **14.1 Type One: wheelchair accessible taxis**

Type One vehicles are intended to offer a good level of service to disabled passengers, including at least one passenger who wishes to

travel in his or her wheelchair. The dimensions and performance criteria set out below are based on a combination of the French (Type 3) standards and the actual dimensions of current wheelchair-accessible taxis: both purpose-built and post-production modified vehicles.

Table 6. **Type One: Entry to the Vehicle**

Item	Dimensions in mm	
	Recommended	Minimum (Maximum)
Ramp gradient	11°	(16°)
Floor height	200	(460)
Passenger door width	800	745
Passenger door height	1 400	1 250

Performance criteria: the ramp gradients for passengers in wheelchairs should be safely manageable with assistance from the driver. As mentioned earlier (Chapter 6) there is a risk of wheelchairs tipping over on ramps with gradients of 6° or more, so help from the driver is essential to ensure the safety of the passenger. The gradients given are based on entry from a pavement with a kerb height of at least 125 mm. If the single step into the vehicle is much in excess of 200 mm an additional (retractable) step should be fitted to give a step height that can be managed by most ambulant disabled people. Floor heights towards the upper limit of 460 mm can cause problems for some disabled people: vehicle manufacturers and conversion companies should be encouraged to develop creative solutions to reduce or obviate this problem.

The entry door width should be sufficient for (at least) standard wheelchairs to enter and exit comfortably. The entry door height should be high enough to give sufficient head clearance for ambulant disabled passengers directly accessing a seat, without them having to bend down uncomfortably. At 1 400 mm it should cater for at least 90 per cent of wheelchair users. The minimum figure of 1 250 mm should be usable comfortably by at least 35 to 40 per cent.

Table 7. **Type One: Vehicle Interior**

Item	Dimensions in mm	
	Recommended	Minimum (Maximum)
Interior headroom	1 400	1 350
Wheelchair space		
Width	750	700
Length	1 300	1 200

Performance criteria: the interior headroom should be sufficient for all but the tallest of seated wheelchair passengers to sit without having to bend. It should also enable disabled passengers who walk to get to and from their seat comfortably. In the case of side entry the wheelchair space should be large enough for the wheelchair user, with assistance as necessary, to turn through 90° and reverse into the wheelchair securement space. This space may be for either forward or rearward facing travel. There should be sufficient space for assistance dogs.

It should be noted that the recommendations on the wheelchair space are intended for taxis where entry is from the side. To avoid the wheelchair passenger having to move off the pavement on to the road, with consequential safety risks, side access is preferred to rear access. However, it is recognised that there may be places where the environment means that rear entry has to be used.

There should be appropriate wheelchair tie-down/anchorage and an occupant restraint for the wheelchair user suitable for a wide range of passengers.

The dimensions and performance criteria given above relate specifically to the requirements for carrying a passenger seated in a wheelchair.

There are further recommended dimensions and requirements relating to other features in the vehicle which should also be provided in Type One vehicles. These are set out below in the table (8) in

sub-section 14.2, as these other requirements also apply to Type Two vehicles.

## **14.2 Type Two: standard accessible taxis**

Type Two vehicles will be mainly saloon, estate and multi-purpose vehicles with relatively minor modifications. They will not carry wheelchair passengers except for those who are able to transfer and whose wheelchair can be carried in the boot or luggage space of the vehicle.

However, there are many design features that could be incorporated in vehicles used as Type Two standard taxis, which would make use by disabled people easier and more comfortable. These are set out below in Table 8. It should be remembered that over 90 per cent of disabled people do not use a wheelchair: thus the design features recommended below will be of benefit to a very substantial number of people.

Performance criteria: whether the vehicle is Type One or Type Two, ease of getting in and out is critical for many disabled people. This applies particularly to passengers with walking difficulties (who constitute the single largest group of disabled people) as well as wheelchair users who can transfer from their wheelchair to a seat in the taxi. To minimise any difficulties, the seat position needs to be close to the door (also very helpful for passengers transferring from a wheelchair) and at a height that is comfortable for the passenger.

There should be a reasonable space in front of the passenger seat, as some passengers find it difficult to bend their legs. Some disabled (and many elderly) people swivel around on their seat when alighting and place both feet in the pavement before levering themselves off the seat. To do this comfortably means that the seat squab should not be too high and there should be the unobstructed space (the exit radius) to allow them to do this.

Table 8. Type One and Two dimensions and other features

Item	Dimensions in mm recommended
Seat spacing: distance between the front surface of the seat back and back(s) in front	At least 650 mm
Seat position : horizontal distance from near side of seat squab to outer edge of door sill	No more than 250 mm
Seat height: floor to seat squab	300 – 450 mm
Clear floor space in front of seat (foot space)	At least 300mm
Exit radius: the clear space between the front nearside corner of the seat squab and the door frame (A or B pillar)	At least 350mm
Door closure reach	Up to 450 mm
Door handles	Minimum 65 mm long
Door release effort	15 - 20N*
Grab handles: dimensions	Circular cross section, with a diam. of 20 to 45 mm (35 - 40 preferred) and clearance of 45 mm from adjacent surfaces
Grab handles: positions	Vertical on either side of passenger door from at least 900 mm down to 500 mm. Interior grab handles should also be provided as appropriate
Visibility: colour contrast	Door handles, grab handles, step and ramp edges, door edge, front edge of seat squab and perimeter of driver communication 'window'
Lighting: passenger cab (applies only when vehicle is stationary)	150 lux, enhanced to 200 lux at steps, meter display (unless internally illuminated), safety signage and communication window

\* Research with disabled users found a force of up to 5.4N to be ideal, but this is considered unrealistically low in practice.

When alighting, many disabled people will grasp the side of the door opening (frame) to help them get out of the seat. Thus the position of the door frame in the horizontal plane should be close to the back of the passenger seat.

The distance from the nearest forward facing seat to the nearside door handle should be such that a seated passenger can reach the handle without having to get up out of the seat. The door handles (internal and external) should be designed to be easy to grasp and to move by people with arthritic hands or with limited manual dexterity and strength.

Grab handles should be provided at the passenger entrance door to help ambulant passengers board easily and in the interior of the taxi, depending on the size and layout of the vehicle. Colour contrast of the features listed in the table will assist passengers with low vision as will adequate lighting within the passenger cab.

The option of fitting an induction loop should be considered, as this will help passengers who use a hearing aid. The taxi meter should have a display that is clearly visible to passengers and an audible facility to state the fare.

In addition, consideration could be given to providing a swivel seat (with or without vertical movement) or some equivalent means that is safe and convenient to use. If a swivel seat is provided it is recommended that there should be a minimum distance between the highest point of the seat squab and the top of the door opening of 760 mm and the squab should be between 450 mm and 550 mm above ground level when deployed. Also, when deployed, the front edge of the seat should project at least 100 mm from the side of the vehicle.

The taxi should have sufficient luggage space to carry a folded wheelchair. The German standard DIN 13249 recommends a boot large enough to take a folded wheelchair measuring 400 mm wide x 1 100mm high x 1250mm long. These dimensions make provision for a large wheelchair that can be collapsed laterally, but not dismantled

or further folded. The ISO reference wheelchair has dimensions of 440 mm x 760 mm x 820 mm with the push handles folded down and the footplates folded back. Information on the dimensions of boot space in a wide range of cars is available on the Ricability web-site: [www.ricability.org.uk/carmeasurement/index.html](http://www.ricability.org.uk/carmeasurement/index.html)

### **14.3 Encouraging Provision of Accessible Taxis**

The introduction of accessible taxis can be done either by regulation or by financial incentive, or possibly by a combination of both. Although no country has (to date) comprehensive regulations on accessibility, a number have regulations that just concern taxis used to carry disabled people and some UK local authorities have mandated for all taxis in their area to be wheelchair accessible.

On the financial side a number of different initiatives are possible. These can include reducing duties or taxes paid on new accessible taxis: in some countries these amount to a substantial proportion of the total vehicle purchase price. A significant reduction in them could be expected to result in a substantial increase in the number of accessible taxis. Where taxi licences are expensive, or where a strict limit on numbers of licences is applied, thus giving licences a substantial value, a low-cost licence or the granting of additional licences only for wheelchair accessible vehicles might increase numbers.

Another approach to consider is the use of user-side subsidies: giving disabled people the money to buy taxi services. This will lead to the greater use of taxis by disabled people and may thus encourage more operators to buy accessible vehicles, but probably not in any significant numbers.

Local authorities can also support the introduction of accessible taxis by specifying their use in contract work; for example that of providing school transport for disabled pupils.

The evidence from the study is that some form of support and/or mandatory regulation is needed if a significant number of fully

accessible taxis are to be made available. It is not possible to be prescriptive about which policy is appropriate, because circumstances vary greatly from one country to another. However, it is clear that national governments need to take the lead in this area. Leaving the provision of accessible taxis just to local authorities is likely to lead to a patchwork of provision, lacking in consistency from area to area.

#### **14.4 Infrastructure**

It is recommended that local authorities should consider how the infrastructure used by taxis can be improved to make it more accessible for disabled people. Chapter 12 of the report provides guidance on this.

Recommendations include the provision of taxi ranks at railway, bus and coach stations and in major shopping centres. These ranks should be designed so that there is adequate space for wheelchair accessible taxis to deploy their ramps, preferably onto a raised area of footway so that the ramp gradient is reduced.

Sheltered seating should be provided and there should be a good level of lighting. Information should be given, including the times that taxis operate from the rank and the telephone number(s) of operator(s) serving the rank. A public telephone or a direct line to the taxi operator should be available and usable by wheelchair passengers.

#### **14.5 Training**

As stated in Chapter 13, training in disability awareness is essential for all taxi staff, including those who take calls for service as well as the drivers themselves. The training should cover all disabilities: sensory and cognitive as well as physical. Staff should be shown how to assist people with any disability, how to use any equipment on the vehicle and how to ensure that the passenger is carried safely and comfortably in the taxi.

The study has identified a number of good training guides and instructive videos that have been produced by member countries.



These can be used as the basis for training programmes, but it is strongly urged that any training programme should involve disabled people themselves. They are the experts in their disability and are best placed to explain to taxi drivers and other staff what kind of assistance is appropriate. Training should be provided for drivers of both the types of taxis recommended in this study and there should be periodic refresher courses.

## 15. CONCLUSIONS

The two levels of accessibility set out in this recommendation, if applied progressively to the taxi parc, should result in much improved travel opportunities for disabled people. A mainstream taxi parc composed of Type One and Two vehicles would meet the requirements of the great majority of disabled people, including a substantial proportion of wheelchair users.

It is also recognised, however, that the Type One wheelchair accessible vehicles will not carry all those passengers who need to travel seated in their wheelchair. To provide vehicles that cater for these passengers, vehicles that meet the design standards set out in Table 4 (“Ideal Dimensions for a Wheelchair Accessible Taxi”) are required. There is a place for vehicles of this type in some paratransit services and in services designed specifically for disabled people.

It is also recognised that there is very considerable variation in the make-up of taxi parcs in the countries in Europe. For those countries where there are no (or virtually no) vehicles that would meet even Type Two recommendations, a starting point might be to identify those standard mass-produced vehicles that are closest to meeting the recommendations – mainly on seat positioning/access – that are set out under Type Two.

National and local government vehicle manufacturers and conversion specialists, central and local government and taxi operators all have a part to play in developing and providing taxi services that are usable by disabled people.

## Authorities

- National government should promote the introduction, over time, of requirements for taxis to meet the accessibility recommendations.
- National (or local) governments (as appropriate) should also develop action plans indicating the timescales for taxis to meet, initially, at least the minimum requirements and, in due course, the recommended design dimensions. Any guidance or standards set should allow for the continued manufacture and use of current wheelchair-accessible taxis for a reasonable period. To introduce any requirements that preclude the continued use of these vehicles over a reasonable design life would not be in the interests of disabled passengers.
- Concurrently, governments should examine what financial incentives might be appropriate to assist the taxi industry in buying and using these vehicles.
- Local government should also ensure that infrastructure provision plans include necessary improvements to be made as the number of fully accessible taxis increases. They should also ensure that their parking control policies do not conflict with the use of taxis by disabled people.

## Vehicle manufacturers and converters

- Vehicle manufacturers should take account of the design parameters set out in this paper when planning and developing new vehicles (or major upgrades of existing vehicles) that will be used as taxis.
- Conversion specialists should continue their development of ways of making mass-produced vehicles more easily usable by disabled people: not just wheelchair users but people with other disabilities, sensory as well as physical.

## Taxi operators

- Taxi operators should pay particular attention to training their staff in disability awareness. This training should be given to taxi drivers and to other staff - for example, those in booking offices - who deal with members of the public.

In conclusion it should be reiterated that the recommendations made in this paper should not be interpreted as formal standards. But equally the recommendations have been developed from extensive discussions and research with the industries involved and, most importantly, with disabled people. They do not attempt to produce an ideal solution, but to give practical guidance, which if adopted by national governments, will be of considerable benefit to the more than 45 million disabled people who live in Europe.

## **ANNEX 1 COMPANIES AND ORGANISATIONS CONSULTED\***

### **Vehicle manufacturers**

ACEA  
DaimlerChrysler AG  
Fiat Auto S.p.A.  
LTI Limited  
Mercedes–Benz GmbH  
PSA Peugeot Citroen  
Renault  
Volkswagen AG

### **Conversion companies**

Allied Vehicles  
Aquablue Minibus Industries  
Gruau Laval  
Manganese Bronze Holdings PLC  
Modec Ltd

### **Organisations representing disabled persons**

European Disability Forum

\* Individual companies and organisations did not necessarily subscribe to all detailed aspects of the ECMT-IRU approach.



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# IMPROVING ACCESS TO TAXIS

Taxis are an essential mode of transport for disabled and older people. The combination of the personal service they offer, their wide availability and door-to-door operations enable them to respond particularly well to the travel needs of people with disabilities. Although several countries have made progress in improving the accessibility of taxi services, much remains to be done. This joint ECMT/IRU study examines factors relating to the design and manufacture of taxi vehicles and considers practical measures to increase the production and use of accessible taxis.

Recommendations on taxi vehicle design take a two-tiered approach: Type One for wheelchair accessible taxis, Type Two for standard accessible taxis. The recommendations are intended to be phased in within a reasonable time period – not necessarily to be implemented immediately. The study points out that good vehicle design alone is not sufficient to ensure accessibility, and explores other factors, including infrastructure and driver training, that, together with appropriate design, will lead to the development of a taxi service that is genuinely fully accessible.

The report is the fruit of extensive consultation with European-based motor vehicle manufacturers and conversion specialists, disabled people, representatives of the European taxi trade and national governments. It starts with the needs of disabled users, and then takes account of what would be feasible for vehicle manufacturers and what would be acceptable to the taxi trade. The recommendations provide practical guidance, which if adopted by governments, vehicle manufacturers and operators, will be of considerable benefit to the more than 45 million disabled people who live in Europe.



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