

Urban Transport Benchmarking Initiative Year Two



Year Two Final Report

**Urban Transport
Benchmarking Initiative**

July 2005



The Urban Transport Benchmarking Initiative

Year two final report

Prepared for

**European Commission
Directorate General for
Energy and Transport**

by



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Project Number	L/04/182
Version	1.1
Date	July 2005
File location	\\Ttr01\company\TTR PROJECTS\CURRENT PROJECTS\EC Benchmarking Year 2\Technical\Project Reports - Year Two for QC\A0 Final Report
Last edited	26/07/2005
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0. EXECUTIVE SUMMARY

This document is the final report of the second year of the Urban Transport Benchmarking Initiative. The report provides an overview of year two of the project and summarises the headline results from the benchmarking activities. This document is supported by full reports of each of the four thematic working groups and the findings from the common indicators, which were collected by all participants in the initiative.

Year two of the Urban Transport Benchmarking Initiative was launched in September 2004 and the five themed working groups established during year one of the initiative continued to evolve their chosen topics based upon the following themes; Behavioural and Social Issues in Public Transport, City Logistics, Cycling, Demand Management and Public Transport Organisation and Policy. Due to a lack of sufficient interest from participating cities the City Logistics group ceased its activities in February 2005 and was not replaced due to the advanced stage of the project. Instead, a joint working group visit was organised between the Cycling group and the Behavioural and Social Issues in Public Transport working groups and a separate report of this joint meeting and site visit has been produced.

Each of the working groups attended three site visits during the course of year two of the initiative, with a total of 10 different cities being visited by working groups from the Urban Transport Benchmarking Initiative. The site visits organised during year two of the initiative were held in; Copenhagen, Dublin, Paris, Madrid, Stuttgart, Brescia, The Hague, Glasgow, Bologna and Athens. These site visits were used partially to provide meeting time for the working groups in which the participants discussed progress in the benchmarking process and planned the next phases of development, as well as allowing the participants to focus upon the good practices evident in the cities being visited. The site visits held in Brescia was jointly attended by the Behavioural and Social Issues in Public Transport and Cycling working groups and included a workshop session in order to consider the links between the themes. The outcomes of this meeting have been reported in Annex A6, which supports this document.

A total of 23 cities submitted data for the year two common indicators and this data was compiled alongside the information from year one of the Urban Transport Benchmarking Initiative and that collected by the PLUME (PLanning and Urban Mobility in Europe) benchmarking exercise. PLUME was a European Commission DG RESEARCH project which considered the integration of land-use and transport planning as part of the City of Tomorrow Cultural and Key Heritage Action. As part of the PLUME project a group of cities collected the same common indicators from year one of the Urban Transport Benchmarking Initiative. The data was analysed by the project team in order to highlight interesting comparisons and identify key trends. The detailed findings of the common indicator analysis are included in the common indicator report in Annex A1 and a number of policy implications have been outlined for small, medium and larger cities. The analysis of the data collated for the common indicators identified the following main trends:

The main trends from year one of the benchmarking initiative were supported using the broader data-set. These were:

- Average income levels have an impact upon public transport use and car use in cities/regions. Where GDP per capita was found to be high, the modal share of public transport was generally lower and the proportion of trips made by car was higher. This has obvious policy implications for both less affluent cities/regions and wealthier cities/regions, because it implies a clear preference for car travel. People who can afford to travel by car appear to do so unless traffic congestion, lack of parking or access restrictions associated with large, heavily urbanised

cities/regions prevent them from doing so (as in London or Rome). It also implies that people in less affluent cities/regions would travel by car, if it were more affordable, but instead rely upon public transport.

- Cycling was found to be popular where it had been encouraged by investment.
Cities/regions that have larger cycle lane networks tended to be those with higher levels of GDP per capita. The cities/regions that have large cycle lane networks in proportion to the size of the urban road network were also found to display the highest levels of cycling modal share. This sends a clear message to policy makers that are keen to develop a cycling culture in their cities/regions. People are more likely to cycle where they are provided with the facilities that enable them to cycle safely and quickly.
- A critical mass of population is necessary to support a metro system.
The majority of cities/regions with populations in excess of 500,000 inhabitants have metro systems, all of which are supported by a wide range of other public transport modes (bus, train and particularly tram) and were generally focused upon central urban areas (those more extensive networks of Paris and London are exceptions). Averaging the size of metro systems across the metro cities/regions revealed a guide threshold of approximately 46 km of metro per million inhabitants. Although this needs to be considered in relation to the other public transport modes available in each city, it does suggest that Dublin could be considered as a potential metro city. Cologne also falls into this category, although it has an extensive tram network which runs underground in the central areas of the city.

Additional trends using new data from year two in the initiative have also been identified and these include:

Public Transport Trends in the Benchmarking Cities

- Smaller cities are largely reliant upon bus services for the delivery of their public transport and generally demonstrate lower levels of public transport use which is reflected by the modal share data collected.
- Metro and tram systems, which generally account for significant proportions of the total number of passenger kilometres travelled, are most prevalent in cities with populations greater than 600,000 inhabitants. In six of the eight “metro cities” which provided data, the proportion of passenger kilometres travelled by metro is approximately 25-30%.
- In several cities the infrastructure available for buses (e.g. bus stops) does not appear to provide adequate wheelchair access in relation to the proportion of the bus fleet that is wheelchair accessible. This is probably because in these cities a high proportion (if not all) of the accessible bus fleet may operate on a limited number of routes, e.g. “showcase” or “quality bus corridor” routes on which accessible stop infrastructure is concentrated.
- Many of the cities with smaller populations demonstrate greater proportions of wheelchair accessible bus fleets than the largest cities involved in the initiative, as do UK and German cities.

Urban Transport Speed and Cost

- Of the four cities (Budapest, Madrid, Oxford and Warsaw) which reported public transport modal shares greater than 50%, and were able to provide data relating to average peak-hour speeds, only Budapest demonstrated a faster average peak-hour speed for public transport than private motorised modes. This suggests that the urban traveller does not base his/her decisions

solely upon the speed of the transport modes available to them. Issues such as the cost of, and access to, suitable public transport services are also likely to influence these decisions.

- Some cities face a distinct disadvantage when trying to make public transport an attractive option for people travelling during peak public transport hours, because the road network can provide the private motorised traveller with a considerably faster journey than the public transport system. The cities where private modes are considerably faster than public transport modes in the peak hour are; Cologne, Bucharest, Helsinki, Dresden, Rotterdam, Malmo, Clermont Ferrand, Oulu and Suceava. In these cities there appears to be considerable potential for greater demand management measures.
- When considered in real terms (as a percentage of GDP per capita) the point-of-use costs associated with travelling by car, e.g. parking and petrol, appear to have a significant link with the modal splits for car and public transport trips. The region of Merseyside and the cities of Prague, Bucharest and Budapest all have relatively expensive parking and petrol costs (as a percentage of GDP per capita) and these cities all display greater modal shares for public transport than they do for car use. Conversely the city of Oulu has the cheapest petrol and car parking facilities as a percentage of GDP per capita and also displays a very large car modal share of 90%.

Urban Transport Mode Share and Infrastructure Provision

- Scatter-plot and correlation analysis was not able to find a similar positive relationship between the density of the road network, car use and the level of car ownership in the benchmarking cities as identified in the Commission for Integrated Transport's "World Cities Research"¹. Despite this, there is evidence that some of the cities do follow this trend, which provides some evidence among the benchmarking cities of a direct positive relationship between the provision of road space, the extent of car use and the levels of car ownership in a city.
- This serves to outline the fact that a broad range of issues (e.g. behavioural, social, economic, political and climatic) combine to affect the level of ownership and use of cars in cities. It is therefore possible to conclude that the availability of road space is merely one of these factors.
- A similar comparison of the public transport modal shares of the cities with metro systems and those without revealed that, on average, the cities with metro systems have larger public transport modal shares than those which do not have a metro system. This indicates that metro systems stimulate public transport use and are usually found in cities with larger populations (greater than 1 million inhabitants).

Comparisons between EU15 and New Member State (NMS) cities

New Member State cities involved in the Urban Transport Benchmarking Initiative demonstrated;

- A significantly higher level of public transport use, in terms of the average number of trips, per person, per year, compared to cities in EU15 states.
- Public transport fares were not noticeably inexpensive when compared in real terms (as a percentage of GDP per capita) with those in cities from EU15 states.
- Significantly smaller proportions of the bus fleets in New Member State and Accession Country cities are accessible for wheelchair users compared to those in cities located in EU15 states.
- Urban road networks are less densely developed in New Member State and Accession Country cities than those in EU15 cities.

¹ Commission for Integrated Transport web reference: <http://www.cfit.gov.uk/>

The findings of the analysis of the thematic indicators for each working group are available in the working group reports in Annexes A2 to A5 but are also summarised below;

Cycling

The cycling working group pursued three research questions during year two of the Urban Transport Benchmarking Initiative, building on the findings from the year one activities. These were: ***“How does the city measure the effects of its cycling policies and reflect this in programme review”***, ***“Which marketing techniques are being used to engage specific audiences”*** and ***“How can cycling be integrated with modes of public transport to encourage mutual demand uptake?”***

The following conclusions and recommendations were drawn from the analysis of the thematic indicators and working group visits:

- The three Danish and Swedish cities (Aalborg, Copenhagen and Malmö) demonstrate significantly more developed cycle networks than the cities of Brescia, Glasgow and Prague. The positive effect upon the modal share of cycle trips in these cities sends a clear message to cities seeking to encourage cycling in their city - the most important thing to do is ensure that an effective cycle network is established.
- Cycling data which has some practical use for policy monitoring and ongoing evaluation is currently gathered in a relatively piecemeal fashion from an assortment of local stakeholders. Mechanisms for the collection of data are relatively unclear, with ad-hoc surveys and involvement in projects such as the Urban Transport Benchmarking Initiative providing the impetus for some of the cities to collect and analyse data relating to their cycle network and cycle usage.
- Despite the range of sources for cycling data the participants in the group were generally able to find statistics for the benchmarking exercise, although this often required some effort on their part. The participants in the group suggested the most useful data for policy monitoring related to;
 - Cycle network length
 - Cycle accidents
 - The statistical risk of cycling
 - The availability and use of cycle parking
 - Formal surveys of cyclist travel behaviour
 - The extent of engagement with employers and schools to promote cycling
- Formal fiscal support for the integration of cycling and public transport modes is sparse, with Glasgow being the only city in the working group with a formal budget allocation for the integration of public transport and cycling.
- The working group felt that having a bicycle available during the whole journey is generally very practical and offers the greatest intermodal flexibility. The group suggested that the approaches to developing integrated cycle networks tend to be based either upon bike and ride provision, or the free carriage of bicycles on public transport. The consensus of the group was that, while the latter of these two approaches offered the most flexibility, the former provided the better short-term option because of a perception that it would be easier to provide secure cycle parking facilities than it would be to provide these facilities on-board vehicles.

Behavioural & Social Issues in Public Transport

The Behavioural and Social Issues in Public Transport working group also chose to develop its working group theme from year one in order to sharpen the focus of the topic. The group looked at the user group of younger people in order to consider the theme of **“Young people as a target group for public transport marketing.”**

The following interesting conclusions can be drawn from the analysis of the collected information;

- In the majority of the cities and regions in the working group approximately 20% of the total population are aged between 10-25 years old. The Emilia Romagna region is a key exception, where the population is significantly “older” than the others in the working group. The proportion of public transport trips made by people in this age group is encouraging and suggests that younger people are relatively intensive users of public transport services.
- After trips for study & education purposes, work and leisure are the most common reasons for people in the target age group of 10-25 to make trips by public transport. It is therefore possible to suggest that fare offers and other incentive schemes designed to encourage public transport use could target these types of trips, possibly in the form of all-inclusive public transport travel-cards which are made available at a reduced rate.
- The fact that younger people do appear to use public transport fairly intensively has been attributed to the fact that, prior to the age of 18, they have a more limited range of travel options. The age of 18 is relatively uniform across the cities and regions involved in the working group as the age at which it is possible to commence driving. Prior to this age younger people are not legally allowed to drive and are therefore more likely to be reliant upon public transport in order to get around. The age of 18 can therefore be considered as a threshold age for public transport and car use among younger people.
- This concept of a “threshold” age at which younger people may begin to use public transport less in order to make urban trips has the potential to be utilised by cities in order to structure their approaches to marketing and incentivising public transport for younger people. The key age groupings identified by the working group were 10-14 year olds (Young independent travellers), 15-17 year olds (Independent pre-driving age) and 18-25 year olds (Driving age). The group of young people who are old enough to travel independently, but too young to drive were considered as the key target for the marketing and promotion of public transport. The younger target group was considered as the main aim for educational activities, while the “Driving Age” target group was considered as the age at which financial incentives were likely to make the most impact upon the younger person’s propensity to travel by public transport.

Public Transport Organisation & Policy

Based upon their findings from year one of the Urban Transport Benchmarking Initiative, which highlighted the role of service quality contracts in the attainment of high performance levels, the participants involved in the Public Transport Organisation & Policy working group opted to consider the role of contracts between public transport operators and authorities.

The following interesting conclusions were drawn from the group’s analysis of the collected information;

- The use of contracts between public transport operators and authorities is considered or planned in most networks represented in the working group, but they currently are fully implemented in only a few networks.
- Most public transport networks currently using contracts, or planning to use them, have included quality provisions. However, the variety and the type of quality indicators included in the contract vary significantly between networks, as well as the methods used to measure and assess quality. This range in approaches to quality in contracts reflects the variety of purposes of public transport contracts. For this reason, fruitful comparisons between networks are necessary in order to be able to consider the objectives and specific features of each contract in detail.
- It became apparent during the discussions that quality provisions in contracts between public transport operators and authorities were not always part of a comprehensive quality approach based on customer perceptions and expectations. The quality approach naturally exceeds the framework of the contract between the operator and its authority, and it involves the whole service production process.
- In relation with the previous point, participants recognised that the assessment of the impact on customer satisfaction of implementing a contract, and in particular its quality provisions, was usually a missing element in their management process. In that respect the regular opinion surveys of S-Bahn passengers carried out on behalf of the Verband Region Stuttgart emerged as an interesting example.
- The approach of the working group on Public Transport Organisation and Policy consisted of investigating practices behind the benchmarks. This approach was appreciated by the participants who gained a practical and detailed understanding of the contractual practices of the other networks, including the context in which contracts take place. Each participant could identify which practices would be appropriate in their own situation. The difficulty however lay in the absence of a common self-assessment framework, in other words, in the absence of common methods to assess to what extent the introduction of quality provisions in the contract has led to an improvement of the performance. There is thus a degree of subjectivity in the assessment of the respective practices of the participants in the working group.

Demand Management

The Demand Management working group focused upon “*The relationship between land use planning and transport planning*” as the basis for its research in year two of the Urban Transport Benchmarking Initiative. The key findings and conclusions from the working group were:

- The working group discussed the impact of urban density on transport performance in depth as there was a mixture of high and low density cities in the group. By comparing population density and job density with the modal share for car journeys (from the common indicators), it was found that car use was lower in the most densely populated areas whereas less densely populated cities had higher levels of car use. The same trend was observed for job density; where the density of jobs was higher, the use of cars was lower.
- The working group discussed the role of Park & Ride in cities. In the Ile de France, the Park & Ride network at rail stations has historically grown without a strategic plan to develop it but now the regional authority sees it as a good way of intercepting car trips from the outer region. Similarly, in Dublin and The Hague, Park & Ride is viewed as a transport mode for

trips being made from the region into the metropolitan area. Such Park & Ride sites are ideally situated at the edge of the metropolitan area or outside it. City authorities in the working group prefer a policy of encouraging “walk and ride” trips on public transport in the metropolitan area, rather than encouraging Park & Ride by metropolitan residents. Park & Ride sites within the metropolitan area, closer to the centre of the city, are seen as being a useful way of intercepting journeys made by visitors to the city, particularly tourists in the case of The Hague. The Hague provided a good example of targeted dynamic travel information to encourage tourists travelling to the beach resort in The Hague to use Park & Ride within the metropolitan area, to relieve congestion at the resort.

Policy implications

One of the wider aims of the Urban Transport Benchmarking Initiative has been to try and link the findings of the project to urban transport policy and suggest some factors that may have an impact upon these policies. The following potential policy implications have emerged from the findings of year two of the benchmarking initiative:

Policy implications for larger cities (populations of more than 1 million inhabitants)

Larger cities demonstrate the most densely developed transport networks with the widest variety of public transport modes and are most likely to have metro systems and urban heavy rail networks, which provide rapid transit in central areas and are unaffected by road traffic congestion. Bus networks in larger cities often act as feeder services for tram/heavy rail/metro systems and, compared to those in less populated cities, a smaller proportion of the bus fleet in larger cities is wheelchair accessible. The Urban Transport Benchmarking Initiative’s findings suggest that metro systems coincide with greater public transport modal shares in cities. The presence of a metro encourages greater public transport use, because it is rapid, efficient, segregated and easy use. The cities with the largest populations and population densities have all introduced metro systems, because they represent the most efficient way of transporting large numbers of passengers. The need for a sufficient critical mass of citizens (or potential metro users) is a basic requirement for successfully introducing a metro system. In this respect larger cities have a distinct advantage over medium-sized and smaller cities, because their densely developed central areas and larger populations provide the ideal conditions for sustainable transport use compared to private car travel for urban trips.

The larger cities involved in the Urban Transport Benchmarking Initiative tend to be national or regional economic centres which face the issue of managing the demand for travel into their metropolitan areas. Unlike in less-populated cities policy makers in large cities, which are usually core zones of economic growth and inward investment, have greater potential to make bold transport policy decisions. The fact that larger cities often have public transport networks in place which provide better access to central areas than is possible by car, means that policy makers in these cities have the potential to implement demand management measures aimed at encouraging further modal shift to public transport and sustainable modes. Rome and London are good examples where demand management measures have been successfully adopted in order to discourage car use and encourage public transport travel.

Larger cities provide less support for cycling as a mode of transport, demonstrating relatively small cycle networks as a proportion of the total road network. Two main types of barriers prevent city authorities from promoting cycle use in the same manner as medium-sized and smaller cities.

- Land space is at a premium in the centre of large cities as a result of the dense urban development. As a result there is often not sufficient space to integrate cycling infrastructure into the existing environment without severe disruption and cost. It is hard to promote cycling or developing a cycling culture when the physical infrastructure which cyclists require is not in place.
- Road traffic congestion, pollution and the lack of safe routes deter people from attempting to cycle.

These barriers need to be addressed through bold policy-making to encourage cycling in larger cities. The finding from smaller cities suggests that the uptake of cycling is often infrastructure-led and therefore if larger cities can engineer solutions which overcome the lack of space for cycling infrastructure then it should be possible to generate a cycling culture and increase the uptake of cycling.

A key finding of the research of the Urban Transport Benchmarking Initiative is that the challenge for policy makers in larger cities is to manage the existing transport infrastructure in order to optimise the use of public transport and reduce car use, primarily through the implementation of demand management measures. Larger cities should focus upon creating opportunities for sustainable modes of transport (walking and cycling) to increase their modal share and improve the accessibility of the existing public transport system in order to open up urban transport systems to provide equality of access for disabled people.

Policy implications for medium-sized cities (300,000 – 1 million inhabitants)

The cities with between 300,000 and 1 million inhabitants (medium sized cities) demonstrate a broad range of urban transport issues which overlap with both the smallest and largest cities involved in the Urban Transport Benchmarking Initiative. The medium-sized cities are often local or regional economic centres, which are likely to have bus and light rail networks and approximately half have metro systems, some of which are being expanded or are planned for expansion to meet the needs of growing populations and nearby conurbations (e.g. Rotterdam, Helsinki, Lisbon).

These medium-sized cities therefore share the policy implications for both smaller and larger cities, since many are large enough to support high-load mass transit systems, but are not as densely developed as the largest cities in the initiative and therefore also display relatively high levels of car use. The resultant challenge for policy makers in medium-sized cities is to balance the pressure of car use through careful demand management and parking controls which increase the cost and reduce the accessibility of private motorised travel, yet simultaneously seek to encourage greater levels of public transport use, walking and cycling through the development of infrastructure which reflects the size and stature of the city.

Policy implications for smaller cities (less than 300,000 inhabitants)

Smaller cities involved in the benchmarking initiative demonstrate much lower density public transport networks and are largely reliant upon bus networks to provide public transport services. A key obstacle for transport policy makers in these cities is that the road network can often provide the car/motorcycle user with a faster, more convenient journey than the public transport system can offer. As a result car use is generally higher in the less populated cities and, although there is considerable potential for demand management measures to be applied in these cities, it is possible that local authorities are often reluctant to use them because of the risk reducing the attractiveness of the city to businesses and visitors.

In terms of cycle use in cities a key finding was that the highest levels of cycle use and the largest cycle networks as a proportion of total road space were found to exist in smaller cities. The lower densities demonstrated by less populated cities and greater availability of land for traffic-free cycle routes have provided transport policy makers with ideal conditions to encourage cycling. Urban planners in larger cities may seek to learn from the practices of smaller cities in this field in order to encourage greater use of cycling.

Transport policy makers in cities with smaller populations are faced with the challenge of encouraging public transport use where there may be an insufficient critical mass to provide an extensive, high frequency public transport network and where car use is very high. Subtle use of demand management measures aimed primarily at reallocating road space to sustainable modes, the continued development of sustainable modes (walking and cycling) through pedestrian and cycling infrastructure and the development of high quality, accessible bus services could be considered as key challenges for policy makers in cities with smaller populations.

Policy implications for cities in Central and Eastern Europe

Cities in New Member States consistently display large public transport modal shares relative to car use, although levels of car ownership are increasing in these cities. The experiences of cities located in Southern Europe (e.g. Lisbon) suggest that levels of car ownership dramatically increase following accession to the EU, primarily as a result of the growth in income levels. The Urban Transport Benchmarking Initiative has demonstrated a link between the selection of modes and the level of GDP per capita (a proxy indicator for economic activity and, indirectly, the average income level) and it is therefore possible that cities in New Member States will experience similarly rapid growth in the level of car use.

One challenge for transport policy makers in Central and Eastern European Countries is therefore to continue to maintain the high levels of public transport use in the face of rising car ownership. One way of assisting this process is to carefully benchmark the development of new road space in cities in Central and Eastern Europe, because these cities currently demonstrate significantly less road space per square kilometre when compared to EU15 cities. It is possible that continuing to constrain the size of the urban road networks in these cities could act as a natural form of demand management measure. Integrating the development of urban transport systems with land-use planning in cities in Central and Eastern Europe may also help to regulate the pressure for rapid development which many observers are predicting as an outcome of accession to the EU.

Promotional and awareness campaigns are likely to be a useful tool in encouraging sustainable travel in cities in New Member States and Accession Countries. While it seems inevitable that levels of car ownership will rise in these countries, it is possible that excessive car use can be deterred by encouraging citizens to consider using alternative modes of travel by marketing and promotional campaigns and innovative transport planning.

1. INTRODUCTION

1.1 Project background

Year two of the Urban Transport Benchmarking Initiative represents an evolution of the work undertaken during the first year of the initiative (autumn 2003 to summer 2004). The project has continued to apply the concept of benchmarking to the urban transport systems present in cities across the EU, including the New Member States. This is in line with the European Union's policy approach, which places considerable importance upon the roles that attractive, efficient local and regional transport systems can play in the economic development and social cohesion of the member states. In the field of urban transport the exchange and promotion of best practices is one of the main policy tools that the European Commission possesses. Through a combination of quantitative data collection and benchmarking, and qualitative site visits the Urban Transport Benchmarking Initiative has sought to act as a conduit for good practice in EU cities. Year Two of the Urban Transport Benchmarking Initiative has therefore continued to compare the transport systems of the participating cities in order to identify and promote interesting practices in urban transport.

The benchmarking concept has considerable potential when applied to urban transport systems. A range of previous initiatives, not least the first year of the Urban Transport Benchmarking Initiative, have provided this project with the opportunity to deepen the focus of the benchmarking process and provide more comparable results. The development of more practical data indicators has aided the learning process for the organisations involved in the project and this has greatly helped to improve the robustness of the data collected for the project. These indicators have also been applied to the Planning Land-use and Urban Mobility in cities (PLUME²) benchmarking exercise in order that the baseline of background data for cities across Europe was widened.

The Urban Transport Benchmarking Initiative has adhered to the European Commission's subsidiarity principle by including as many urban transport stakeholders as possible. The process of the second year of the Urban Transport Benchmarking Initiative has been a fluid one, responding to address the issues raised by participants in the first year of the project, rather than following an overly rigid, predetermined process. In this way the subsidiarity principle has been fulfilled. The recommendations of interesting practices have been made by the participatory network of urban transport operators, user groups, local authorities and municipalities, rather than a single centralised institution. It is therefore intended that the project findings will provide a useful resource for other urban transport stakeholders and help them to implement innovative solutions to commonly experienced urban transport problems.

Year Two of the Urban Transport Benchmarking Initiative has been based around four themes, for which data has been collected by the participating cities. These themes have been organised into working groups and the activities of these groups in year two of the initiative reflect an evolution of the working groups' focus from year one:

- Behavioural and Social Issues in Public Transport
- Cycling
- Demand Management
- Public Transport Organisation and Policy

² PLUME project website available at: www.lutr.net, accessed on 11/05/05

The working group themes were selected by the participating cities to reflect their interests in relation to the issues currently salient for urban transport systems in cities. The views from representatives of the participating cities have provided input into the selection and definition of common data indicators, which have been used to benchmark general aspects of urban transport. In their respective working groups the participants have also chosen and defined a series of thematic indicators, which were collected during the course of the Urban Transport Benchmarking Initiative's second year. The thematic indicators are specific to each working group and aim to answer each group's chosen research questions. Each working group received technical and administrative assistance from an expert and a rapporteur, who were responsible for coordinating activities such as the definition and analysis of thematic indicators and the organisation of site visits.

This document is the summary report of the second year of the Urban Transport Benchmarking Initiative. The report provides an overview of the activities undertaken as part of the project and also summarises the headline results from the benchmarking process. This document is supported by full reports of each of the four working groups and the findings from the common indicators as well as the standalone report from the joint workshop session held in Brescia in March 2005.

1.2 The benchmarking concept

The concept of benchmarking has been used widely by many different types of organisation seeking to learn more about their operational shortcomings. The process of benchmarking involves comparing operational performance with similar institutions, organisations or enterprises in order to gain some understanding of the best practices employed within a given industry. Once performance differences across an industry are understood then each participating organisation has the potential to integrate best practices within the scope of its own operations in order to attain measurable performance improvements.

Successful Benchmarking =
Self Analysis + Identify Best Practices + Analyse Performance Differences + Implement Findings
Result = Narrowed Performance Gaps & Tangible Performance Improvements

The benchmarking process is usually centred upon performance indicators, which operate as a means of self analysis and help to identify key differences between participating organisations. The participants of a benchmarking exercise will collect data for these indicators in order to establish best practices in a particular field. Site visits or case studies are often used to showcase best practices, because this helps participants to understand more fully how the best practices have been developed and how they work on a daily basis.

Once benchmarks have been established it is the responsibility of individual participants to return to their respective organisations and implement the process changes that should improve performance levels. This requires a commitment from participants that the organisation is willing to co-operate not just in the process of benchmarking, but in following up the recommendations in order to implement change. This is not simply a case of "following the leader", but of constructively integrating the best practices that leading organisations have established into existing procedures.

In the case of the Urban Transport Benchmarking Initiative the city representatives that have participated in the first two years of the benchmarking exercise have been urban transport stakeholders. This included a range of organisations such as municipal authorities, public transport

operators, and regional authorities. It is intended that the organisations representing each of the participating cities will disseminate results relevant to their city to other local transport stakeholders. In a number of the cities and regions involved in the initiative local reference groups have been established, either through internal, inter-departmental, co-operation (e.g. Belfast and the Emilia Romagna region) or through collaboration between a number of stakeholders (e.g. Lisbon, Paris/Ile de France region and Brussels).

1.3 Comparisons with other transport benchmarking initiatives

Included in the final reports from year one of the Urban Transport Benchmarking Initiative were references to and comparisons with the findings from previous transport benchmarking activities, in particular the Citizen's Network Benchmarking Initiative. Where relevant throughout the project's year two reports similar references have been made to the findings of the first year of the Urban Transport Benchmarking Initiative.

The inclusion of relevant and comparable data from year one benchmarking cities and the cities involved in PLUME benchmarking has made it possible to revisit the findings from these two sets of data and re-evaluate trends identified. Compiling the three sets of data has also greatly increased the number of data indicators available for comparison, thus improving the statistical validity of correlation coefficients and trends identified.

1.4 Objectives of the Urban Transport Benchmarking Initiative

The key objectives of the Urban Transport Benchmarking Initiative were:

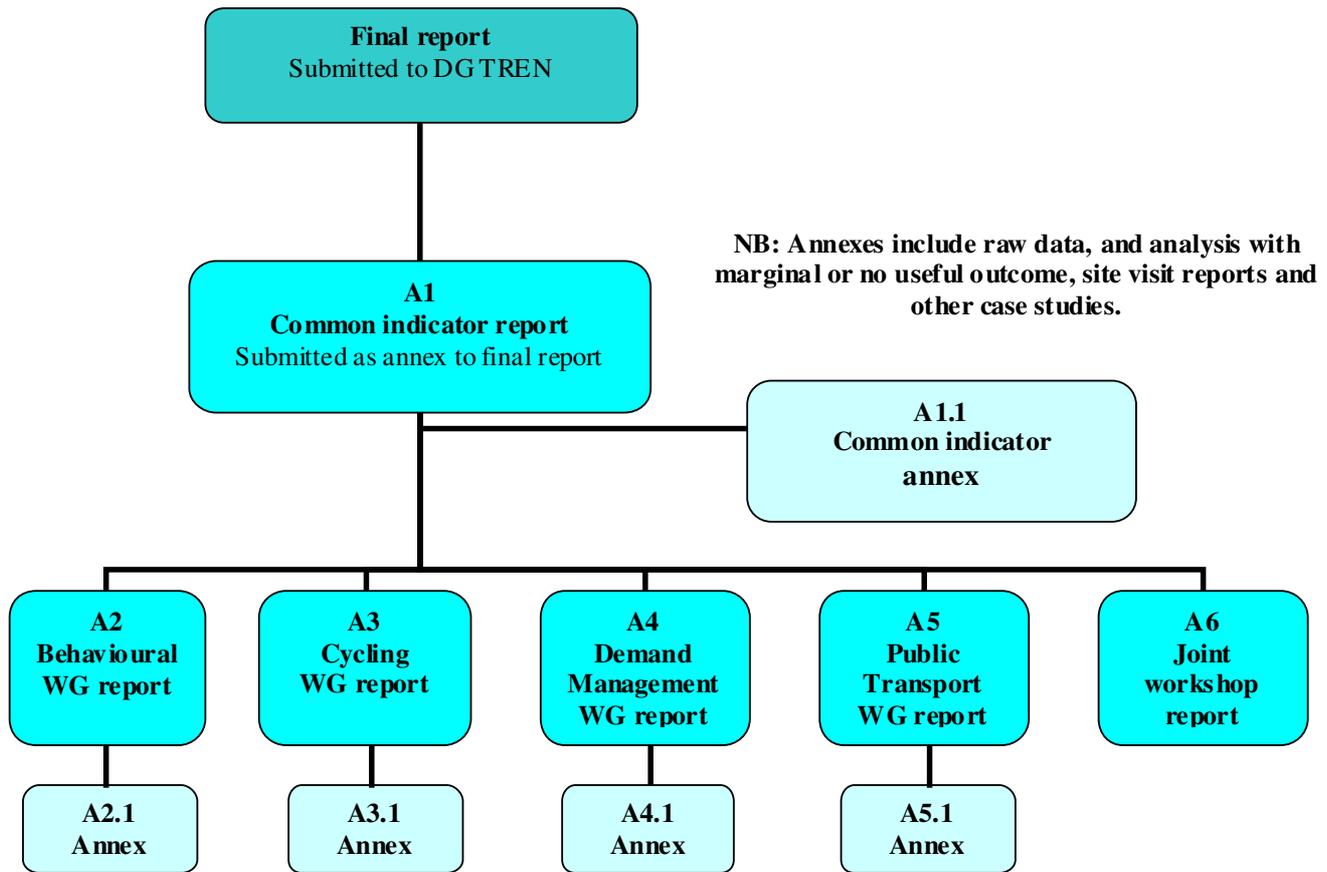
1. To select annually a group of participants representing local and regional urban transport stakeholders from 35-40 cities.
2. To agree a set of common performance indicators covering urban passenger and freight transport.
3. To undertake a comparative analysis across stakeholders.
4. To set up a maximum of 5 thematic working groups on topics agreed by the participants.
5. To organise site visits (3 per year) for the working groups through which to identify and study best practices.
6. To disseminate the results.

These objectives were largely achieved and a review of the achievements of year two of the Urban Transport Benchmarking Initiative is presented in the concluding section of this report.

1.5 Purpose and context of this report

This document represents the summary report of the second year of the Urban Transport Benchmarking Initiative. The document outlines the organisation of the project and summarises the findings of the project. This document is supported by a range of annexes (detailed in Figure 1.1), containing the reports that have been produced for each of the five working groups and for the common indicators.

Figure 1.1: Reporting structure for the Urban Transport Benchmarking Initiative



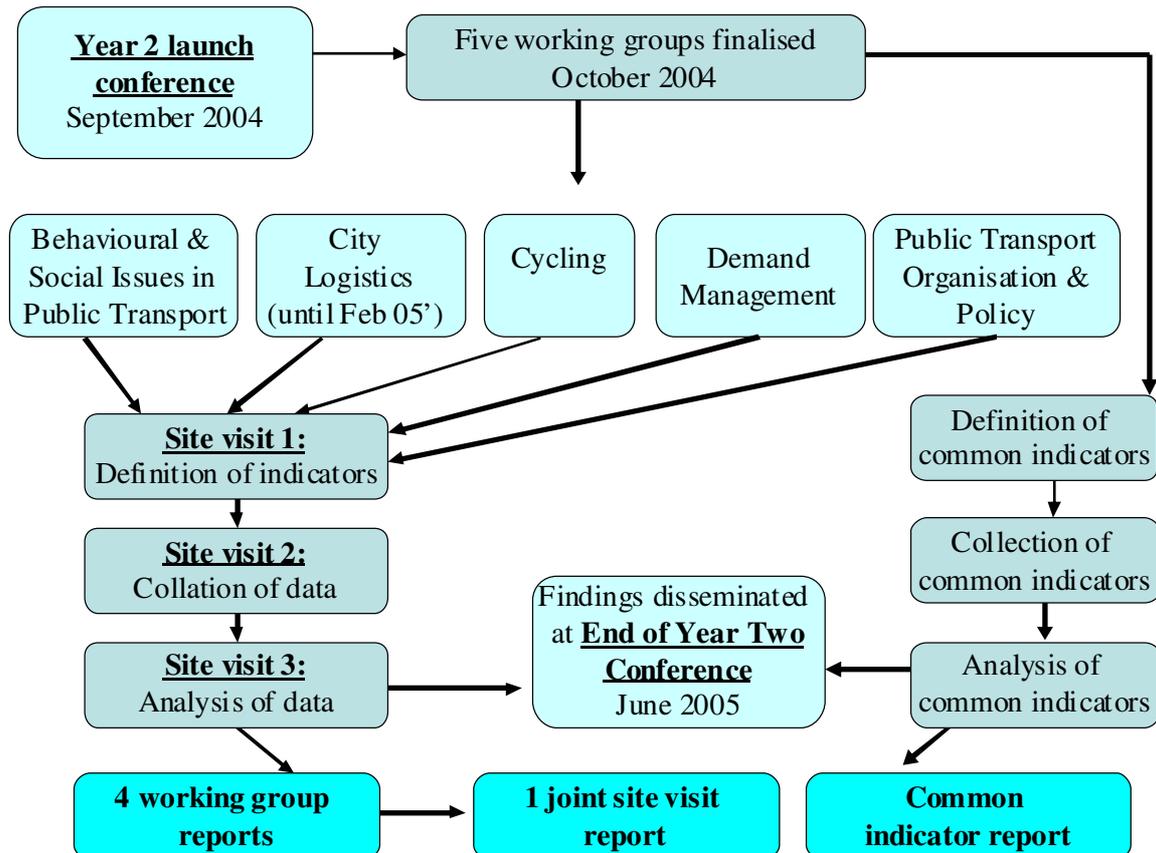
The remainder of this report includes an overview of the cities and regions that have participated in the Urban Transport Benchmarking Initiative (section 2). Section 3 of the report outlines key statistics and trends identified from the analysis of the common indicators. Section 4 summarises the findings of the four working groups which have focused upon different urban transport-related themes. The final section of the report outlines the conclusions from year two of the Urban Transport Benchmarking Initiative and makes recommendations for the development of the project for year three. A series of suggested next steps for the project are also included in section five of this report.

2. ORGANISATION, PARTICIPANTS AND SITE VISITS

2.1 Project Organisation

Year two of the Urban Transport Benchmarking Initiative was launched in September 2004 and the work of year two of the Urban Transport Benchmarking Initiative continued until June 2005, when the results of the second year of the project were disseminated at the End of Year Two conference. Figure 2.1 (below) outlines graphically how the project has progressed during its second year:

Figure 2.1: Year two of the Urban Transport Benchmarking Initiative



The five themed working groups established during year one of the initiative continued to evolve their chosen topics based upon the following themes; Behavioural and Social Issues in Public Transport, City Logistics, Cycling, Demand Management and Public Transport Organisation and Policy. Due to limited interest in the City Logistics theme this working group ceased its activities in February 2005 and was not replaced due to the advanced stage of the project.

Each of the working groups attended three site visits during the course of year two of the initiative, with a total of 10 different cities being visited by working groups from the Urban Transport Benchmarking Initiative. The site visits organised during year two of the initiative were held in; Copenhagen, Dublin, Paris, Madrid, Stuttgart, Brescia, The Hague, Glasgow, Bologna and Athens. These site visits were used partially to provide meeting time for the working groups in which the participants discussed progress in the benchmarking process and planned the next phases of development, as well as allowing the participants to focus upon the good practices evident in the cities being visited. The site visits held in Brescia was jointly attended by the Behavioural and Social Issues in Public Transport and Cycling working groups and included a workshop session in

order to consider the links between the themes. The outcomes of this meeting have been reported in Annex A6, which supports this document.

Once the working groups had advanced through the process of data collection and analysis the rapporteurs from each working group were responsible for producing an end of year report, with the help of the participants in the group. The key findings from year two of the project were disseminated at the end of year conference which took place in June 2005 and, as illustrated in Figure 1.1, the working group reports are annexed to this report.

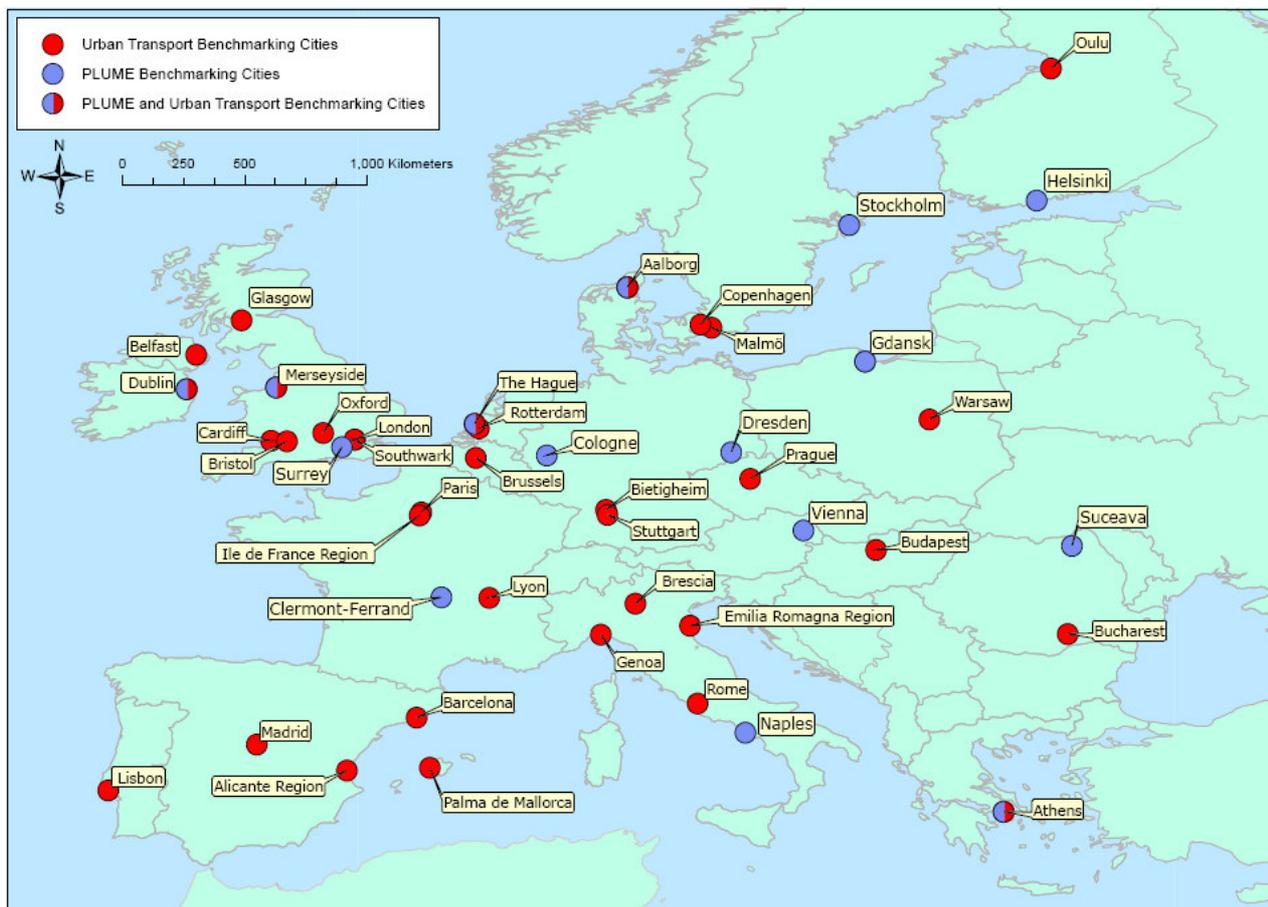
2.2 Participating cities and regions

A total of twenty six different cities participated in the second year of the Urban Transport Benchmarking Initiative and twenty three submitted data for the project’s common indicators. Among the data collected for the second year of the initiative a total of 6 cities were new participants in the initiative and these included:

- Cardiff
- Malmö
- Glasgow
- Palma de Mallorca
- Madrid
- Bietigheim-Bissingen

Including the data obtained from PLUME benchmarking cities and the first year of the Urban Transport Benchmarking Initiative, a total of 45 cities fell within the scope of this report, for which 42 sets of common indicator data were collected. The map shown in Figure 2.2 illustrates the wide geographical spread of the cities involved in the three projects.

Figure 2.2: Cities participating in the Urban Transport Benchmarking Initiative



The cities which participated in the PLUME benchmarking exercise collected the common indicators used in year one of the Urban Transport Benchmarking Initiative as part of their activity to compare the integration between land-use planning and transport strategies. This work was undertaken within the context of the PLUME (**PL**anning and **U**rban **M**obility in **E**urope) initiative which was funded by the European Commission DG Research as part of the City of Tomorrow programme. Along with the common indicators used in year one of the Urban Transport Benchmarking Initiative, the PLUME cities collected a set of indicators focusing upon land-use planning, transport strategies and the extent of integration between these two fields. The results of the PLUME initiative were presented at the project's final conference in Cologne in June 2005 and the full reports are available via the project website www.lutr.net.

2.3 Project site visits

During the course of year two of the Urban Transport Benchmarking Initiative a total of 10 different cities were visited by the working groups including:

- Copenhagen
- Dublin
- The Hague
- Athens
- Paris
- Stuttgart
- Glasgow
- Madrid
- Brescia
- Bologna

In year two of the Urban Transport Benchmarking Initiative a greater degree of attention has been given over to the site visits in order that the participants attending the meetings can learn more about the good practices in the cities visited. As a result many of the groups have included detailed summaries of good practices observed during site visits in the annexes of their final reports (A2.1 through to A5.1) and some working groups have included case study sections in the main bodies of their reports (Annex A2 to A5). The site visit reports are also available on the Urban Transport Benchmarking Initiative website at: <http://www.transportbenchmarks.org/events/site-visits.html>. Figure 2.3, below highlights some images from the cities visited over the course of year 2.

Figure 2.3: Cities visited by the working groups



Cities pictured are: Top left to right; Copenhagen, Paris, Middle left to right; The Hague, Stuttgart, Bottom left to right; Bologna and Glasgow

3. THE COMMON INDICATORS

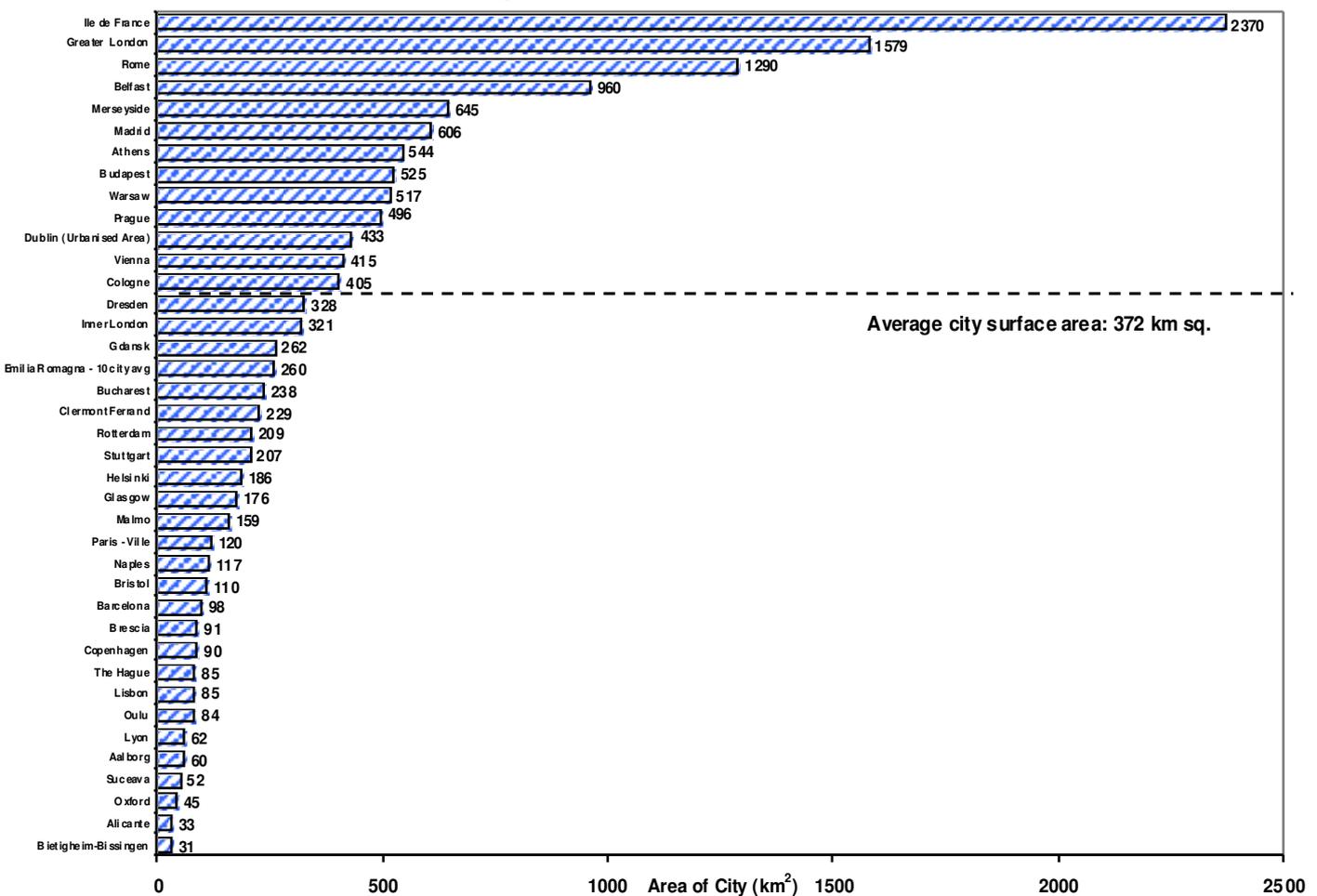
This section of the summary report outlines selected background information and the key findings drawn from the common indicator report (Annex A1 and A1.1). The common indicator report fully describes the process of indicator selection, data collection and data analysis and includes a complete list of the common indicators.

3.1 Background data

This section of the analysis displays the data used to provide a contextual overview of the cities and regions which have participated in the first two years of the Urban Transport Benchmarking Initiative and the PLUME benchmarking initiative. This data has been displayed to cover background statistics, such as population, area, population density and GDP per capita, as well as general data which describe the urban transport network in each of the cities and regions.

Figures 3.1 to 3.4 and Table 3.1 provide a range of background statistics for each of the cities and regions that participated in the Urban Transport Benchmarking Initiative.

Figure 3.1: Surface area of cities



Key data issues:

- Data relates to the study year of 2003, except for Oxford, Suceava, Lyon, Lisbon, Barcelona, Bristol, Naples, Helsinki, Rotterdam, Gdansk, Dresden, Cologne, Vienna, Warsaw, Athens, Rome and London (2002), Prague and The Hague (2004) and Merseyside (2005).
- Data for Rotterdam refers to the municipality of Rotterdam.

- Data for Paris and London have been displayed for both city/ville areas and the wider, metropolitan areas in recognition of the different sub-divisions in each of these cities.
- Data for Rome refers to the built-up area and not the surrounding metropolitan area.
- Data for Barcelona refers only to the city.
- Data for Dublin relates to the urbanised area of Dublin's District Electoral Divisions (DEDs).

Figure 3.1 illustrates the wide variety of cities that have collected common indicators through the first two years of the Urban Transport Benchmarking Initiative and the PLUME benchmarking activity. The cities range in size from Bietigheim-Bissingen, the smallest city in the initiative with a surface area of 31km², to the urbanised area of the Ile de France which covers an area of 2,370 km². In terms of both surface area coverage and population, the Ile de France (comprising Paris-Ville and surrounding areas) represents the largest city participating to have collected data for the Urban Transport Benchmarking Initiative and PLUME benchmarking. Along with Greater London and Rome, the Ile de France is one of three cities which are included in the analysis to have a built-up area which exceeds 1000 km². The mean average surface area of cities which have submitted common indicators is 367 km², although this declines to 254 km² if the values for Rome, The Ile de France and Greater London are excluded from the calculation.

Paris also displays the largest population, with 9.64 million inhabitants, among the benchmarking cities (see Figure 3.2, overleaf). London is the second most populous city with 7.3 million inhabitants followed by Rome and Athens. The smallest city in terms of size of population is Bietigheim-Bissingen Oulu, which has a population of just over 41,000. Figure 3.1 and 3.2 emphasise the wide range of cities that have participated in the Urban Transport Benchmarking Initiative. The cities displayed in Figure 3.2 have been divided into groups according to population size and these groupings are used as the basis for analysing similarly sized cities later in this report.

Figure 3.2: Population of cities

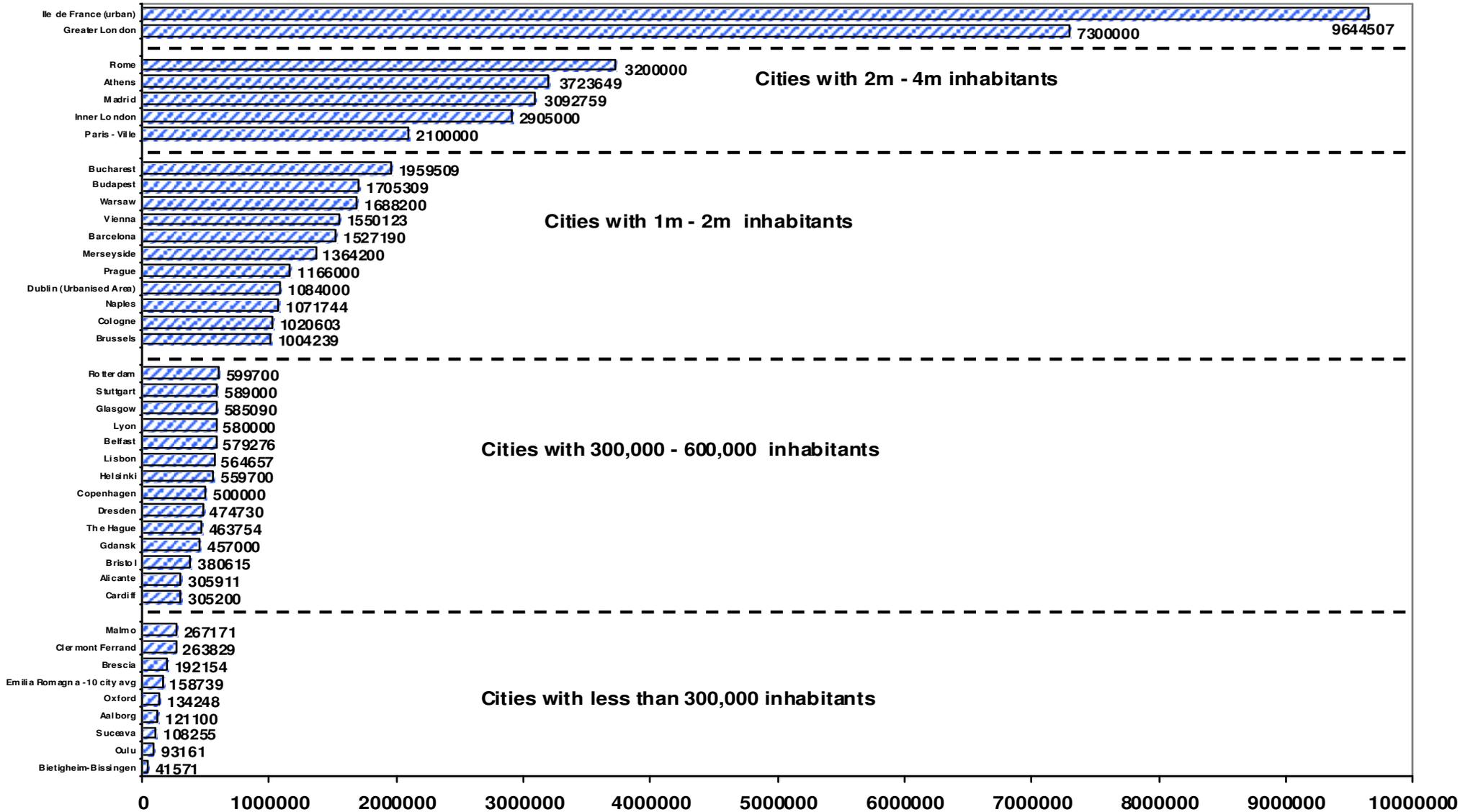


Figure 3.2 Key Data Issues

- Data refers to 2003, except for Clermont Ferrand (1999) Belfast (2000), Athens, Bristol, Lisbon, Merseyside, Vienna and Oxford (2001), Gdansk, Suceava, Dresden, Helsinki, Cologne, Naples, Lyon, Rotterdam, Dublin, Barcelona, Warsaw, Rome, Greater London and the Ile de France (2002).
- Data for Rotterdam refers to the municipality of Rotterdam.
- Data for Paris refers to the built-up area and not the entire Ile de France region.
- Data for London relates to the Greater London area.
- Data for Rome refers to the built-up area and not the surrounding metropolitan area.
- Data for Dublin relates to the urbanised area of Dublin's District Electoral Divisions (DED's).
- Data for Barcelona refers only to the city.

Figure 3.3 Key Data Issues:

- Data refers to 2003, except for Clermont Ferrand (1999) Belfast (2000), Athens, Bristol, Lisbon, Merseyside, Vienna and Oxford (2001), Gdansk, Suceava, Dresden, Helsinki, Cologne, Naples, Lyon, Rotterdam, Dublin, Barcelona, Warsaw, Rome, Greater London and the Ile de France (2002).
- Data for Rotterdam refers to the municipality of Rotterdam.
- Data for Paris refers to the built-up area and not the entire Ile de France region. In Paris Ville (the urban centre of the city) the population density exceeds 24,000 people / km².
- Data for London relates to the Greater London area.
- Data for Rome refers to the built-up area and not the surrounding metropolitan area.
- Data for Dublin relates to the urbanised area of Dublin's District Electoral Divisions (DEDs).
- Data for Barcelona refers only to the city, which is completely urbanised.

Figure 3.3: Population density of cities and regions

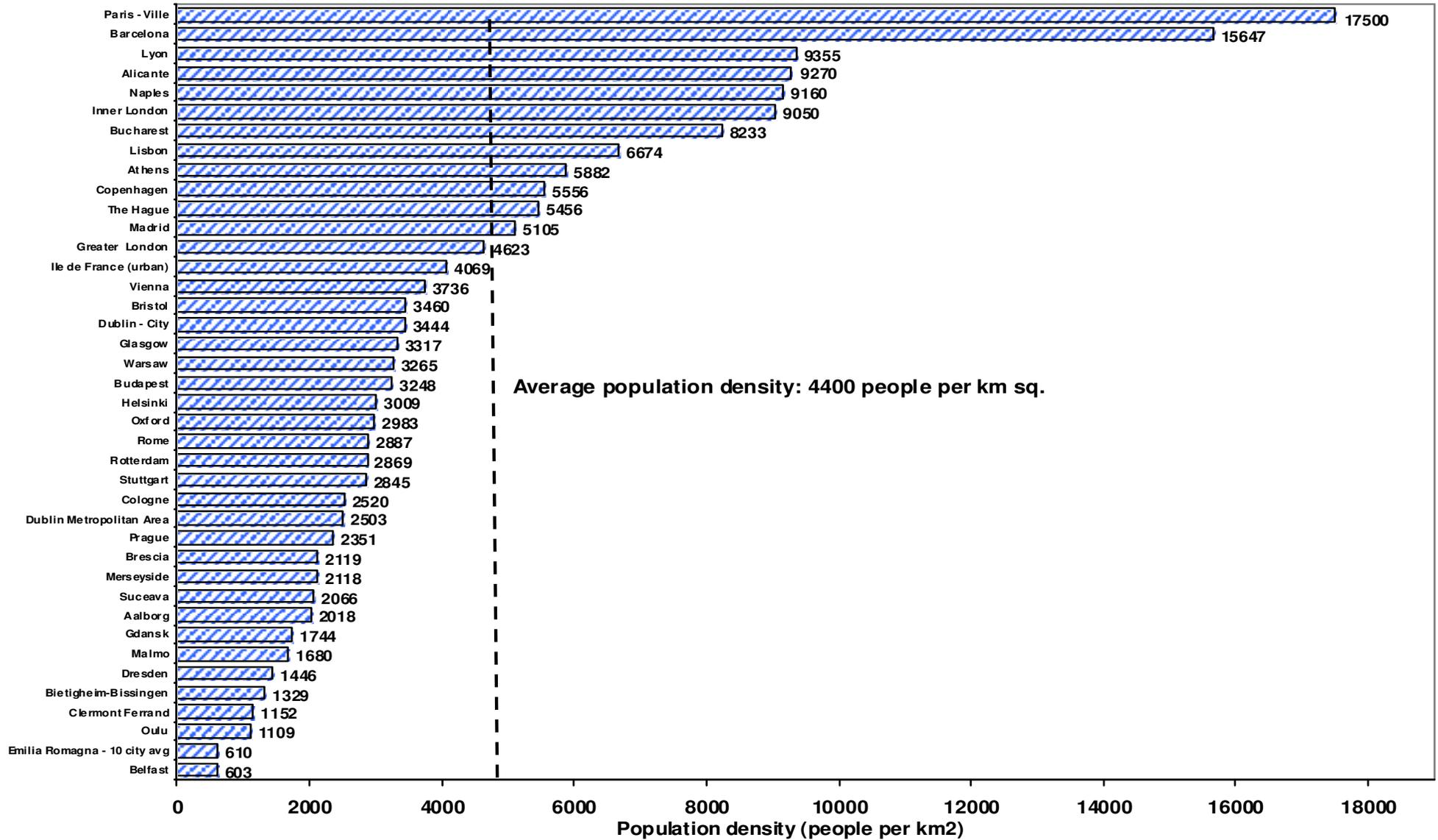


Figure 3.3 outlines the population densities of the benchmarking cities, expressed as the number of persons per square kilometre. The least densely populated city is Belfast, with 603 people per km². Paris-Ville (17,500 people per km²) and Barcelona (15,647 people per km²) are significantly the most densely populated cities, approximately four times denser than the mean-average population density for all of the cities (4,275 people/km²). The figures for Barcelona and Paris-Ville are significantly larger than those for the other cities, because the data submitted accounts only for the central area of the city and the population of this area.

The differences between the figures Greater London (4623 people per km²) and Inner London (9050 people per km²) and The Ile de France (4069 people per km²) and Paris-Ville (17500 people per km²) serve to demonstrate the variations in the density of populations in the central areas of cities and across the urbanised areas as a whole. These examples also demonstrate the challenge inherent in accurately de-limiting a city's area and relating this area to the urban transport systems which operate within the city. Population density figures have also been used as the basis for further analyses in section five of this report.

In order to provide a relevant comparison of the urban transport systems in the participating cities a total of five groups made up of cities with similar populations have been established. These groups are based upon those defined in Figure 3.2 and, where several measures of population were given (e.g. Dublin, London and Paris) the area for which the most complete data was submitted has been used. The groups of similarly populated cities have been described below in Table 3.1:

Table 3.1: Population groups for data analysis

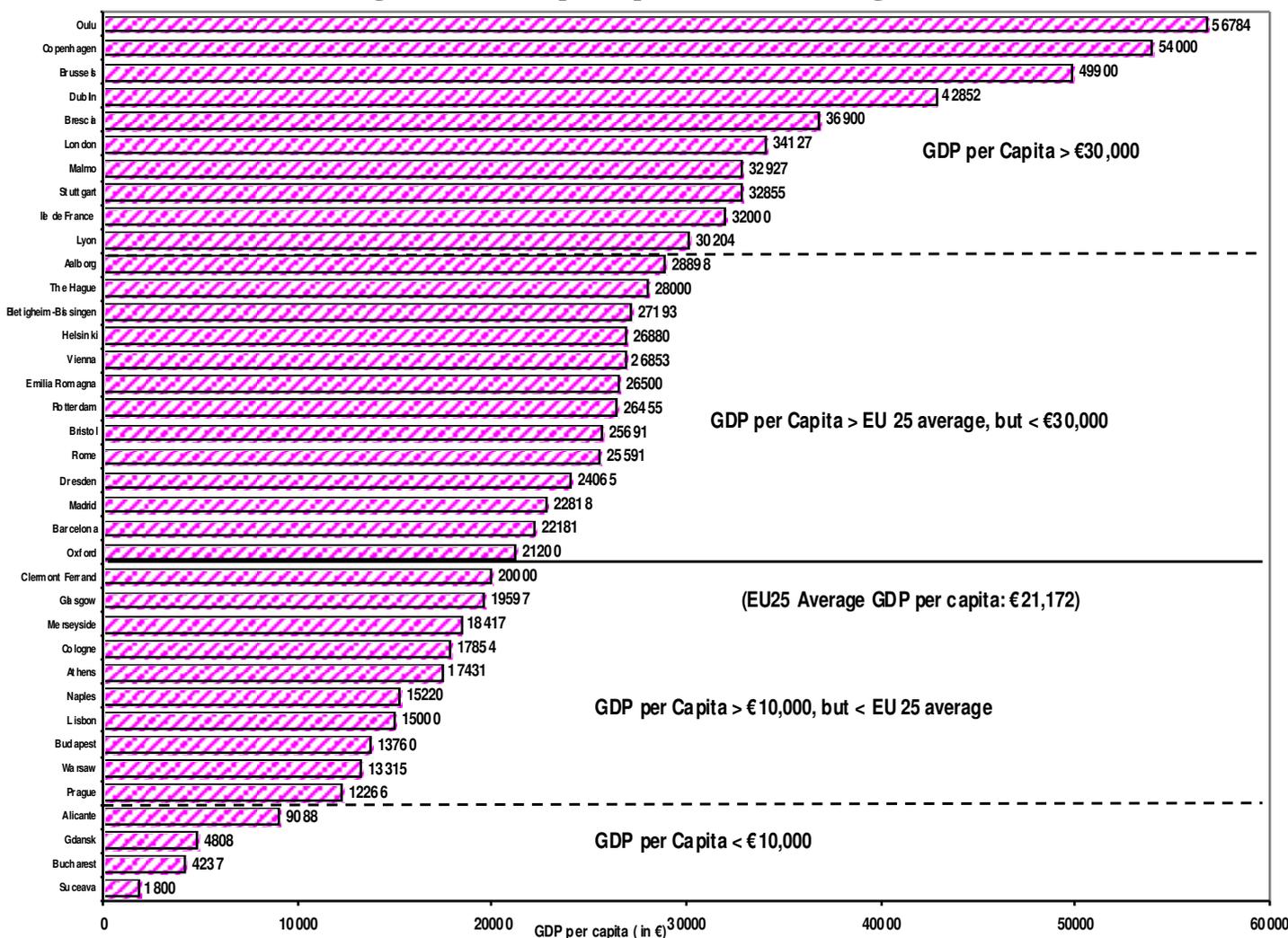
Up to 300,000 inhabitants	300,000 – 600,000 inhabitants	1m – 2m inhabitants	2.m – 3m inhabitants	More than 3m inhabitants
Aalborg	Alicante	Barcelona	Athens	Greater London
Bietigheim-Bissingen	Belfast	Brussels	Madrid	Ile de France
Brescia	Bristol	Bucharest	Rome	
Clermont Ferrand	Cardiff	Budapest		
Emilia Romagna (10 city average)	Copenhagen	Cologne		
Malmö	Dresden	Dublin (Met area)		
Oulu	Gdansk	Merseyside		
Oxford	Glasgow	Naples		
Suceava	Helsinki	Prague		
	Lisbon	Warsaw		
	Lyon	Vienna		
	Rotterdam			
	Stuttgart			
	The Hague			

Figure 3.4 displays the GDP per capita values for the cities which have taken part in the first two years of the Urban Transport Benchmarking Initiative and the PLUME Benchmarking exercise. Significant differences are evident in the levels of GDP per capita, most notably between Oulu, the city with the largest GDP per capita (€56,784), and Suceava, the city with the smallest (€1,800). The mean-average GDP per capita of all of the cities participating in the Urban Transport Benchmarking Initiative is €24,801 and this figure compares favourably to the average level of

GDP per capita in the EU25 cities of €21,172 which was obtained from Eurostat³ and is illustrated in Figure 3.4. Although it only provides a limited indication of the relative affluence and economic vitality of cities, GDP per capita remains the most widely available and immediately comparable indicator which can be readily collected by the participating cities.

In a similar manner to the population of the cities, GDP per capita can also be considered as a key indicator and a major point of reference for further analysis. The cities displayed in Figure 3.4 can be grouped by GDP per capita levels based around the EU25 average GDP per capita level in order to establish more relevant comparisons amongst cities which demonstrate similar levels of economic vitality.

Figure 3.4: GDP per capita of cities and regions



Key Data Issues:

- Data refers to 2003, except for; Lisbon, Clermont Ferrand, Stuttgart and Brescia (2000), Bucharest, Oxford, Barcelona, Dresden, Bristol, Rotterdam, Emilia Romagna (2001), Suceava, Gdansk, Warsaw, Naples, Athens, Cologne, Merseyside, Glasgow, Madrid, Rome, Vienna,

³ EU 25 GDP per capita figures obtained from Eurostat, available at: http://epp.eurostat.cec.eu.int/pls/portal/docs/PAGE/PGP_PRD_CAT_PREREL/PGE_CAT_PREREL_YEAR_2005/PGE_CAT_PREREL_YEAR_2005_MONTH_01/2-25012005-EN-AP.PDF, accessed on 25/05/05.

Helsinki, Bietigheim-Bissingen, Aalborg, Lyon, Ile de France, London, Dublin, Brussels and Copenhagen (2002).

- Data for Brescia, Lyon and Emilia Romagna refers to regional area.

A range of different types of employment data have been collected throughout the first two years of the Urban Transport Benchmarking Initiative and in the PLUME benchmarking activity. During year one of the Urban Transport Benchmarking Initiative and for PLUME benchmarking, the data collected referred to the percentage of residents in the urban administrative area that were in employment. These figures were reported in the year one report of the Urban Transport Benchmarking Initiative. The broad range of available statistics which relate to employment data in the participating cities has meant that the data submitted for this indicator is relatively incomparable and, as a result, are not relevant for further analysis.

3.2 Urban Transport in the participating cities: A comparison

Table 3.2 and Figures 3.5 to 3.7 illustrate the differences in the urban transport systems across the range of participating cities and regions. Where data relate to different years or spatial areas, or it has not been possible for a city or region to provide data this has been noted as a “key data issue”.

Table 3.2 shows the range of public transport modes available in each of the cities, which have been grouped according to their population size. The table reveals the following key points:

- Buses are the most commonly represented public transport mode, being present in all of the cities.
- The majority of the cities are served by heavy rail, although only some medium-sized and most of the larger cities have an urban heavy rail networks within the metropolitan area (e.g. Dublin, Merseyside/Liverpool, Paris, Rome).
- Tram and metro systems are much less common in the cities with smaller populations. Of the 9 cities with fewer than 300,000 inhabitants only Bietigheim-Bissingen (on the edge of Stuttgart’s metropolitan transport network) and Clermont-Ferrand (which has a unique rubber-tyred, optically guided tram system) are served by these modes.
- Copenhagen (500,000 inhabitants) is the least populous city to have a metro system. The majority of cities with populations greater than 500,000 inhabitants have a metro system; Dublin and Belfast are notable exceptions.

Table 3.2: Typology of public transport modes present in each city/region

City	Population	GDP per capita	Bus/ Trolley	Train	Tram	Metro
Aalborg	121,100	28,898	✓	✓		
Bietigheim-Bissingen	41,571	27,193	✓	✓	✓	✓
Brescia	192,154	36,900	✓			
Clermont Ferrand	263,829	20,000	✓	✓	✓	
Emilia Romagna	158,739	26,500	✓			
Malmö	267,171	32,292	✓			
Oulu	93,161	56,784	✓	✓		
Oxford	134,248		✓			
Suceava	108,255	1,800	✓			
Alicante	305,911	9,088	✓			
Belfast	579,276	No data	✓	✓		
Bristol	380,615	25,691	✓	✓		
Cardiff	305,200	No data	✓	✓		
Copenhagen	500,000	54,000	✓	✓		✓
Dresden	474,730	24,065	✓	✓	✓	
Gdansk	457,000	4,808	✓	✓	✓	
Glasgow	585,090	19,597	✓	✓		✓
Helsinki	559,700	26,880	✓	✓	✓	✓
Lisbon	564,657	15,000	✓	✓	✓	✓
Lyon	580,000	30,204	✓		✓	✓
Rotterdam	599,700	26,455	✓		✓	✓
Stuttgart	589,000	32,855	✓	✓	✓	✓
The Hague	436,754	28,000	✓		✓	
Barcelona	1,527,190	22,181	✓	✓	✓	✓
Brussels	1,004,239	49,900	✓	✓	✓	✓
Bucharest	1,705,309	4,237	✓		✓	✓
Budapest	1,959,509	13,760	✓	✓	✓	✓
Cologne	1,020,603	17,854	✓	✓	✓	✓
Dublin	1,180,083	42,852	✓	✓		
Merseyside	1,365,900	18,417	✓	✓		
Naples	1,071,744	15,220	✓	✓		✓
Prague	1,166,000	12,266	✓	✓	✓	✓
Warsaw	1,688,200	13,315	✓	✓	✓	✓
Vienna	1,550,123	26,853	✓	✓	✓	✓
Athens	3,200,000	17,431	✓	✓	✓	✓
Madrid	3,092,459	22,818	✓	✓		✓
Rome	3,723,649	25,591	✓	✓	✓	✓
London	7,300,000	34,127	✓	✓	✓	✓
Ile de France	9,644,507	32,000	✓	✓	✓	✓

Modal share

Figures 3.5a and 3.5b and Figure 3.6a and 3.6b display the proportions of journeys made by each mode. The population groupings have been maintained on each of the graphs in order to enable comparisons to be made across the data-set as a whole as well as between similarly-sized cities.

The participants also tried to collect data relating to the modal split on a Saturday and only two cities (Budapest and Malmö) were able to provide this information. This is itself a finding, identifying a clear data gap in the collection of weekend modal split information. It is very likely that significant differences exist between the number, purpose and modal selection for trips made during the week and those made at the weekend.

Figures 3.5a and 3.5b illustrates the percentage of trips made using motorised transport, discounting the figures for cycling and walking which have not been provided by all cities and which are frequently based upon estimates. The full modal split is displayed in Figures 3.6a and 3.6b although this is less accurate than Figures 3.5a and 3.5b which does not include the figures for walking and cycling. Explanations about the modal split data are provided in a bullet point summary after Figures 3.6a and 3.6b.

Figure 3.5a: Modal Share of motorised trips in the urban administrative area on a weekday - part 1

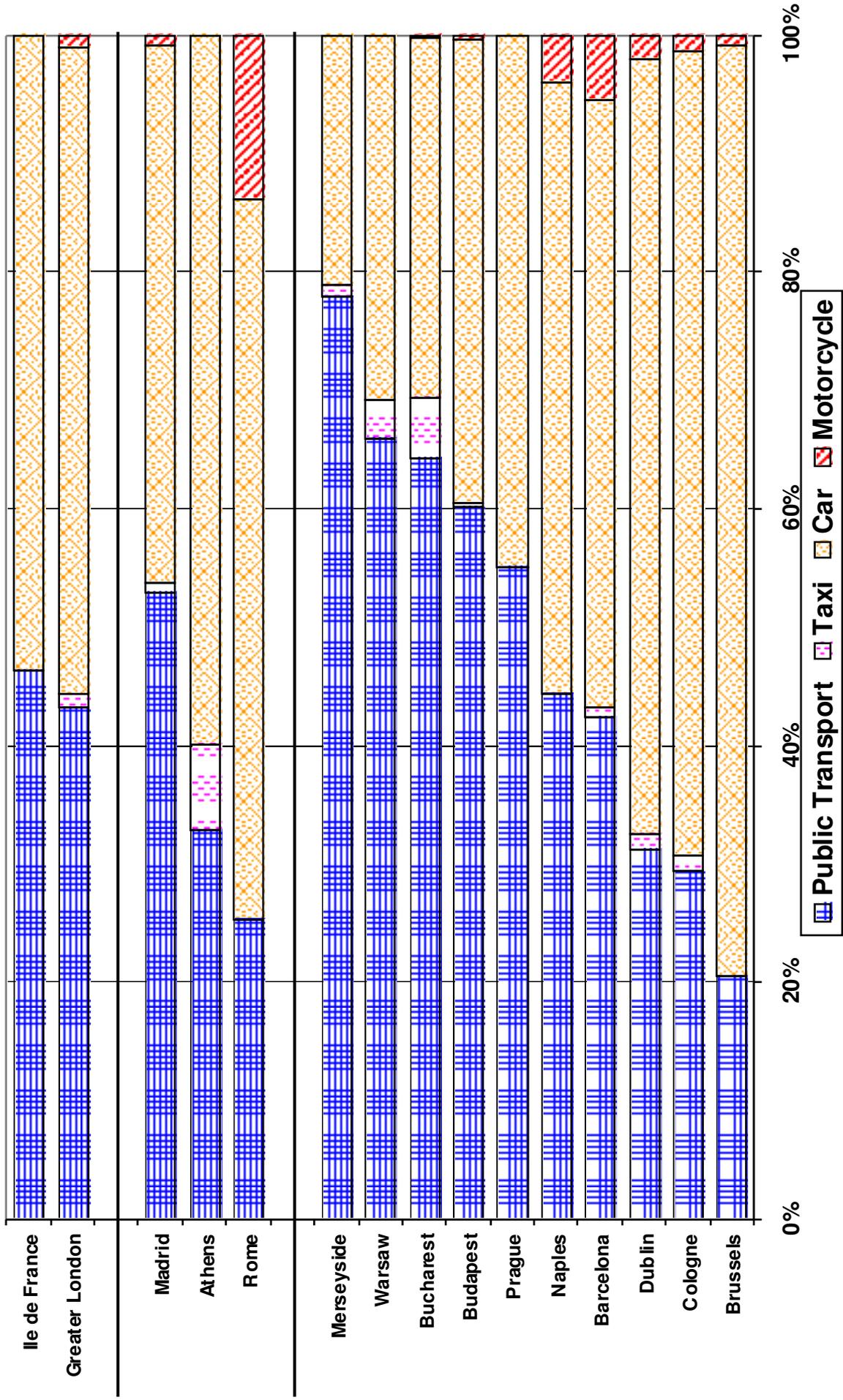


Figure 3.5b: Modal Share of motorised trips in the urban administrative area on a weekday – part 2

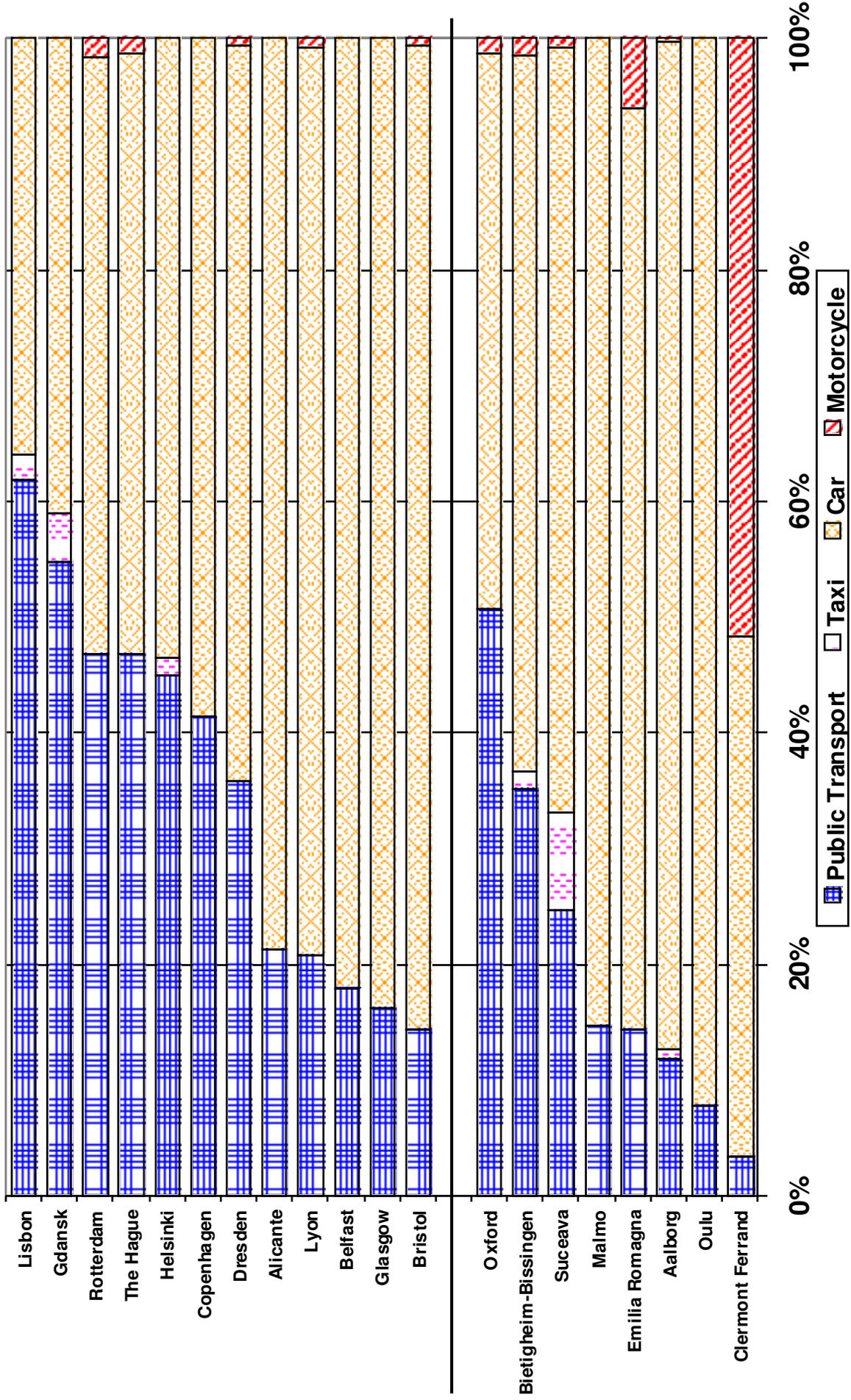


Figure 3.6a: Modal Share of trips by all modes in the urban administrative area – part 1

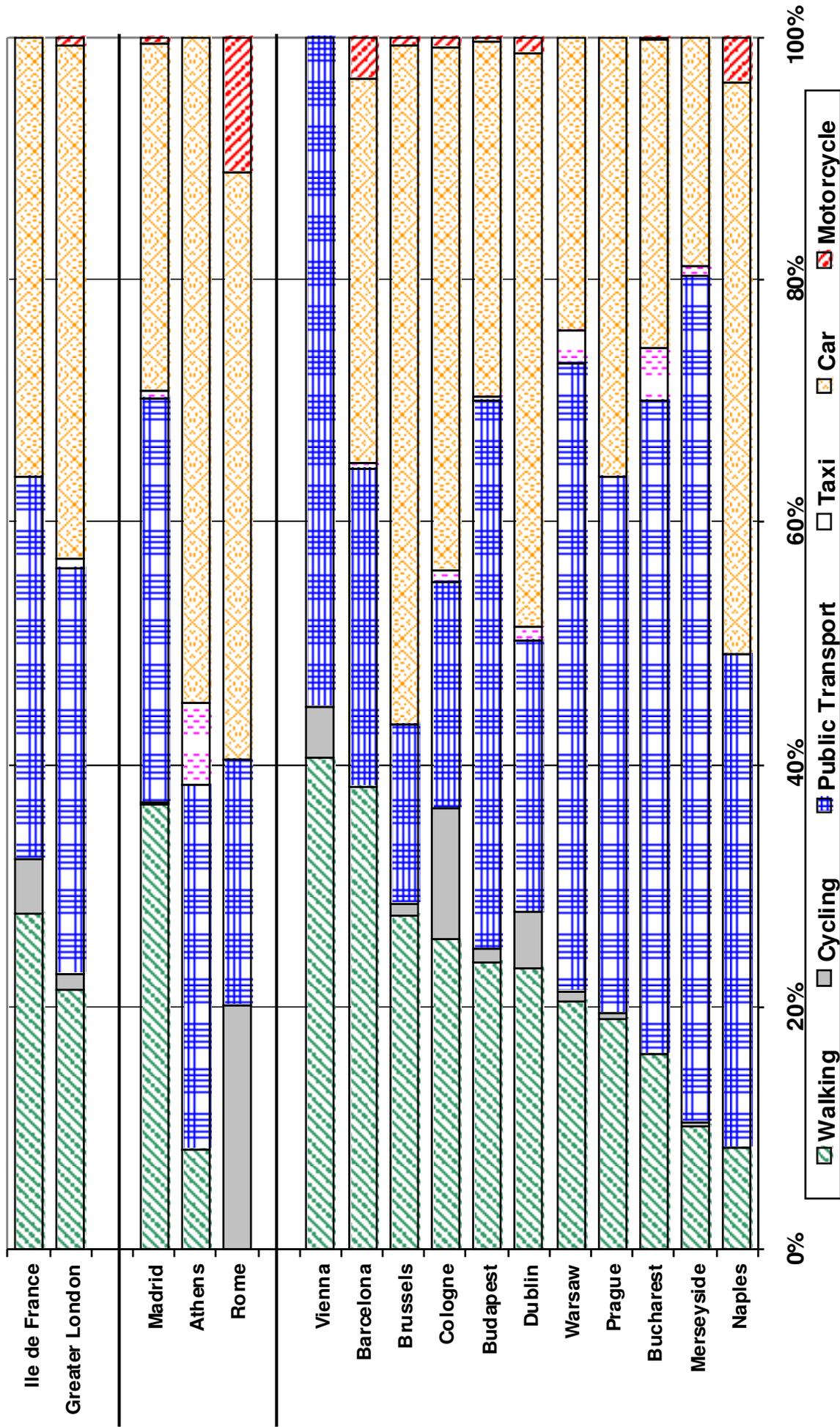
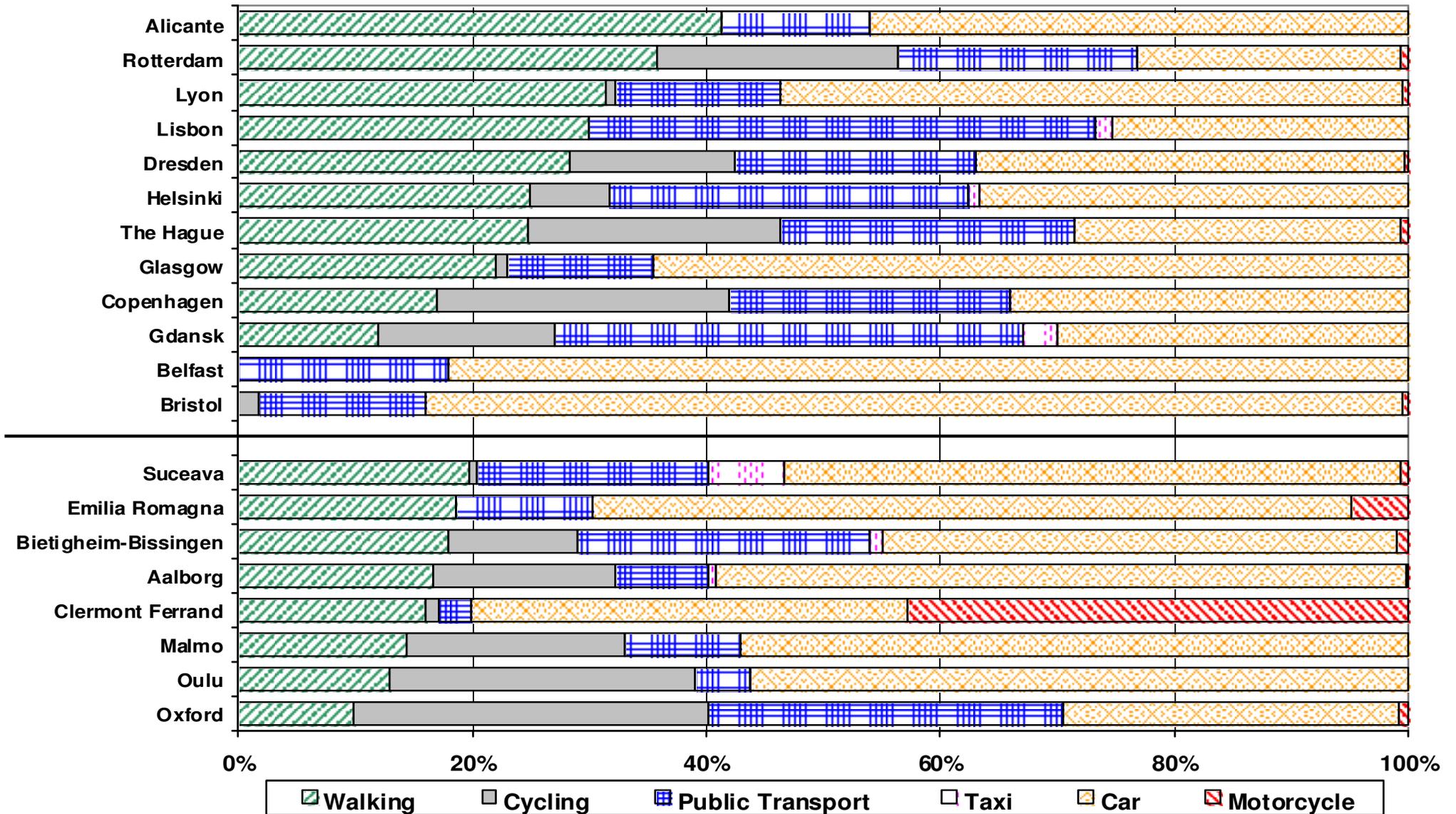


Figure 3.6b: Modal Share of trips by all modes in the urban administrative area – part 2



Key Data Issues for Modal Split Data in Figure 3.5a & 3.5b and 3.6a & 3.6b

- The data displayed relates to the study year of 2003 except for: Budapest (1994), Lyon (1995) Madrid (1996), Lisbon and Warsaw (1998), Athens and Rome (1999), Bucharest (2000), Emilia Romagna and Rotterdam (2001), Dublin, Bristol, Oxford, Naples, Gdansk, Clermont Ferrand, Suceava, Helsinki, Cologne, Dresden, Barcelona and Vienna (2002).
- Walking and cycling data was unavailable for Belfast.
- The data for non-motorised modes displayed for Rome, Prague, Barcelona and Alicante in Figure 3.6a and 3.6b reflects the combined modal shares of walking and cycling.
- Data for Dublin reflects all the daily trips that are made to places of work, school and university only (irrespective of start time) do not therefore reflect the total level of daily trips. The figures are therefore of more non-car based modes, because the majority of these types of trips take place during the peak daily transport hours.
- Data for the Emilia Romagna region related to daily systematic trips (e.g. commuting and school trips).
- Please note that 4% of all urban transport trips in Bucharest were attributed to Lorries. This figure has been removed from Figure 3.5a and 3.5b and 3.6a and 3.6b for improved comparability.
- Data for Cardiff is not presented, because figures relating to the number public transport trips were the only data available and it was not therefore possible to calculate a modal split.

Figures 3.5a and 3.5b display the modal split of motorised trips in the benchmarking cities and within the populations groupings the data have been ranked by the proportion of motorised trips made by public transport modes. The key findings from the modal split of motorised trips are:

- Of the 35 cities for which data was available a total of 9 demonstrated a public transport modal share of more than 50% (Madrid, Warsaw, Bucharest, Budapest, Prague, Merseyside, Lisbon, Gdansk and Oxford).
- 5 of the cities with a motorised-trip modal share of more than 50% for public transport modes are situated in New Member States of the European Union.
- 7 of these 9 cities have between 300,000 and 2 million inhabitants.
- Italian and Spanish cities, Rome and Barcelona in particular, appear to demonstrate the greatest motorcycle modal shares for all motorised trips, which appears to lend support the commonly accepted “scooter culture” which is deemed to be more prevalent in Southern European cities.

Figures 3.6a and 3.6b show the modal split figures including the submitted data for walking and cycling trips. This charts display the cities in rank order of modal share for walking and, as before, the data have been presented in groups of cities with similar populations. The key findings from the data for modal split of all trips in the urban administrative area on a weekday are:

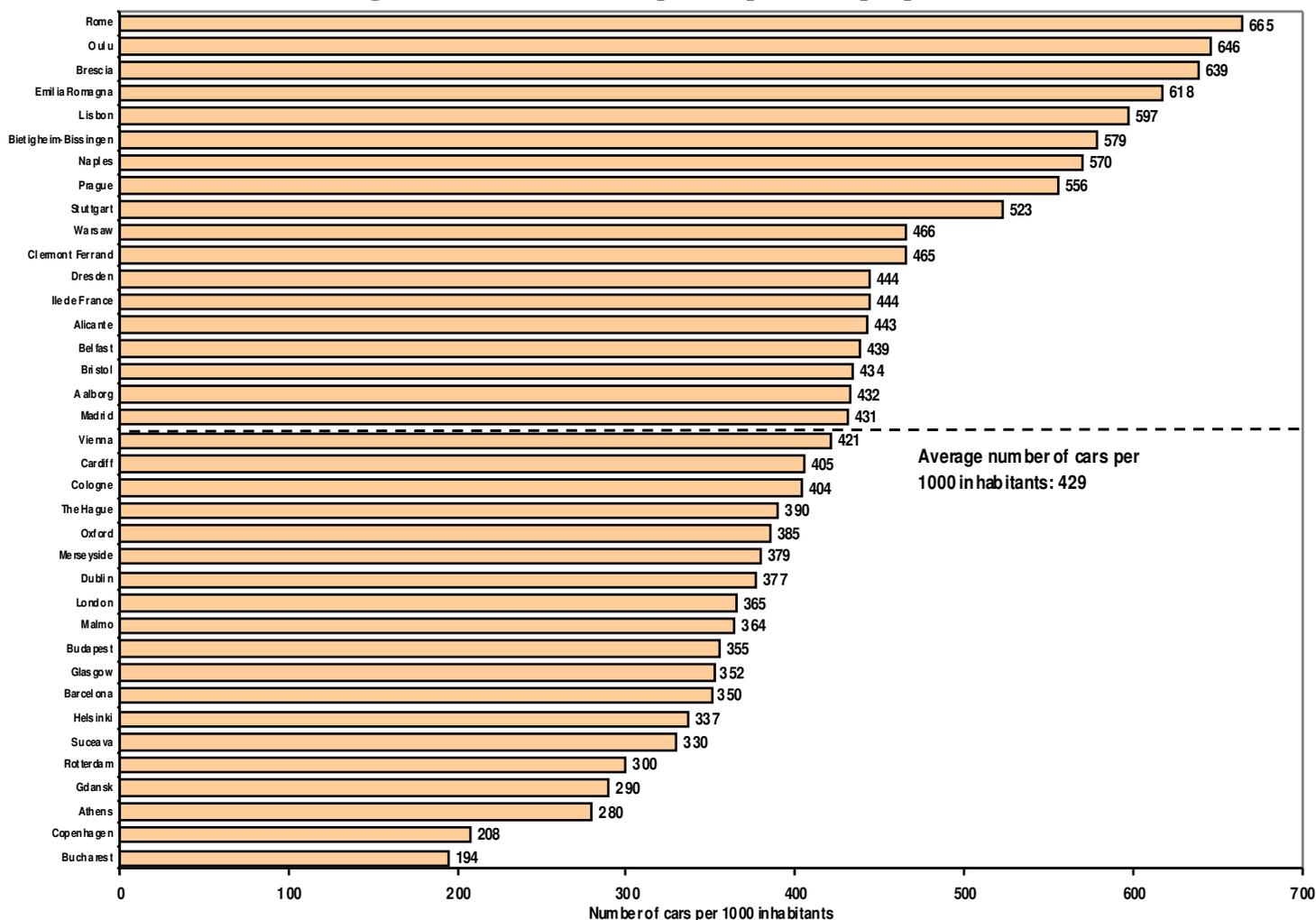
- Of the six New Member State (NMS) cities three have less than 20% modal splits for walking and none of these cities are among those which displayed a walking modal share greater than 30%.
- Scandinavian, Dutch and German cities appear to have the greatest uptake of sustainable transport modes, with The Hague, Rotterdam, Dresden and Copenhagen having significant modal splits (more than 40%) for walking and cycling. Vienna, Alicante, Aalborg, Oulu and Oxford also have large modal shares for walking and cycling.
- The Ile de France and Greater London have very similar modal splits, although The Ile de France demonstrates a marginally greater proportion of trips made by sustainable modes. In

Figure 3.6a and 3.6b the two cities display near identical modal splits for motorised travel, which suggests that the two are suited to further comparisons.

- The cities of Madrid, Athens and Rome demonstrate very different modal splits. In the city of Rome, walking and cycling trips are not segregated, which can be misleading and therefore limits the potential for further analysis of non-motorised travel in Rome. Of the three cities with populations of 2-4 million inhabitants, Athens appears to display the smallest proportion of trips made by walking and cycling. This is supported by anecdotal evidence from the representatives from Athens who suggest that the local topography and climatic conditions in Athens represent a major barrier to walking and cycling in the city.
- Of the cities with between 1 million and 2 million inhabitants there is a significant range in the proportions of trips made by cycling and walking. Although no clear patterns emerge the three cities with the greatest proportions of walking modal share (Vienna, Barcelona and Brussels) also have relatively high levels of GDP per capita. A deeper comparison of these cities and their varying modal splits is likely to be of interest, since all 9 of the cities are relatively similar in size and each have well developed urban transport systems.
- The cities with between 300,000 and 600,000 inhabitants also demonstrate a wide range of modal splits, with notable variations in the proportion of walking trips, although no data for walking and cycling trips was available for Bristol, Belfast and Cardiff. A number of cities within this population group also demonstrate significantly larger cycling modal share proportions when compared to the more populous cities.
- The cities with populations of less than 300,000 inhabitants demonstrate much lower incidences of walking, with all of the cities having a less than 20% share of all trips. Conversely these cities demonstrate some of the larger cycling modal shares from all 35 of the cities. It is therefore possible to suggest that the cities with smaller populations (less than 600,000 inhabitants) appear to be more conducive to cycling, although this finding should be treated with some caution due to the fact that walking and cycling values are often based upon estimates.

Figure 3.7 displays car ownership in terms of the number of registered cars per 1,000 people. The city with the highest level of car ownership is Rome, with 665 cars per 1000 people and Oulu, Brescia and the Emilia Romagna Region also display high levels of car ownership, with each city having more than 600 cars per 100 inhabitants. Bucharest (194 cars per 1000 population) and Copenhagen (208 cars per 1000 population) display the lowest levels of car ownership among the benchmarking cities. The average number of cars per 1000 population for all of the cities listed above is 429.

Figure 3.7: Car ownership (cars per 1000 people)



Key data issues for Figure 3.7

- Data relates to 2003, except for; Athens (1999), Barcelona (2000), Oxford and Lisbon (2001), Cologne, Lyon, Aalborg, Vienna, Bristol, Rotterdam, Rome, Bucharest, Dublin, Warsaw, Stuttgart and the Ile de France (2002) and The Hague and Merseyside (2004).
- Data for Belfast includes both cars and vans.
- Data for London refers to the Greater London area.
- Data for the Ile de France, Merseyside and Barcelona relates to regional areas.

3.3 Key urban transport trends identified

This section of the common indicator report contains an analysis of urban transport trends and has been developed from the basic comparisons outlined in sections 3.1 and 3.2 of this document. One of the key outcomes of the analysis conducted at the end of year one of the Urban Transport Benchmarking Initiative was the identification of a series of urban transport trends. These trends have been used as a starting point for the analysis of the second year of the Urban Transport Benchmarking Initiative and are briefly re-evaluated in section 3.3.1 of this report.

The findings from year one of the benchmarking initiative have also been developed further and, in the remainder of this section of the report, a range of comparisons have also been made. The main

focus of the comparisons include; car and public transport use in the benchmarking cities (section 3.3.2), the relative performance of public transport systems in the benchmarking cities (section 3.3.3), transport network provision and modal share (section 3.3.4) and New Member State cities and similarly sized EU15 cities (section 3.3.5).

3.3.1 Year one urban transport trends revisited

The key trends from year one of the Urban Transport Benchmarking Initiative have been re-evaluated in this section of the report, using the updated data-set which includes PLUME benchmarking and data from year one of this project. The principle trends identified during year one, and supported by the data collected in year two of the initiative, were:

- The positive relationship between GDP per capita (i.e. indicator for affluence) and the level of car use in a city.
- The positive relationship between GDP per capita, the size of a city's cycle network and the modal share of cycling in a city.
- The strong positive relationship between the population of a city, the presence and size of a metro system.

These trends were reported in the year one final report and have also been covered in significant detail in the common indicator report (Annex A1) from year two of the Urban Transport Benchmarking Initiative. As a result the graphs have not been reproduced in this final report of year two.

3.3.2 Public transport performance in the benchmarking cities

Section 3.3.2 of the report considers the performance of the public transport systems present in the cities included in year two of the Urban Transport Benchmarking Initiative. A number of interesting comparisons have been made between the cities and, where possible cities of a similar size have been contrasted. The modal share figures, which form the basis for public transport performance in the benchmarking cities, are presented in section 4 of this report and therefore will not be repeated here. The figures in this section represent a more in-depth look at the use of public transport modes in the benchmarking cities. Section 3.3.2 includes analysis of some public transport performance issues which could contribute to the variations in public transport use identified by the modal share figures and the data in section 3.3.1.

Variations in public transport use in the benchmarking cities

Figure 3.8 outlines the responses to an indicator collected only by cities involved in year two of the benchmarking initiative. The graph illustrates the proportional breakdown of passenger kilometres travelled by each mode of public transport in the benchmarking cities in 2003.

Figure 3.8: The proportion of total passenger kilometres travelled by mode in 2003

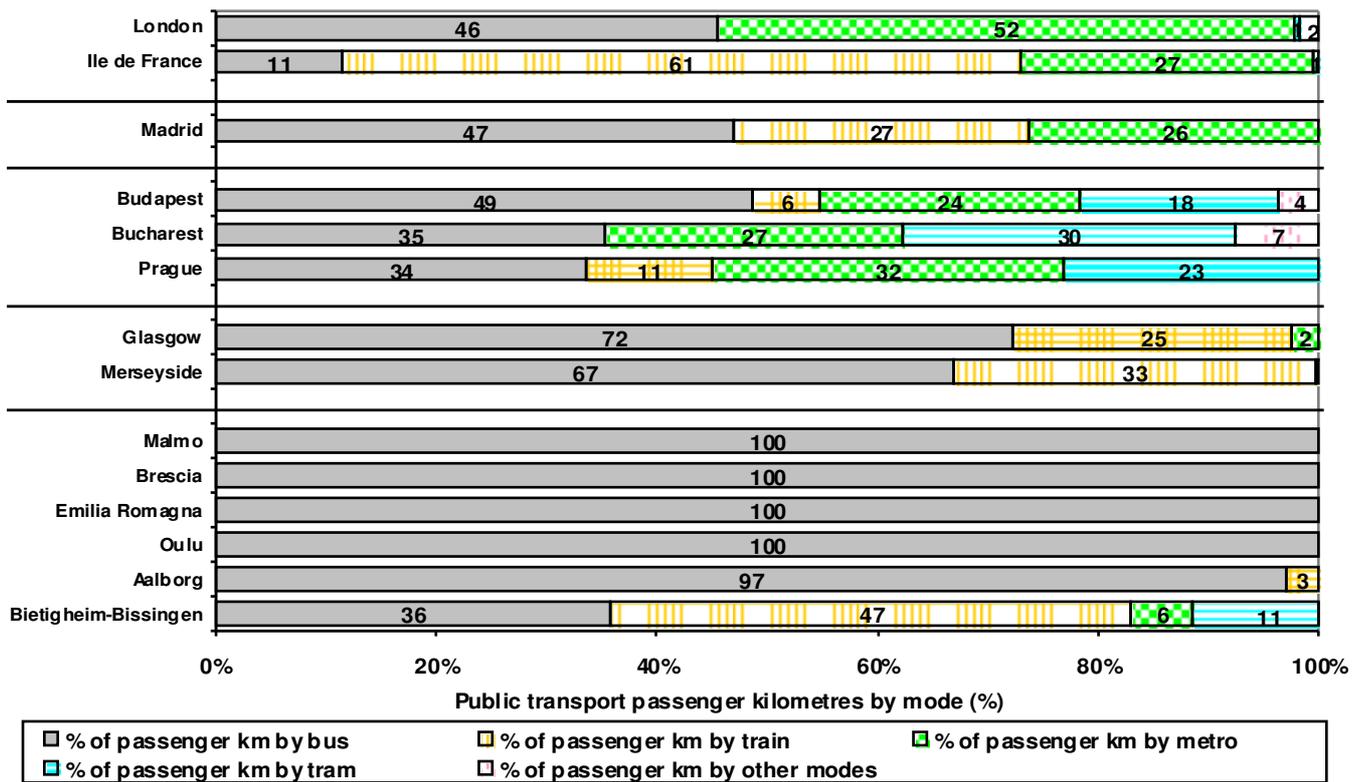


Figure 3.8: Key data notes

- Data for Bietigheim-Bissingen relates to the regional area of Baden-Württemberg.

The key observations from Figure 3.8 are:

- Smaller cities with populations of less than 300,000 inhabitants are largely reliant upon bus services for the delivery of their public transport. Bietigheim-Bissingen appears to be the main exception, displaying a wide range of public transport modes, with the largest share of passenger kilometres attributed to trains. This is because the data provided relates to the region of Baden-Württemberg.
- Glasgow and Merseyside have very similar proportions for passengers carried by each mode, with approximately 70% of the total passenger kilometres being travelled by bus.
- Bucharest and Prague are similarly sized cities which also demonstrate similar shares of bus, metro and tram passenger kilometres in relation to the totals for their cities. In Budapest the number of passenger kilometres travelled is much greater than in Prague and Bucharest, although considerably less distance is travelled by train in Budapest.
- Metro and tram systems which account for significant proportions of the total number of passenger kilometres travelled are more prevalent in cities with populations greater than 600,000 inhabitants.
- In Greater London a very large proportion of trips are made by metro, although because the data for train passenger kilometres was not available (it is individually retained by each train operating company in the city) the proportional figures for London are skewed towards the metro and buses.

- In the Ile de France region the train makes up the largest proportion of total passenger kilometres, followed by the metro. This reflects the well developed RER network in the city, which operates across The Ile de France region.
- In the majority of the cities where there is a metro system present the proportion of passenger kilometres travelled by metro is in the region of 25-30%. The key exceptions are Glasgow (which has a relatively small metro system) and Bietigheim-Bissingen (where the figures have been obtained for the region).

Characteristics of the public transport systems in the benchmarking cities

Due to the nature of the data collected and the wide range of factors that influence the use of public transport it is not possible to draw direct causal links between the modal share for public transport and the factors that affect it. Instead the data from two indicators has been presented in Figure 3.9 and 3.10 to outline selected key characteristics which explain some of the variation that exists in public transport use highlighted in the previous and the modal share figures presented in section 3.2 of this document. Further information relating to the public transport characteristics in cities can be found in section 5 of the common indicator report (Annex A1 to this document).

Figure 3.9: Most frequent peak hour service intervals (averaged for all modes of public transport) in 2003

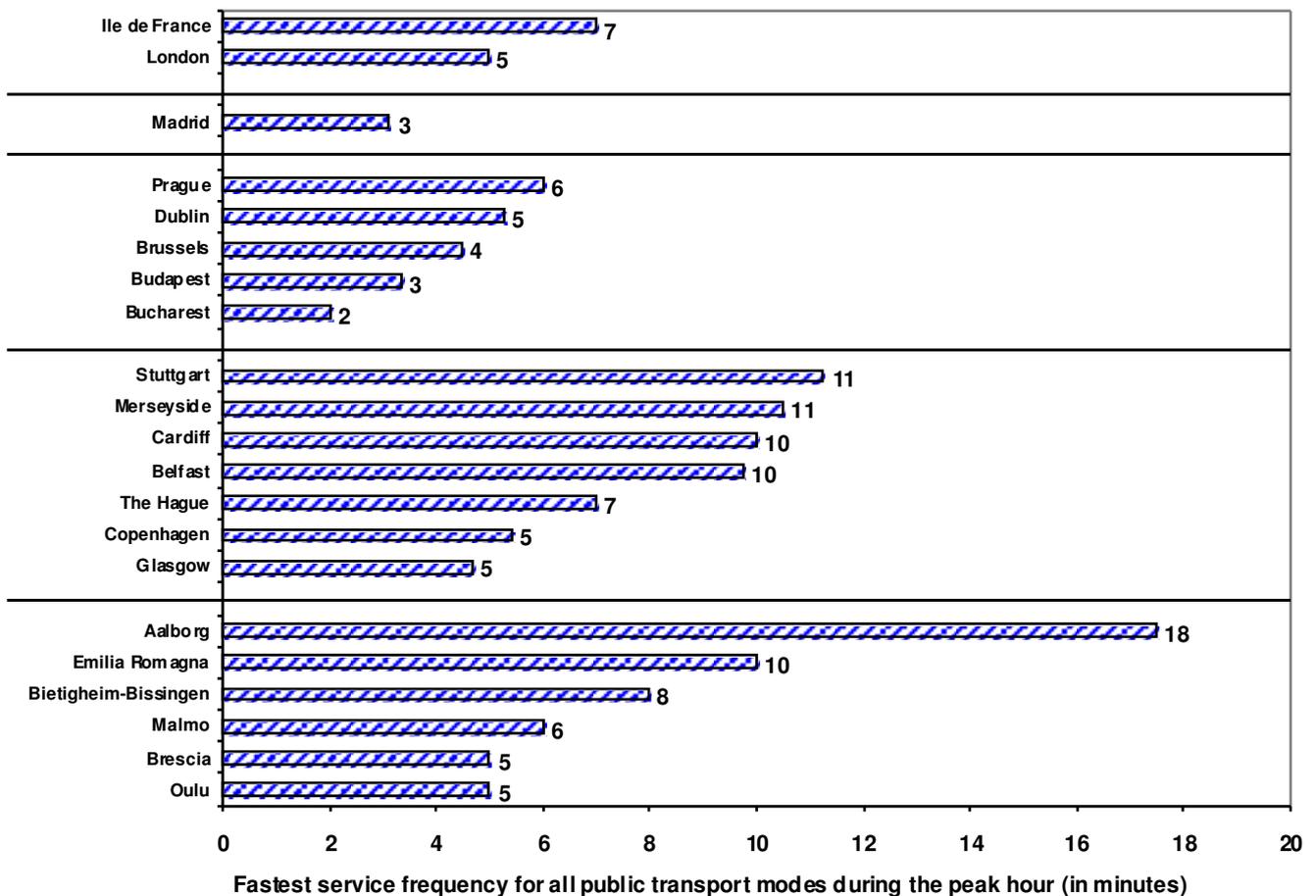


Figure 3.9 illustrates the most frequent service interval as an average for all public transport modes in each of the benchmarking cities which submitted this data. The collected data indicates that:

- When averaged for all modes of public transport, the smaller cities (in terms of population) are more likely to have less frequent peak hour services than larger cities.
- The cities identified with the greater intensity of public transport trips per person in 2003 in figure 3.9 (e.g. Prague, Budapest and Bucharest) all display relatively frequent public transport services.
- This is also the case in Malmö and Dublin, which both displayed much less intensive use of public transport modes in figure 3.9.
- The data for Merseyside also bears an interesting comparison, because the city has a public transport modal share of almost 80%, yet on average the fastest peak hour service interval is once every ten minutes.

Figure 3.10: The cost in real terms of single public transport trips over a distance of 1km and 5 km in 2003.

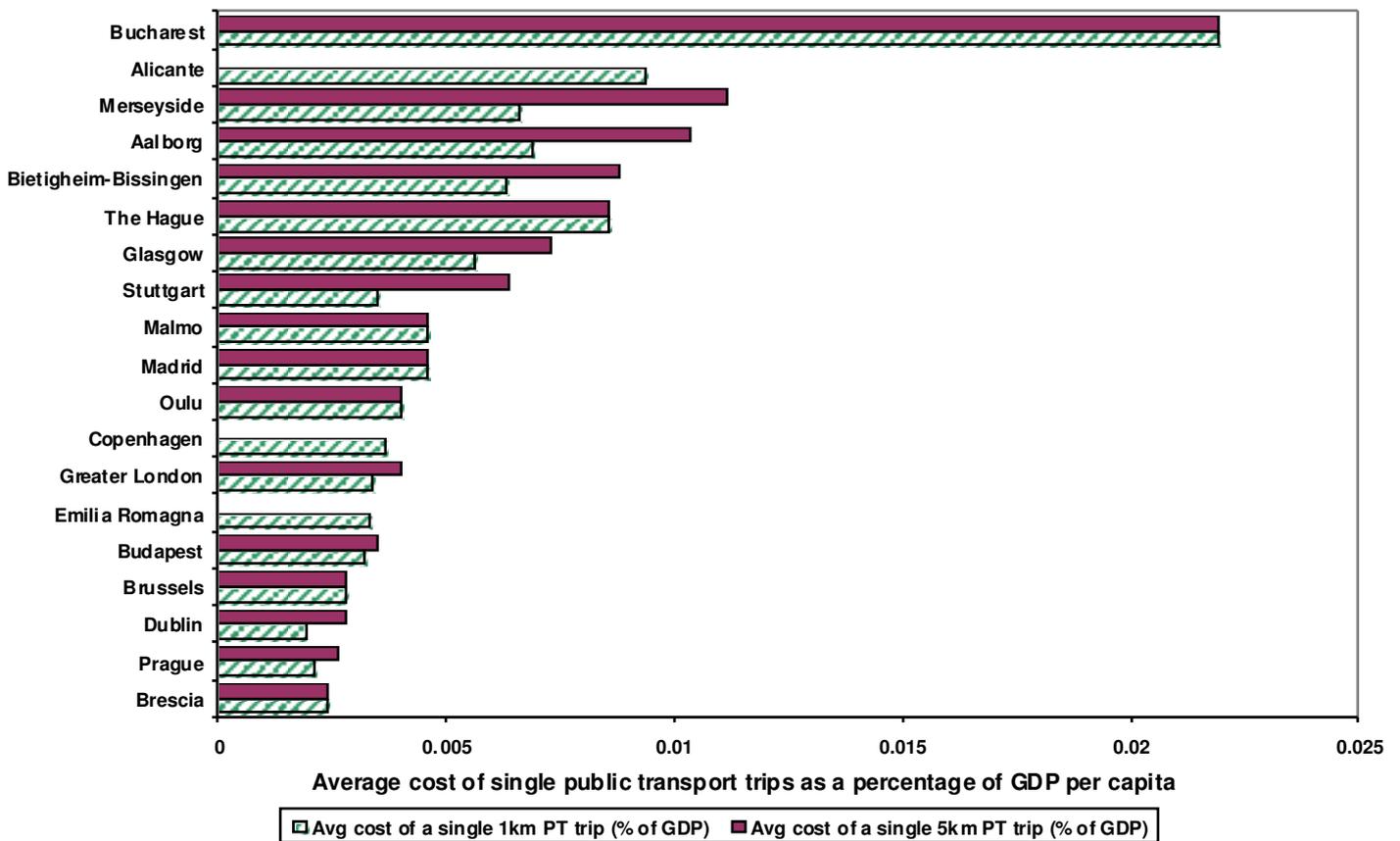


Figure 3.10 is the final graph in this section and it outlines the variations in the average cost (cost averaged across all modes) of public transport as a proportion of GDP per capita for 1km and 5km trips. The most interesting observation to be drawn from Figure 3.10 reiterates one of the findings from year one of the Urban Transport Benchmarking Initiative. The actual cost of public transport in Bucharest is relatively low, however when presented as a proportion of GDP (i.e. in real terms) it is the most expensive public transport journey for 1km and 5km trips.

Overview of public transport performance in the benchmarking cities

The data presented in the previous section has outlined a number of trends relating to the public transport provision in the cities included in the Urban Transport Benchmarking Initiative's year two data-set. These include:

- Smaller cities largely reliant upon bus services for the delivery of their public transport.
- Metro and tram systems, which generally account for significant proportions of the total number of passenger kilometres travelled, are more prevalent in cities with populations greater than 600,000 inhabitants.
- In 6 out of 8 of the cities where there is a metro system present the proportion of passenger kilometres travelled by metro is in the region of 25-30%.
- The smallest cities in terms of population generally demonstrate the lowest levels of public transport use and this is reflected in the modal share figures.
- The real cost of public transport (as a proportion of GDP in this study) needs to be calculated in order to make relevant comparisons relating to the cost of public transport. Ideally this would be calculated to take into account the variations in purchasing power (Purchasing Power Parity - PPP) in the different cities.

3.3.3 Speed and cost comparisons between private motorised and public transport modes

As well as focusing upon public transport provision and the extent it is used in the benchmarking cities, it is also possible to make comparisons between the car and public transport use for urban trips. As highlighted by the re-evaluated key trends from year one of the benchmarking initiative there is a clear link between GDP per capita (the aggregated wealth in a city) and the levels of car and public transport use. Figures 3.11 to 3.16 in this section of the report draw a number of other comparisons between car use and public transport use.

Peak-hour speed comparisons

Figure 3.11 compares the average peak hour speed for cars and motorcycles and all public transport modes in the city in order to highlight the cities where it is quicker to travel by public transport than by car. The key observations are;

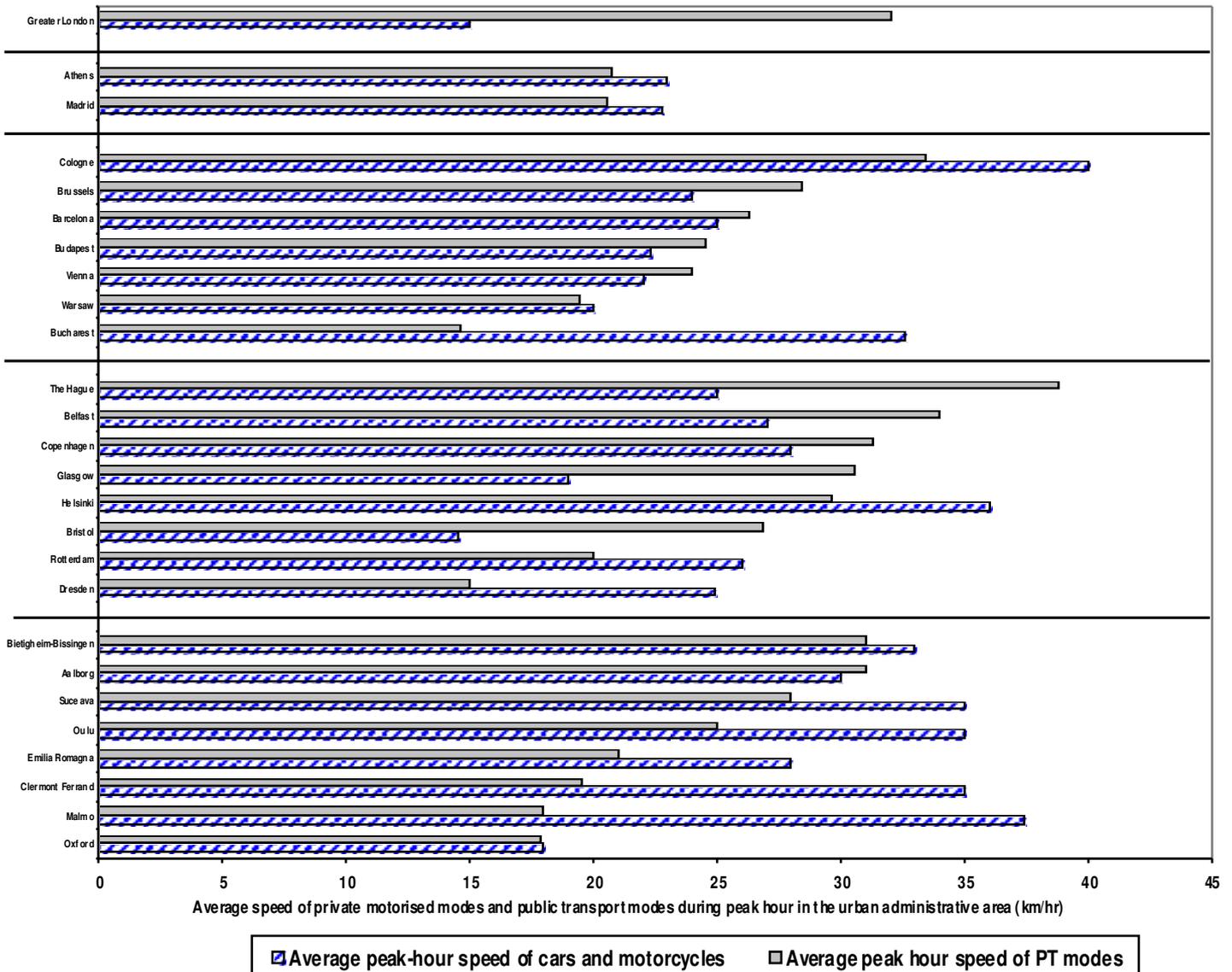
- In Aalborg, Bristol, Copenhagen, Belfast, The Hague, Vienna, Budapest, Barcelona, Brussels and Greater London the average speed of public transport modes exceeds that of private motorised transport.
- London and The Hague are the two cities where there is the largest differential between the peak-hour speed of public transport modes and the peak hour-speed of private motorised modes.
- In 7 of the 8 cities with populations of less than 300,000 inhabitants it is quicker to travel by car or motorcycle than by public transport during peak hour.
- Bucharest and Dresden displayed the slowest peak-hour public transport speeds of all of the cities (15km/h) while Bristol and London had the slowest peak-hour private motorised speeds (also 15km/h).
- Cologne demonstrated the fastest peak-hour private motorised speed (40km/h) and The Hague has the fastest peak hour public transport speed (38km/h).
- When related to the modal share data presented in Figure 3.5a these figures become more interesting. Of the four cities which achieves public transport modal shares in excess of 50%

and were able to provide average speed data for Figure 3.11 only 1; Budapest, demonstrated a faster average peak-hour speed for public transport than private motorised modes.

- This finding suggests that the urban traveller does not base his/her decisions solely upon the speed of the transport modes available to them. Issues such as the cost of and access to suitable public transport services are also likely to influence these decisions.

This data indicates the cities which have been most successful at making public transport an attractive option to travellers during peak public transport hours (most likely to be commuters) in respect of the comparative speed of private motorised modes. Some cities face a distinct disadvantage in this respect, because the road network affords the private motorised traveller a faster journey than the public transport system. This finding would appear to advocate the need for greater demand management measures in cities where peak-hour public transport average speeds are severely inferior to the speed of private motorised modes during the same period. It should however be noted that slowing the speed of private motorised modes and/or improving the rapidity of public transport will not necessarily guarantee improved public transport patronage.

Figure 3.11: Average peak-hour speeds of public transport and private motorised modes in the benchmarking cities

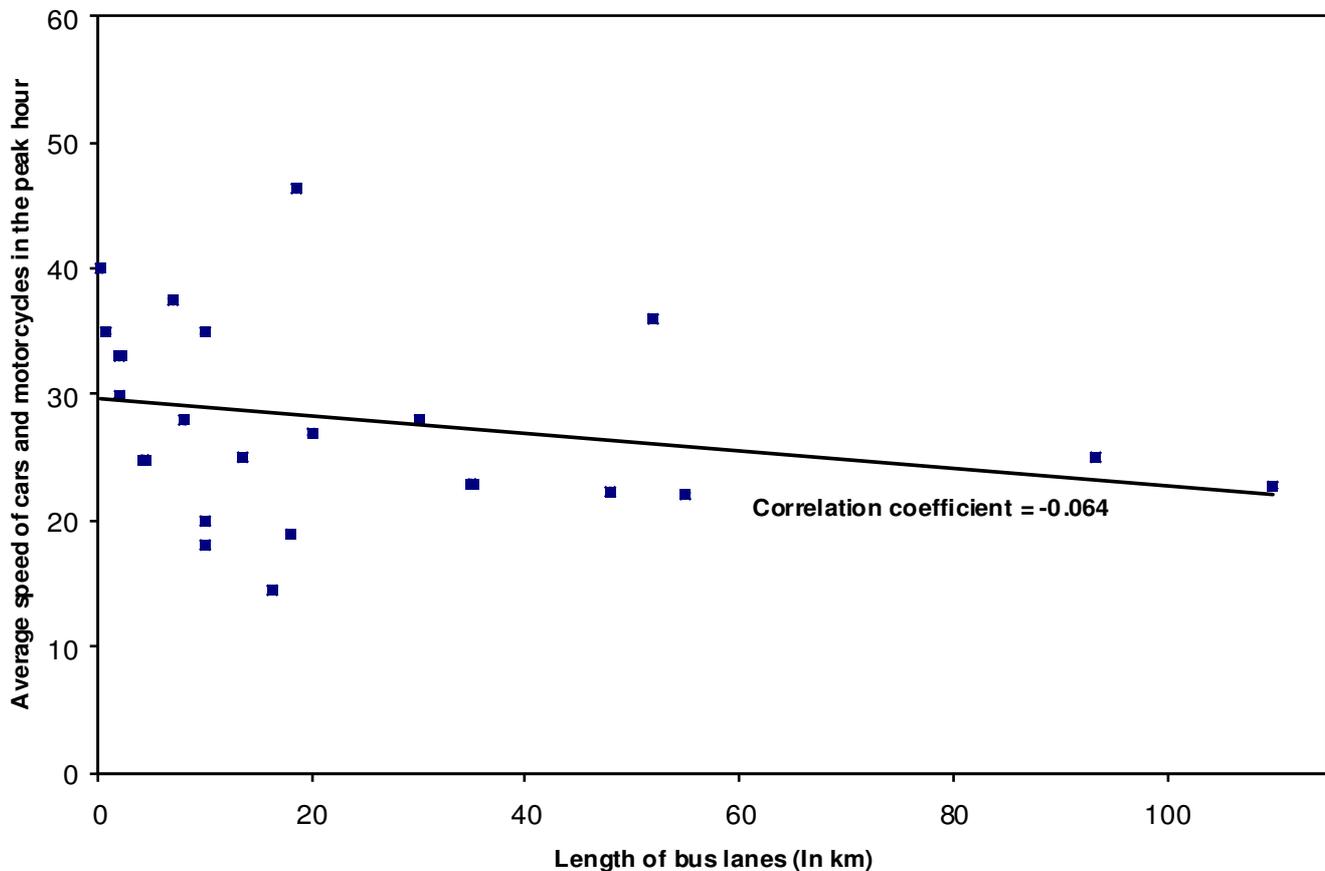


Key data notes for Figure 3.11:

- Data relates to 2003, except for; Oxford, Clermont Ferrand, Suceava, Dresden, Rotterdam, Helsinki, Bristol, Warsaw, Vienna, Barcelona and Cologne (2002).

Figure 3.12 is a scatter-plot which highlights the very weak negative relationship between the average speed of private motorised modes of transport during peak-hour and the length of bus lanes in the cities. This result is not worthy of further consideration, other than to accept that the anticipated link between longer bus lanes in cities with slower average peak-hour speeds of private motorised modes could not be found.

Figure 3.12: Comparison between the length of bus lanes and average peak hour speed of private motorised modes in the benchmarking cities



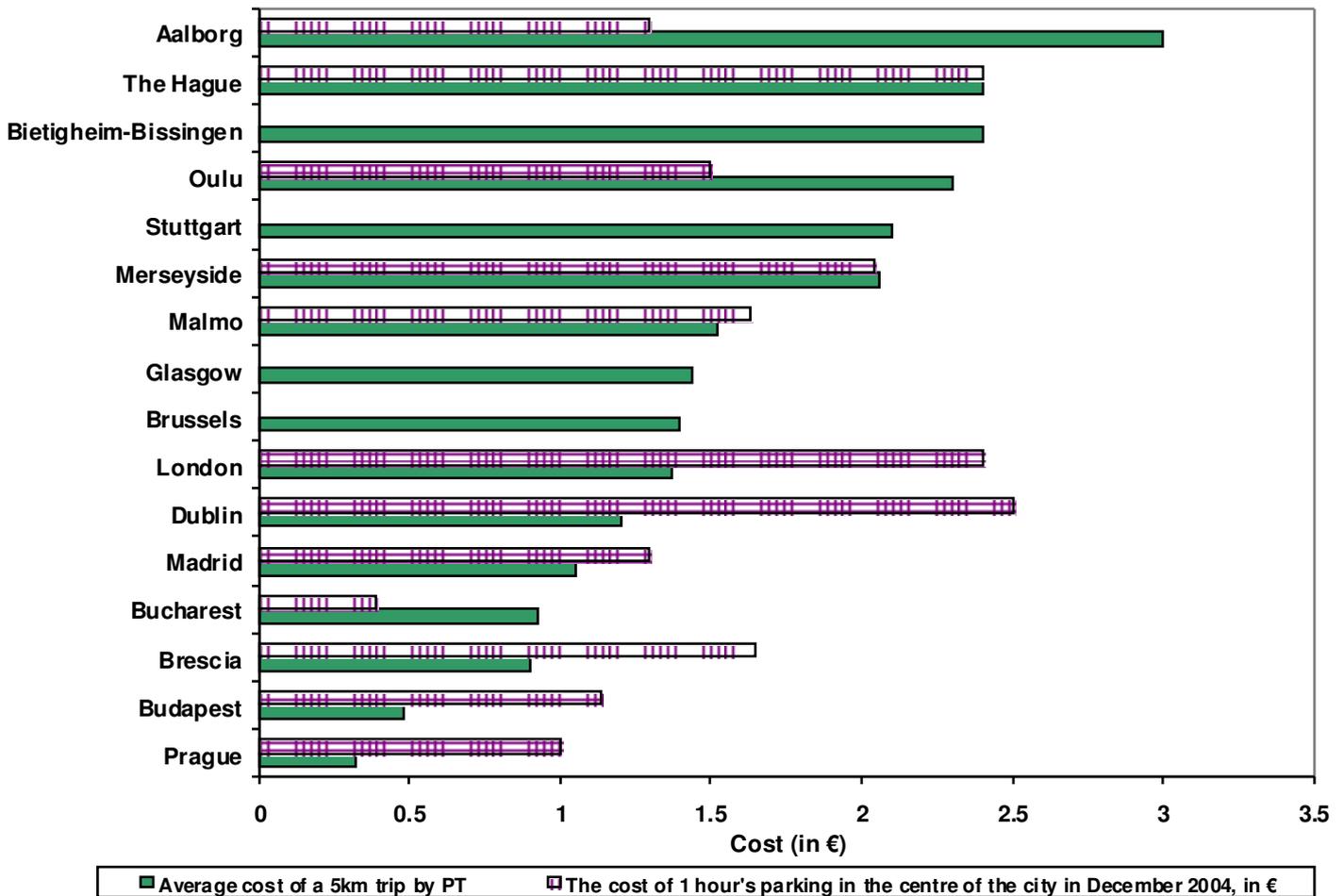
Cost comparisons

Figures 3.13 and 3.14 represent two loose comparisons between the costs of parking and car use against the cost of public transport travel. During year one of the Urban Transport Benchmarking Initiative it was not possible to undertake this type of comparison, because of a lack of available data and difficulties of finding a definition which adequately covered the cost of car use in the participating cities. The redefined indicators from year one of the initiative have contributed to the improved comparability of this information in year three of the Urban Transport Benchmarking Initiative, although there remains scope to further improve the data in year three of the project.

Figure 3.13 illustrates the comparative cost of one hour’s parking in the city centre of the year two benchmarking cities and the cost of a single 5km trip into the city centre by public transport. Of the

sixteen cities which were able to provide data for these indicators a total of six (London, Dublin, Madrid, Brescia, Budapest and Prague) indicated that one hour's parking in the city centre was more expensive than a 5 km trip to the city centre. Four cities (Aalborg, Oulu, Merseyside and Bucharest) revealed cheaper public parking per hour than the cost of a 5 km public transport trip, while costs are equal in The Hague. The remaining five cities could not provide both sets of data for comparison.

Figure 3.13: Comparison between the cost of one hour's parking and the average cost of a 5km single trip to the city centre by public transport

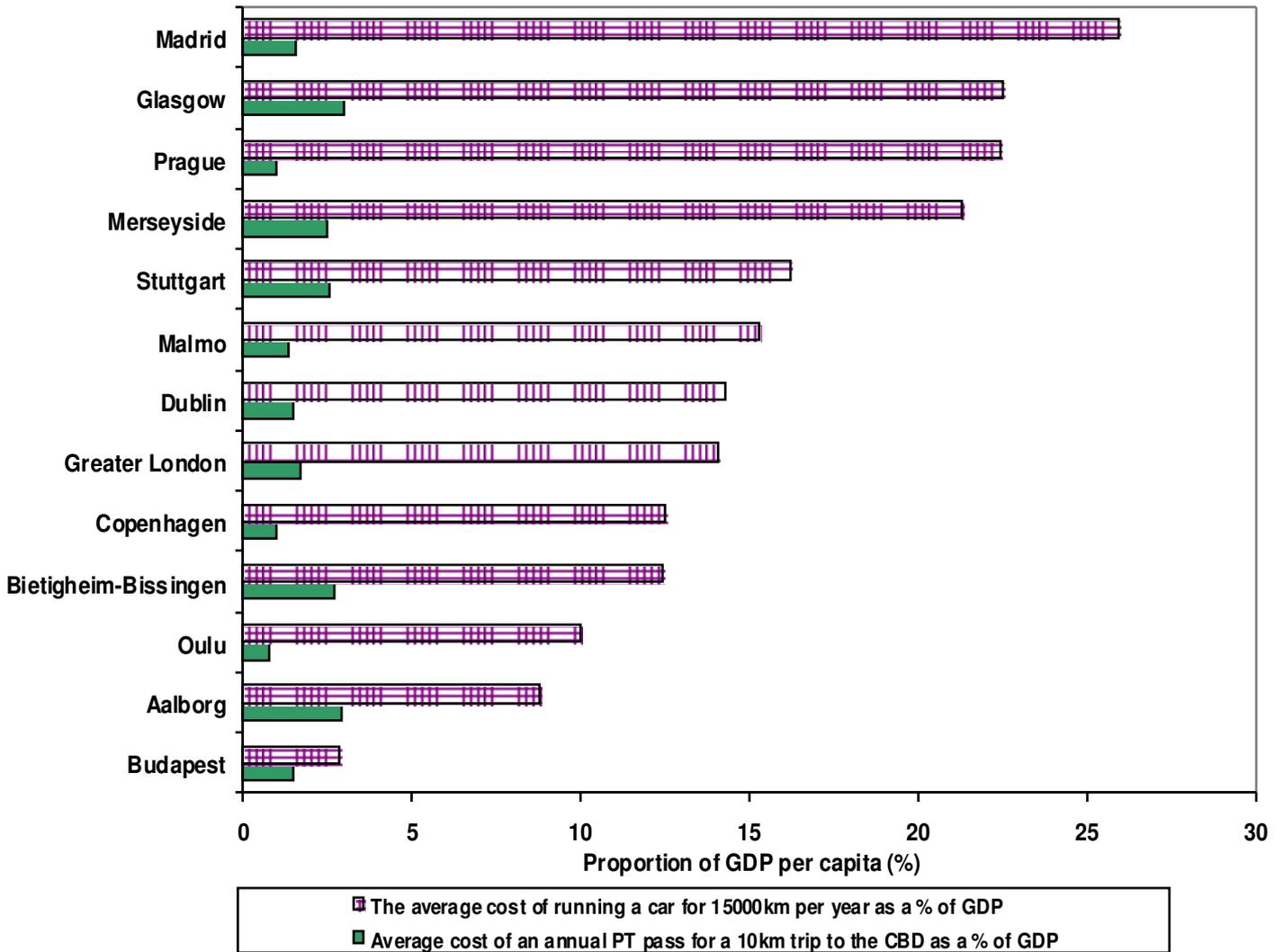


When compared with the modal share data from Figures 3.6a and 3.6b, the information presented in Figure 3.13 suggests that there is no clear relationship between the comparative costs of public transport travel and the modal share for public transport in the benchmarking cities. In Bucharest the cost of a 5 km public transport trip is significantly greater than the cost of parking a car for one hour, yet the modal share for public transport trips in the city is very high (65%). It is however, possible that in Bucharest the demand for public transport trips maintains the price of public transport fares, with the level of data available, and within the scope of the project, it is not possible to determine the direction of any causal link between the two indicators.

Figure 3.14 is another basic comparison of the cost of public transport use and the cost of running a car. The two indicators compared in Figure 3.14 relate to the cost of running a car for 15,000 km per annum and the cost of an annual pass (averaged for all public transport modes) and both are expressed as a percentage of GDP per capita. Although not directly comparable, these two sets of

data represent the most complete and comparable information which was available within the scope of the project. The annual car mileage of 15,000 km was selected because it is generally considered to be a relative standard in terms of the collection of motoring data in Europe. As a result the mileage of 15,000 km does not compare with that one would cover using a 10 km annual public transport pass for a daily commute, which is estimated at approximately 5,000 km based upon a 20 km round trip for 250 working days a year. Nonetheless the two sets of data do provide some basis for comparison, because it is possible to consider the difference between the public transport and car-use costs in each of the cities.

Figure 3.14: Comparison between the cost of running a car for 15,000 km per annum and the average cost of a 10km trip season pass for public transport in real terms



The key observations from Figure 3.14 are that there is a broad range in the difference between the cost of car use and the cost of an annual public transport pass for a 10 km trip. In Madrid the cost of running a car for 15,000 km per annum equates to 25% of GDP per capita, while the cost of an annual public transport pass is less than 5%. By contrast the difference between the costs of the two modes in Bucharest is much smaller, with both being less than 5% of GDP per capita.

In general the car running cost data appears to be less reliable than the data relating to the cost of an annual season pass, which is relatively similar across all of the cities when considered as a

percentage of GDP per capita. This is likely to be because the car running cost data has been obtained from third party sources and is highly variable dependent upon a number of factors e.g. type of car and engine size. Although it would have been possible to define all of these aspects more precisely in the preparation of the common indicators for year two of the Urban Transport Benchmarking Initiative, it was felt that narrowing the indicator too much would have made it very difficult for the participants to collect the information.

As a form of work-around the participants collected information relating to the cost of a litre of petrol (in November 2004) and the cost of one hour's parking in the city centre in order to ensure that some comparable data relating to the cost of car use was collected. These items of data have been expressed as a proportion of GDP per capita in order to improve their comparability and are displayed in Figures 3.15 and 3.16.

Figure 3.15: The cost of a litre of petrol in the benchmarking cities in November 2004 as a percentage of GDP per capita

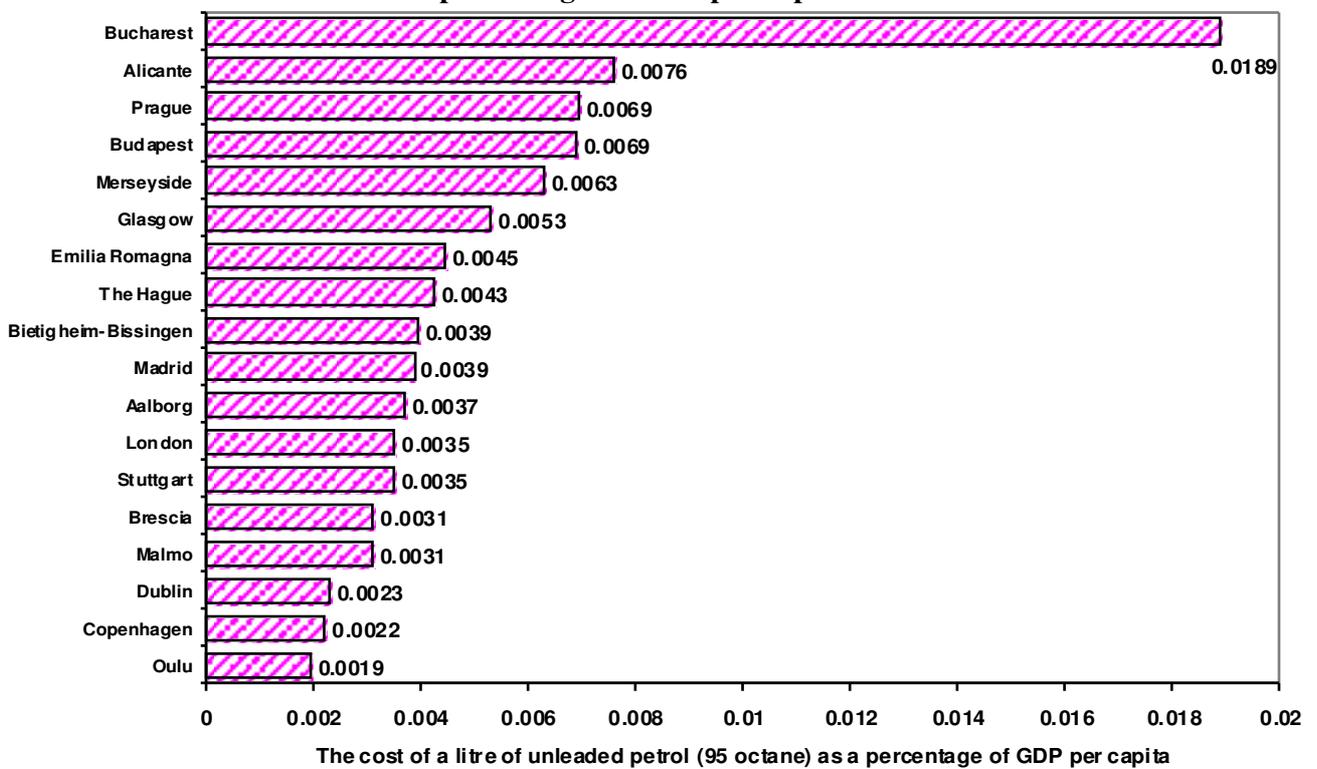
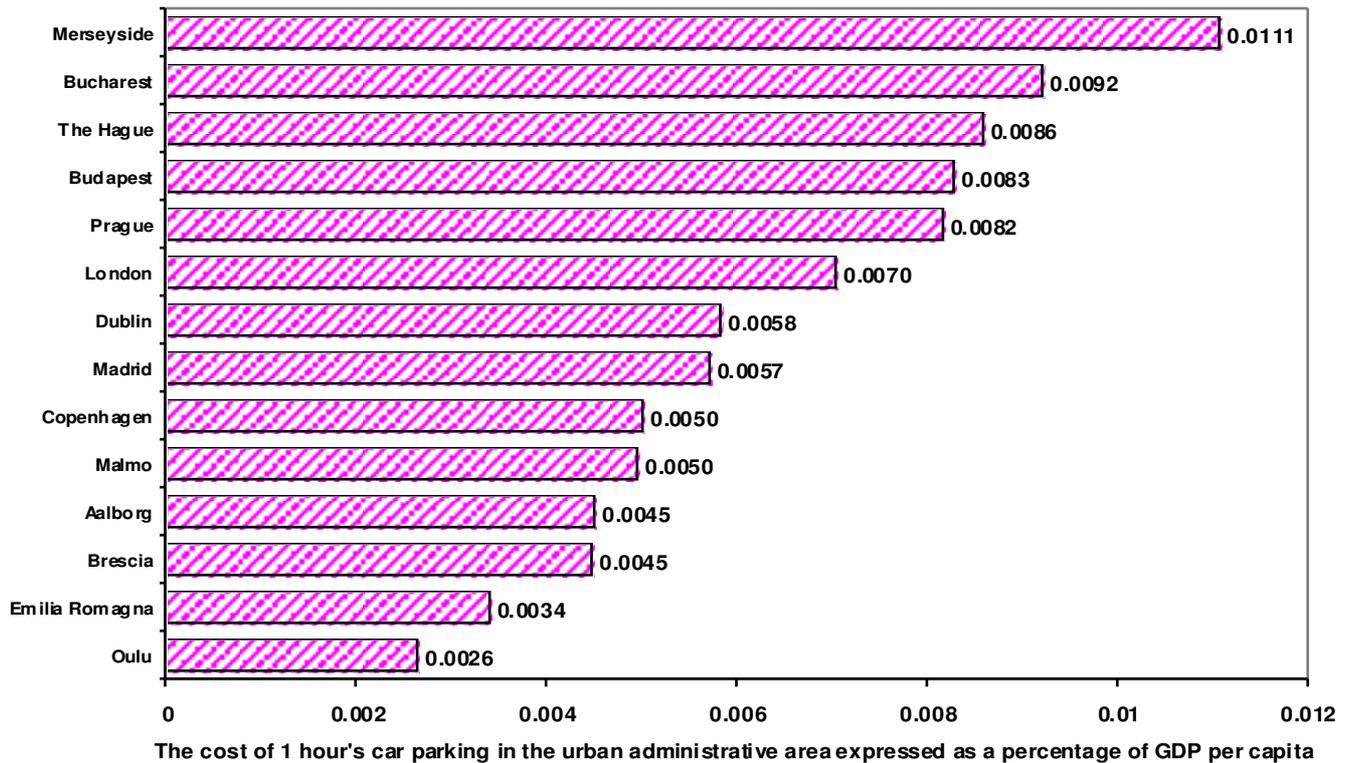


Figure 3.16: The cost of one hour's parking in the city centre as a percentage of GDP per capita in 2003



Figures 3.15 and 3.16 illustrate a broad variation in the costs associated with car use in real terms. The cities of Merseyside, Prague, Bucharest and Budapest are the three cities which have relatively expensive parking and petrol costs and, as shown by Figure 3.6a and 3.6b these four cities all have greater modal shares for public transport than they do for car use. Conversely the city of Oulu has the cheapest petrol and car parking facilities as a percentage of GDP per capita and also displays a very large car modal share of 90%.

Although the data available and limited number of cities that collected the information means that it is not possible to link these two issues more thoroughly, it appears to be clear that the real-term cost of parking and petrol in cities does have a significant impact upon car and public transport use.

Overview of public transport speed and cost comparisons

The data presented in section 3.3.3 has outlined a number of trends relating to the relative costs of public transport and car use in the benchmarking cities. These include:

- Of the four cities which reported public transport modal shares in excess of 50% and were able to provide the average speed data for Figure 3.11 only one, Budapest, demonstrated a faster average peak-hour speed for public transport than private motorised modes.
- This finding suggests that the urban traveller does not base his/her decisions solely upon the speed of the transport modes available to them. Issues such as the cost of, and access to, suitable public transport services are also likely to influence these decisions.
- Some cities face a distinct disadvantage when trying to make public transport an attractive option for people travelling during peak public transport hours, because the road network can provide the private motorised traveller with a faster journey than the public transport system.

- As a result there appears to be considerable potential for greater demand management measures in cities where peak-hour public transport average speeds are inferior to the speed of private motorised modes during the same period.
- It was anticipated that there may be some link between the average speed of private modes and the proportion of road network that was made up of bus lanes, although this was not found to be evident in the benchmarking cities.
- It was also not possible to identify a link between the cost of public transport relative to the cost of parking and the modal share for public transport trips.
- When considered in real terms (as a percentage of GDP per capita) the point-of-use costs associated with travelling by car, e.g. parking and petrol, appear to have a significant link with the modal splits for car and public transport trips.
- The cities of Merseyside, Prague, Bucharest and Budapest all have relatively expensive parking and petrol costs (as a percentage of GDP per capita) and these cities all display greater modal shares for public transport than they do for car use. Conversely the city of Oulu has the cheapest petrol and car parking facilities as a percentage of GDP per capita and also displays a very large car modal share of 90%.
- Although the data available and limited number of cities that collected the information means that it is not possible to link these two issues more thoroughly, it appears to be clear that the real-term cost of parking and petrol in cities does have a significant impact upon car and public transport use.

It would be ideal to deepen the analysis of the relative costs of public transport and car use in year three of the initiative, although it is likely that the lack of a reliable data set which could be used to accurately quantify the cost of car use will again act as a barrier to the successful benchmarking of this issue. It is also possible to suggest that the wide range of behavioural factors which affect the decision making process relating to car/public transport use are vastly complex and beyond the scope of this exercise to be considered at the level of detail required.

3.3.4 The relationship between modal share and urban transport infrastructure provision

In the “World Cities Research” undertaken by the UK’s Commission for Integrated Transport (CFIT)⁴ one of the findings suggested that the availability of road space in cities encouraged higher car ownership and greater car use, reinforcing the need to reallocate road space to public transport modes. This finding seems to be perfectly logical and as a result, these findings were evaluated using the data collected in year two of the Urban Transport Benchmarking Initiative with mixed outcomes.

The scatter-plots and weak correlation coefficients presented in Figures 3.17 and 3.18 appear to suggest that there is no relationship between the road network density, car use and the level of car ownership in the benchmarking cities.

⁴ CFIT World Cities reports, available online at: <http://www.cfit.gov.uk/research/worldcities/summary.htm>, accessed on 17/06/05

Figure 3.17: Comparison between the density of road network and the modal share of car and motorcycle trips

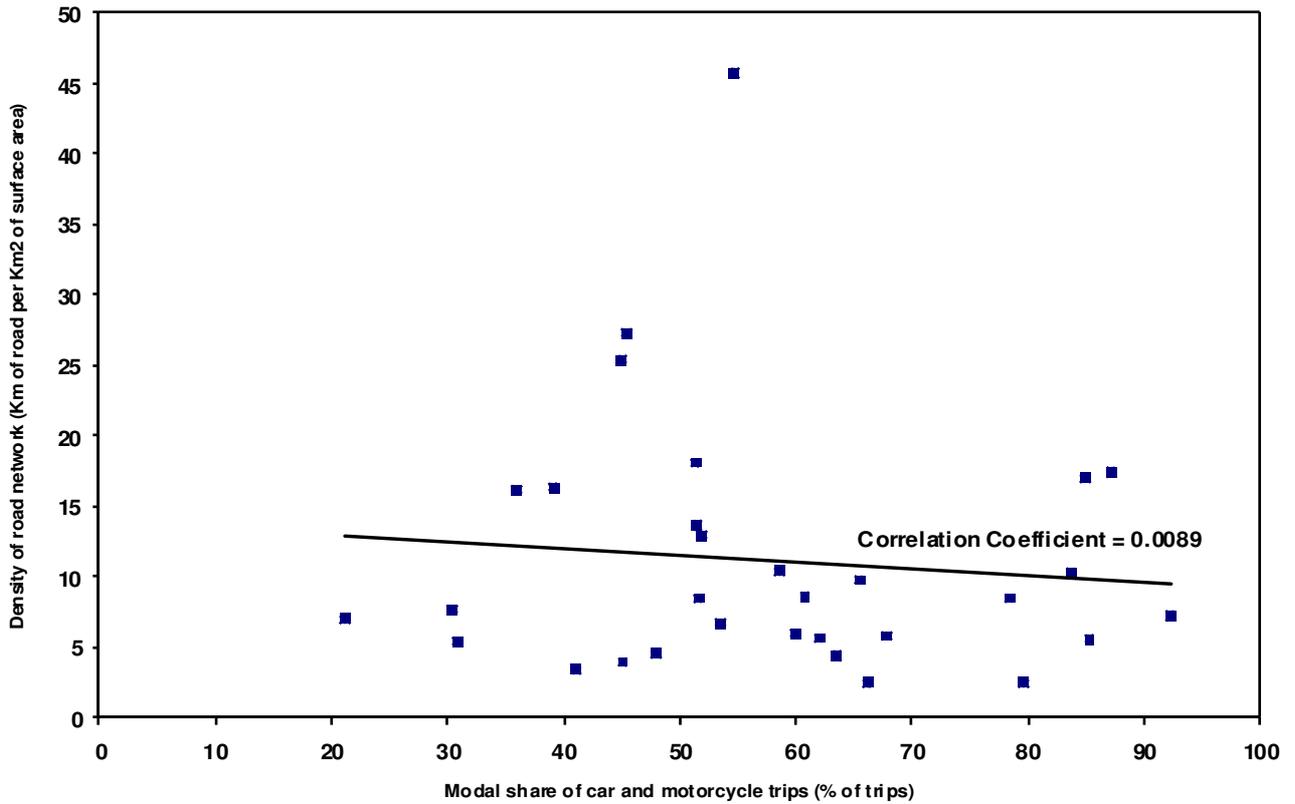
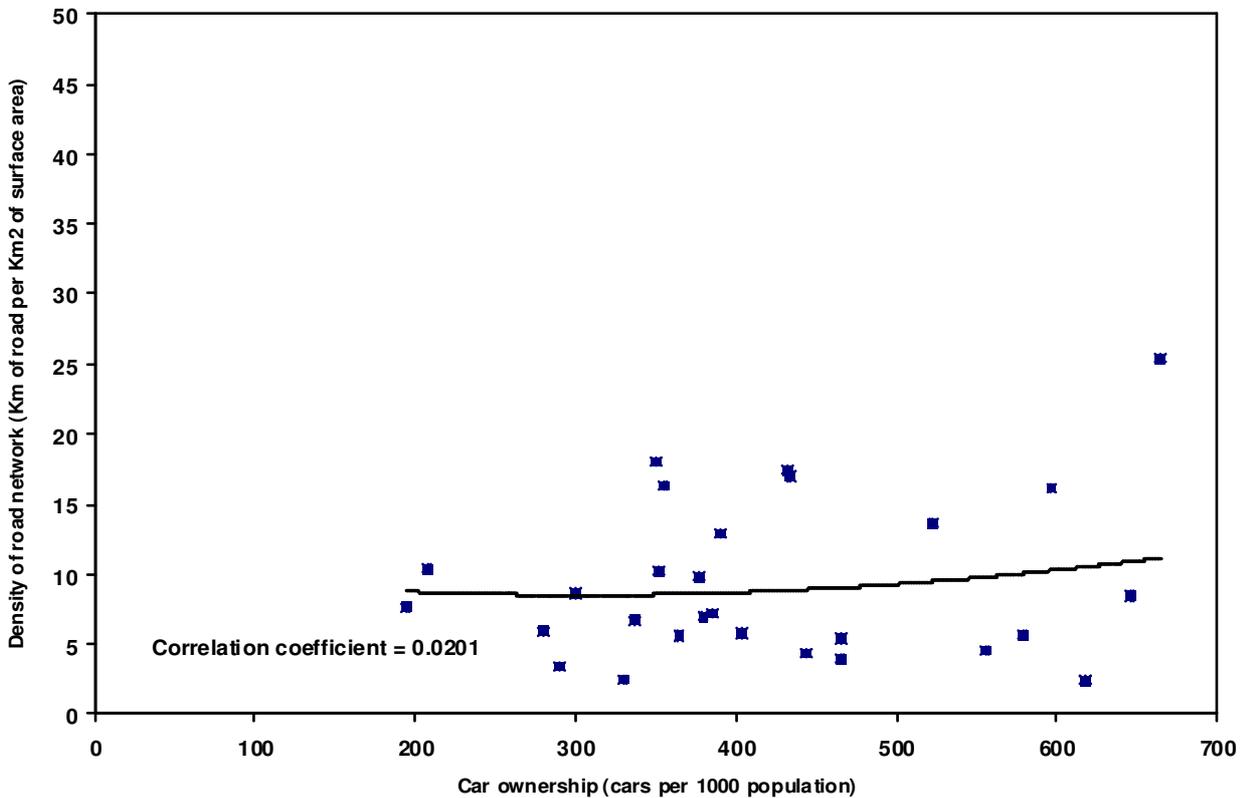


Figure 3.18: Comparison between the density of road network and the extent of car ownership in the benchmarking cities.



However, when the car ownership (figure 3.7), modal share (figure 3.6a and 3.6b) and road network density (not displayed in this report, but presented in the common indicator analysis in Annex A1) graphs are all considered together it is possible to identify a small number of cities where car ownership figures are low, the road network is less dense and the modal share for private motorised travel is high. Likewise, at the opposite extreme there are a number of cities which appear to indicate higher levels of car ownership, densely developed road networks and greater modal shares for private motorised modes. These cities have been outlined in Table 3.3.

Table 3.3: Benchmarking cities which show a link between road-space, car ownership and modal share

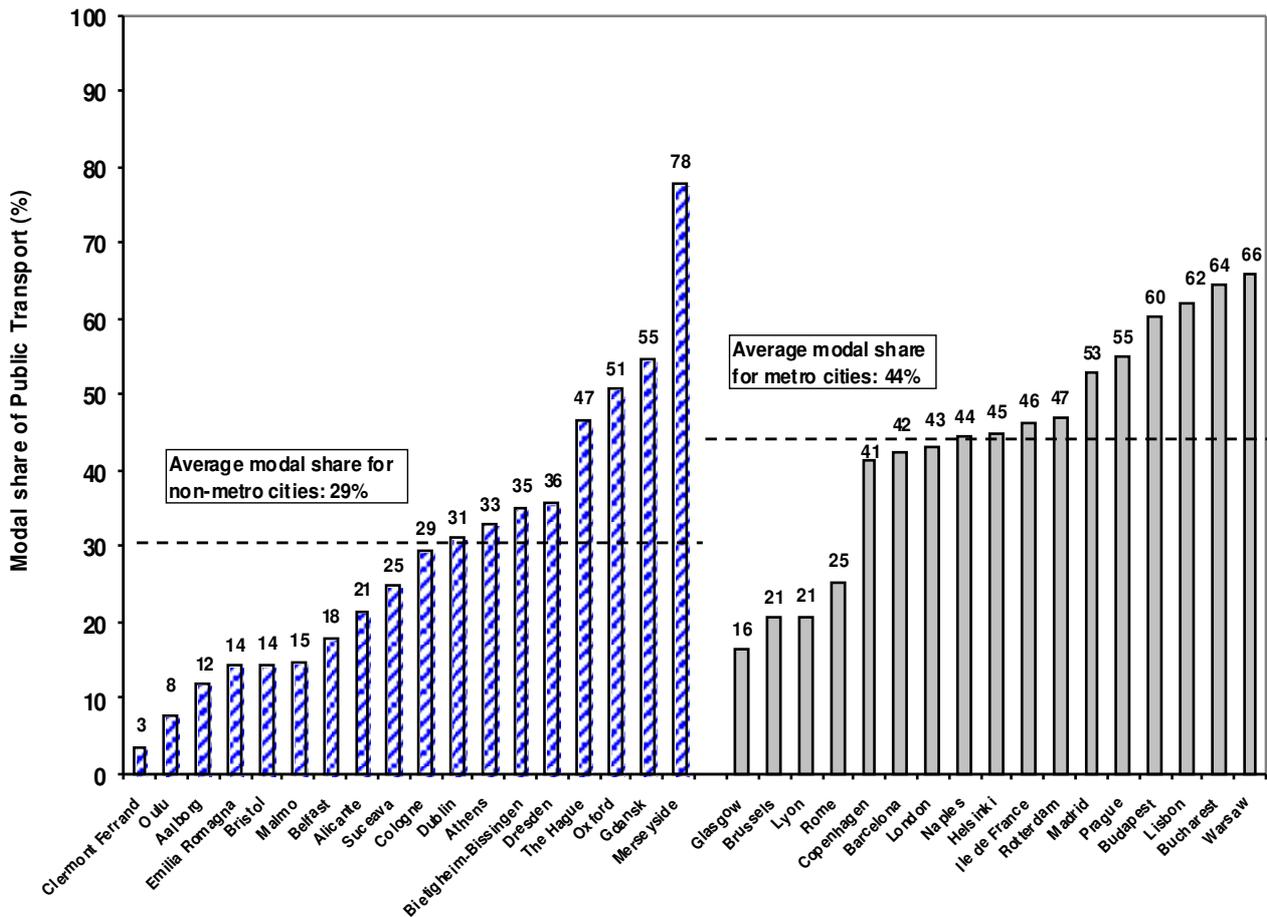
City	Road Network density (km of road per km ² of area)	Car ownership (cars per 1000)	Modal split for car trips (%)
Rome	26	665	75
Aalborg	18	432	86
Bristol	17	434	85
Bucharest	7.5	194	30
Merseyside	7	377	21
Gdansk	3	290	41

A small number of the cities involved in the Urban Transport Benchmarking Initiative do adhere to the CFIT “World Cities Research” trend, although the majority do not. This reflects the broad range of factors (e.g. behavioural, social, economic and climatic) which play a role in influencing the level of ownership and use of cars and the availability of road space appears to be just one of these factors. It is also interesting to note that two of the three cities which display lower densities of road space, car ownership and car modal splits are cities in New Member States.

Based upon the principles applied above, to road-space and its impact upon the car modal share in cities, the concept was also extended to consider the provision of infrastructure and the impact upon public transport modal shares in cities. All public transport modes were considered and the most striking trend identified from this test related to the cities with metro systems and their modal shares for public transport.

Figure 3.19 outlines a modal share comparison between the cities which have metro systems and those which do not. The graph shows that, on average, the cities with metro systems have larger public transport modal shares than those which do not. There are a few notable exceptions to this trend; The Hague, Gdansk, Oxford, Merseyside, Glasgow, Brussels, Lyon and Rome, but it is otherwise very pronounced. Because of the multiple factors which have an effect upon the modal share for public transport, it is not possible to determine whether the metro system is a cause or an effect of high public transport modal shares. While it is possible that the presence of a metro system in a city encourages greater public transport use, it is equally likely that the largest cities with the greatest supply of public transport services and large public transport modal splits are those which have metro systems.

Figure 3.19: Modal share of all public transport modes with metro cities identified



Overview of the relationship between modal share and urban transport infrastructure provision

The data presented in section 3.3.4 has considered whether a trend identified by the CFIT “World Cities” research is also applicable to the cities participating in the Urban Transport Benchmarking Initiative. The main observations from these comparisons are that:

- Scatter-plot and correlation analysis was not able to find a similar positive relationship between the density of the road network, car use and the level of car ownership in the benchmarking cities as identified in previous research.
- Despite this there are a small number of cities within the Urban Transport Benchmarking Initiative which adhere to each “extreme” of the trend outlined above which are obscured in the scatter-plot analysis.
- This suggests that there is some evidence within the benchmarking cities that there is a direct positive relationship between the provision of road space, the extent of car use and the levels of car ownership in a city.
- The lack of a unanimous finding in which all of the benchmarking cities agree with the trend serves to outline the fact that a broad range of issues (e.g. behavioural, social, economic, political and climatic) combine to affect the level of ownership and use of cars in cities. It is therefore possible to conclude that the availability of road space is merely one of these factors.

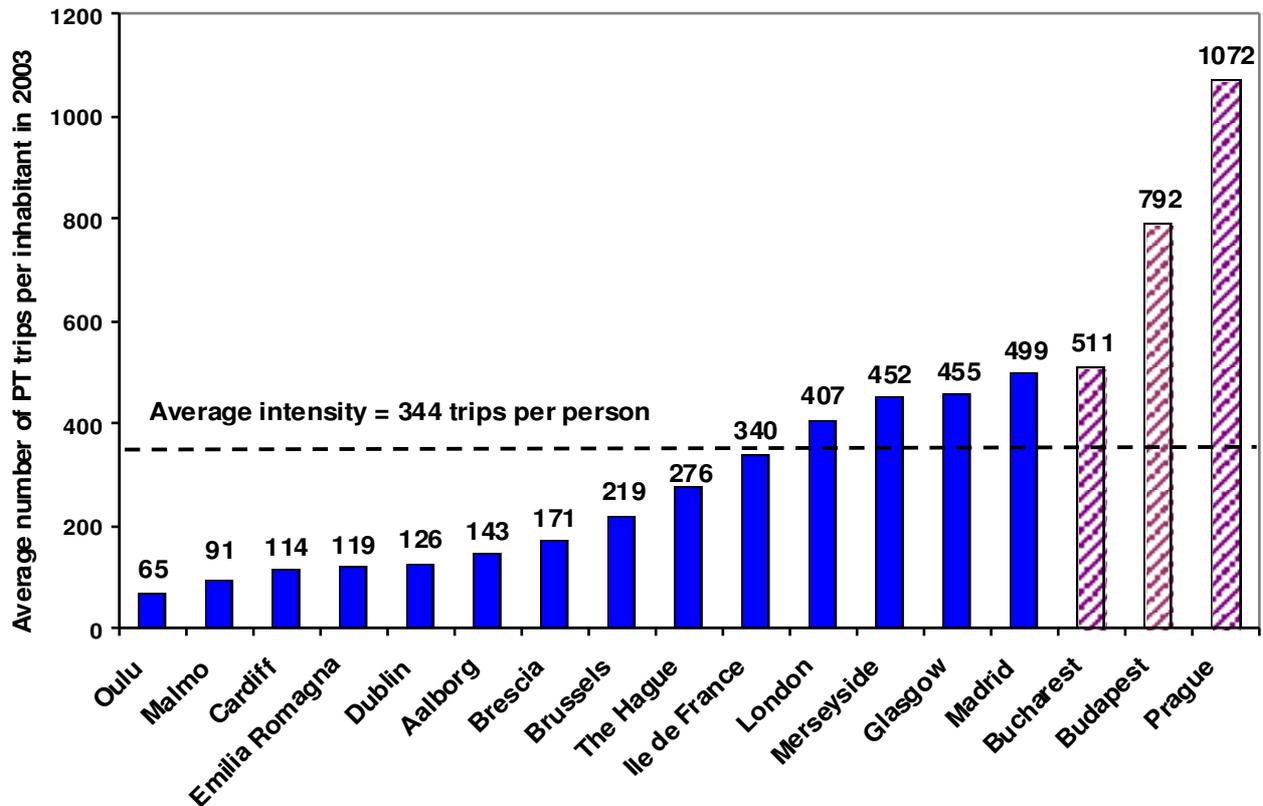
- A similar comparison of the public transport modal shares of the cities with metro systems and those without revealed that, on average, the cities with metro systems have larger public transport modal shares than those which do not.
- There are a few notable exceptions to this trend and due to the multiple factors which impact upon the modal share for public transport, it is not possible to determine whether the metro system is a cause or an effect of high public transport modal shares.
- While it is possible that the presence of a metro system in a city encourages greater public transport use, it is equally likely that the largest cities with the greatest supply of public transport services and large public transport modal splits are those which have metro systems.
- In either case it is apparent that introducing a metro system to a city stimulates public transport use.

3.3.5 Comparisons between NMS cities and EU15 cities involved in the benchmarking initiative

Figures 3.20 to 3.23 in this section of the common indicator report outline some of the key differences between the urban transport systems found in cities in New Member States (NMS) of the European Union and those found in EU15 states. Some of the findings have been remarked upon elsewhere in this document, but are drawn together in this section of the report for a further comparison.

Figure 3.20 outlines the “intensity” of public transport use in the year two benchmarking cities by contrasting the number of public transport trips made in 2003 with the population of the city. This calculation presents an indicative “number of public transport trips per inhabitant” for 2003 and, although the figures do not consider issues such as suburban commuter flows or tourist trips, this is the same for all of the cities and therefore the figures are broadly comparable.

Figure 3.20: The intensity of public transport patronage (total passengers carried by all PT modes ÷ urban population) in 2003



The key observations from figure 3.20 are:

- The average level of public transport use across the 17 cities which submitted data was 344 trips per person in 2003.
- Public transport intensity was particularly high in Bucharest, Budapest and Prague, all of which are New Member States (NMS) to the European Union and located in Eastern Europe.
- As one would expect these three cities all have high levels of public transport modal share, with more than 50% of all motorised trips being made by public transport in Prague, Bucharest and Budapest (see figure 4.6).
- The smallest cities in terms of population (Oulu and Malmö) demonstrate the lowest levels of public transport use and this is reflected by much smaller motorised modal share figures of less than 20% for public transport trips (figure 3.6a and 3.6b).

Figure 3.21 provides a comparison of the cost of an annual bus season pass as a percentage of GDP per capita in the benchmarking cities. The key observation is that the cities from NMS (highlighted yellow) do not all have “cheap” fares when considered in real terms. This is commonly perceived to be a factor which encourages the high public transport modal shares which have traditionally been evident in these cities. Figure 3.21 indicates that Gdansk, Suceava and Bucharest display similar, if not more costly annual bus pass fares when compared to the real costs in EU15 cities.

Figure 3.21: Comparison of the cost of an annual bus pass (as a percentage of GDP per capita)

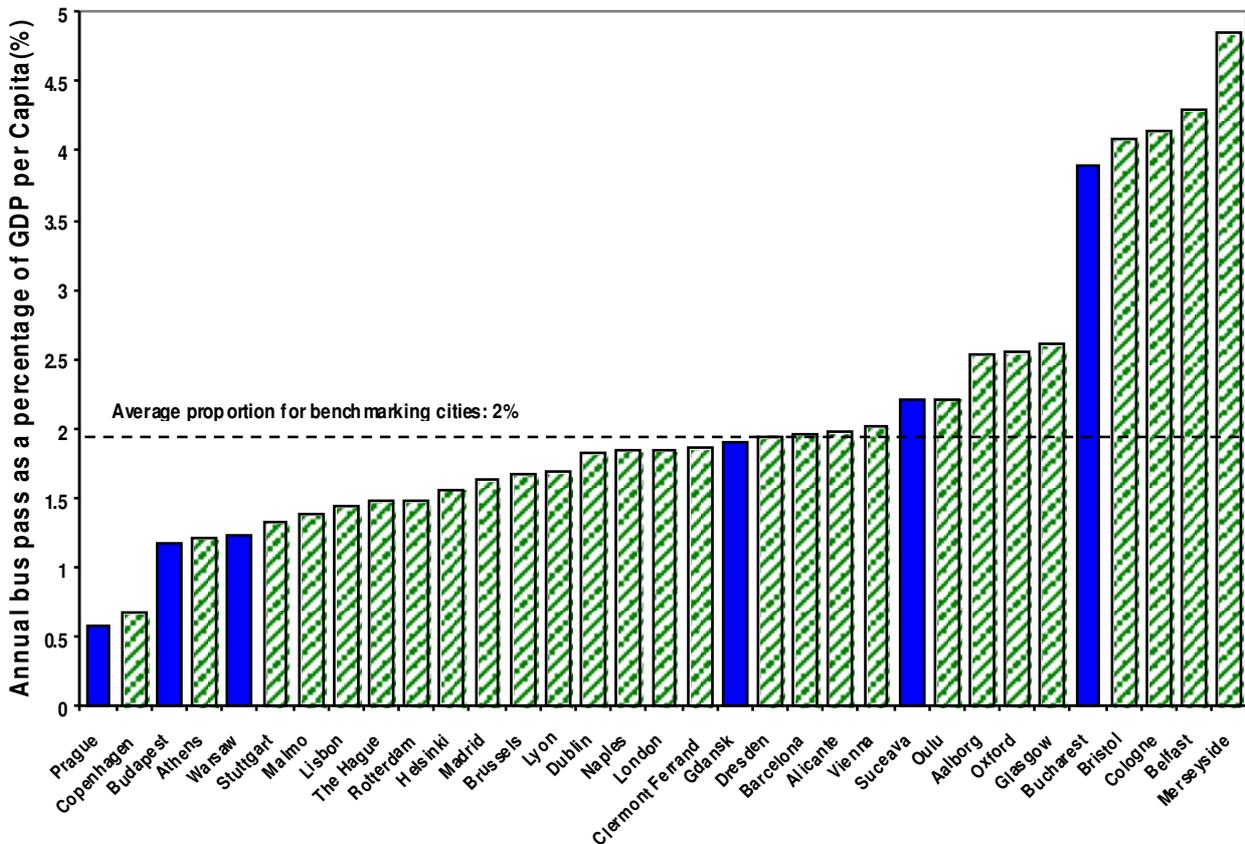


Figure 3.21: Key data issues

- Data relates to 2003 except for; Budapest, Warsaw, Lisbon, Rotterdam, Helsinki, Lyon, Naples, Clermont Ferrand, Gdansk, Dresden, Barcelona, Vienna, Suceava, Oxford, Bristol and Cologne (2002).

Figure 3.22 combines the proportion of the bus fleets in the benchmarking cities that are made up of low floor buses which can be considered as wheelchair accessible. The data indicates that the cities from NMS generally have significantly smaller proportions of wheelchair accessible bus fleets than cities in EU 15 states. It is likely that this pattern reflects a trend for more regular bus-fleet renewal in EU 15 cities. Consideration could be given to comparing the average age of bus fleets as a common indicator in year three of the Urban Transport Benchmarking Initiative in order to further explore this trend.

Figure 3.22: Comparison of the percentage of bus fleets which are low floor accessible

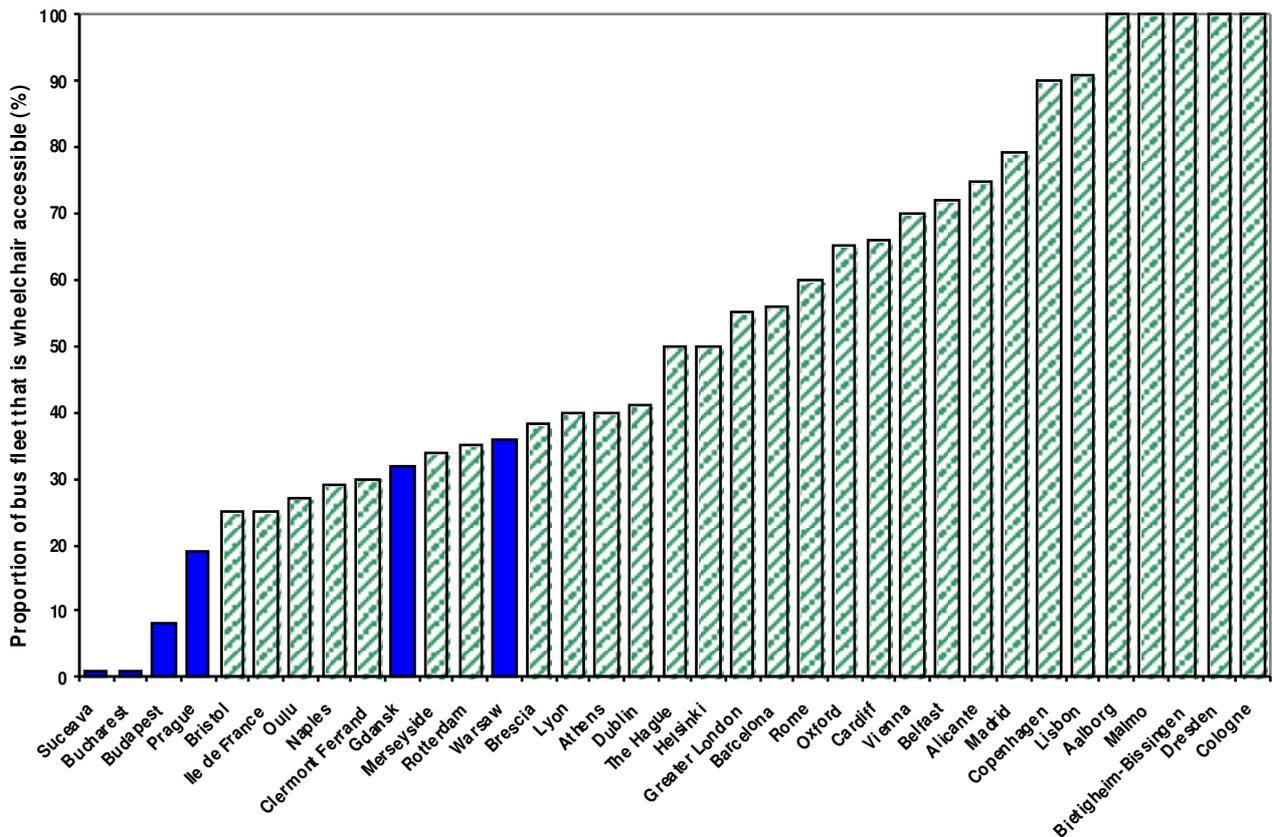


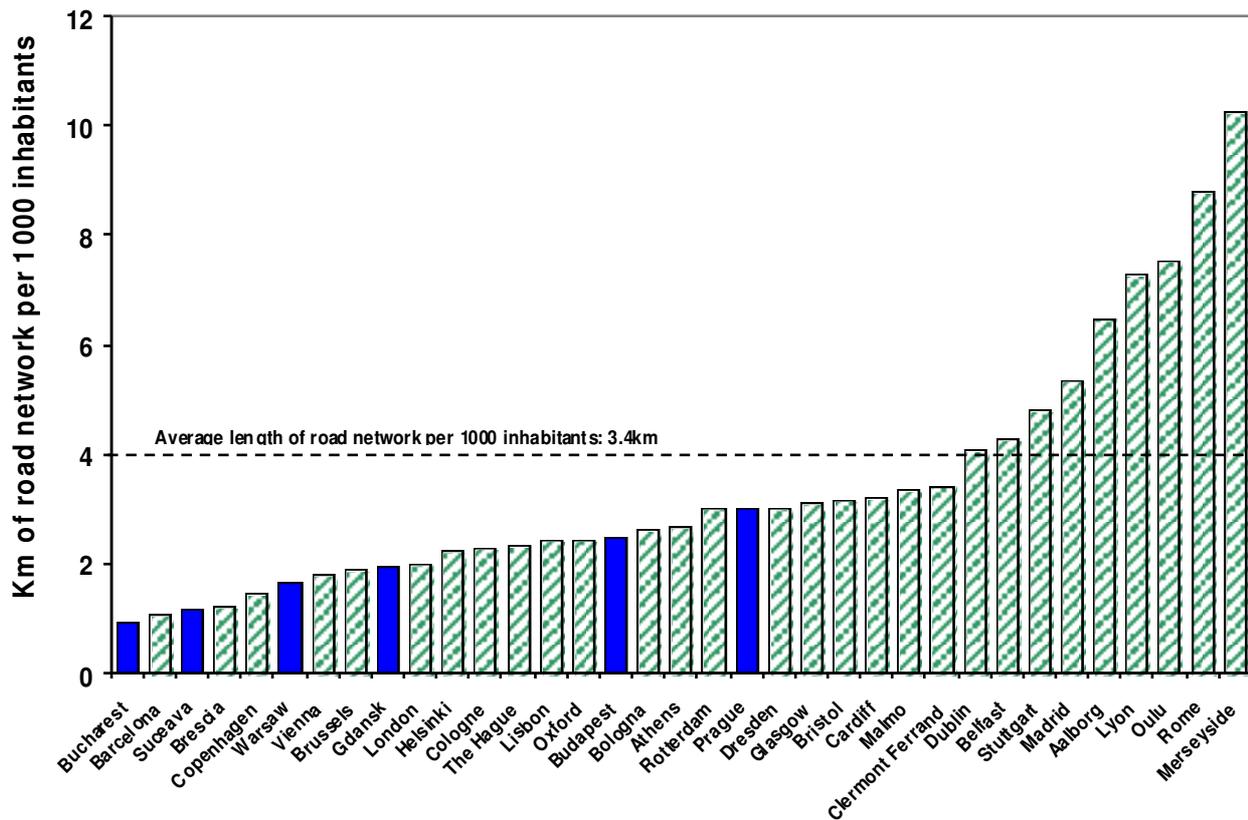
Figure 3.22: Key data issues

- Data relates to 2003 except for; Budapest, Warsaw, Lisbon, Rotterdam, Helsinki, Lyon, Naples, Clermont Ferrand, Gdansk, Dresden, Barcelona, Vienna, Suceava, Oxford, Bristol and Cologne (2002).

Figure 3.23 is the final graph in this section of the report and illustrates the differences in the road space in cities. Figure 3.23 indicates that, in general, the NMS cities demonstrate urban road networks which are considerably less densely developed than those in the cities located in EU15 states. Although it is impossible to determine for certain whether this is a cause, or effect, most of the New Member State cities with less densely developed road networks also demonstrate very large public transport modal shares of more than 50% of all trips made in the cities. Suceava is the principle exception to this trend.

It is possible that the limited road space in the New Member State cities acts as a natural form of demand management measure which, combined with the lower levels of car ownership, serves to stimulate a higher public transport modal share. There is great potential to intensify the focus upon the NMS cities involved in the Urban Transport Benchmarking Initiative and this has the potential to be considered as a theme for a working group in year three of the project.

Figure 3.23: Comparison of the average length of road space per 1000 inhabitants



Overview of EU15 and NMS city comparisons

Section 3.3.5 of the common indicator report has reiterated a number of the trends identified which have involved comparisons being drawn between NMS and EU15 cities. The key findings with respect to this topic are:

- The average level of public transport use across the 17 cities which submitted data was 344 trips per person in 2003, although this figure was significantly higher in Bucharest, Budapest and Prague, all of which are New Member States (NMS) to the European Union and located in Eastern Europe.
- NMS cities do not all have “cheap” fares when they are considered in real terms. Despite this the “cheap” public transport fares in NMS cities is commonly perceived to be a factor which encourages the high public transport modal shares that have traditionally been evident in these cities. Gdansk, Suceava and Bucharest display similar, if not more costly annual bus pass fares (as a percentage of GDP per capita) when compared against the real-term costs of public transport travel in the EU15 cities.
- NMS cities generally have significantly smaller proportions of wheelchair-accessible bus fleets than cities in EU 15 states. It is likely that this pattern reflects a trend for more regular bus-fleet renewal in EU 15 cities. Consideration could be given to comparing the average age of bus fleets as a common indicator in year three of the Urban Transport Benchmarking Initiative in order to further explore this trend.
- NMS cities demonstrate urban road networks which are less densely developed than those in the cities located in EU15 states. Although it is impossible to determine for certain whether this is a cause, or effect, most of the NMS cities with less densely developed road networks also

demonstrate very large public transport modal shares of more than 50% of all trips made in the cities.

- It is possible that the limited road space in the NMS cities acts as an inherent form of demand management measure which, combined with the lower levels of car ownership, serves to stimulate a higher public transport modal share. There is great potential to intensify the focus upon the NMS cities involved in the Urban Transport Benchmarking Initiative and this has the potential to be considered as a theme for a working group in year three of the project.

4. THEMATIC WORKING GROUPS

The four working groups that took part in the Urban Transport Benchmarking Initiative have each produced individual working group reports (Annexes A2-A5). These reports and relevant data annexes are downloadable from the project website (www.transportbenchmarks.org) and this section of the summary reports represents an overview of the key findings from each working group.

4.1 Definition of interesting practice

The aims of the Urban Transport Benchmarking Initiative data analysis were clearly defined at the outset of year one and these remain unchanged now:

- To look for best practices and try to establish reasons for variations between data.
- To encourage all participants to take part in this process in order to ensure a set of findings supported by reasoned analysis rather than a collection of statistics.

As a result the approach to the term “Best Practice” has been retained for the second year of the Urban Transport Benchmarking Initiative. What constitutes a “Best Practice” has been heavily debated over the course of previous benchmarking projects. The major problem is that there is no all-encompassing definition which clearly defines ‘Best Practice’. In the case of this initiative the term “Best Practice” is applied more loosely to include interesting practices that are displayed in the operations of the participant’s urban transport systems.

From the outset it has not been the goal of the Urban Transport Benchmarking Initiative to create a competitive atmosphere among the participants and at the launch conference it was clearly stated that this is not a competition with “winners” and “losers”. Promoting interesting practices, through the use of benchmarking, so that a wide audience of cities, operators and local authorities may benefit from them is a concept with huge potential. Creating a set of “winners” and “losers” does not help to achieve this, because it may dishearten those perceived to have “bad practices”, whereas these groups of participants probably have the most to gain from this type of project.

The aim of the project is therefore to try to offer the participants the chance to benefit from the project by presenting a set of findings that will interest all of the participants. Disseminating a range of interesting practices is also likely to be of wider interest to those not participating in the project.

4.2 Overview of the working groups and key findings from year two

Cycling

The Cycling working group continued its work from year one of the Urban Transport Benchmarking Initiative and benefited greatly from having a larger number of cities involved when compared to year one of the project:

- | | | |
|--------------|-----------|-----------|
| • Malmö | • Aalborg | • Brescia |
| • Copenhagen | • Prague | • Glasgow |

The group had 3 site visits, to Copenhagen, Brescia (which was shared with the Behavioural & Social Issues in Public Transport working group and is reported in Annex A6 to this document) and

Glasgow. The research questions selected by the group represented evolutions of the topics covered during year one of the Urban Transport Benchmarking Initiative and are outlined below;

How does the city measure the effects of its cycling policies and reflect this in programme review?

Which marketing techniques are being used to engage specific audiences?

How can cycling be integrated with modes of public transport to encourage mutual demand uptake?

The thematic data indicators the group collected during year one were re-defined and supplemented with additional questions before the data was collected by the working group. The following key findings were drawn from the analysis of the working group's activities;

- The three Danish and Swedish cities (Aalborg, Copenhagen and Malmö) demonstrate significantly more developed cycle networks than the cities of Brescia, Glasgow and Prague. The positive effect upon the modal share of cycle trips in these cities sends a clear message to cities seeking to encourage cycling in their city - the most important thing to do is ensure that an effective cycle network is established.
- The three cities where the cycling modal shares are particularly high (Aalborg, Copenhagen and Malmö) also display greater numbers of killed and seriously injured cyclists, although this is logical when the larger number of cycle trips being made in these cities is taken into account.
- The cycle networks established in the working group's cities reflect the very different approaches to the development of cycling facilities across the group. Malmö and Aalborg have achieved their cycle network through the development of predominantly off-road tracks and routes, while in Copenhagen the majority of cycle routes are on-road and are segregated from the main flows of traffic by a raised kerb. Brescia, Glasgow and Prague also have predominantly on-road cycle networks, although the planned developments to the cycle networks in Glasgow and Brescia focus upon the creation of traffic-free cycling space, or green routes.
- Cycling data which has some practical use for policy monitoring and ongoing evaluation is currently gathered in a relatively piecemeal fashion from an assortment of local stakeholders. Mechanisms for the collection of data are relatively unclear, with ad-hoc surveys and involvement in projects such as the Urban Transport Benchmarking Initiative providing the impetus for some of the cities to collect and analyse data relating to their cycle network and cycle usage.
- Some of the information required for this benchmarking activity has been derived from annual reviews of local transport policies, although in many cases the focus upon cycling is limited. The information is usually reported on an annual basis although the fact that the participants had to collect the information from a range of sources serves to underline the fact that cycling often falls between policy areas.

- Despite the range of sources for cycling data the participants in the group were generally able to find statistics for the benchmarking exercise, although this often required some effort on their part. The participants in the group suggested the most useful data for policy monitoring related to;
 - Cycle network length
 - Cycle accidents
 - The statistical risk of cycling
 - The availability and use of cycle parking
 - Formal surveys of cyclist travel behaviour
 - The extent of engagement with employers and schools to promote cycling
- The least useful information for monitoring cycling policy was identified as that relating to cycle theft, the number of cycle repair shops and, perhaps surprisingly, the extent of cycle training uptake among children.
- Formal fiscal support for the integration of cycling and public transport modes is sparse, with Glasgow being the only city in the working group with a formal budget allocation for the integration of public transport and cycling.
- Dialogue between public transport and cycling professionals remains limited, with Prague being the only city to have developed a formal exchange of views through a working group. Greater formalisation of exchanges between these transport stakeholders and including the issues in cycling policy monitoring could help to encourage greater intermodality in the working group cities.
- Although it is possible to suggest that having a bicycle available during the whole journey is generally very practical, most of the programmes and campaigns designed to integrate public transport and cycling are focused upon two main strands of logic;
 - The first is based upon the development of bike and ride facilities which will enable cyclists to combine the two modes of travel where they cannot carry bikes onto the public transport services.
 - The second is based upon the perception that people do not wish to leave their bicycles at public transport stops and, as a result, the carriage of bicycles on public transport modes has been encouraged as much as possible.
- It has so far not been possible for any city to introduce urban bus services capable of carrying bicycles, yet this has been attained on metro and train services to some extent. The costs associated with carriage of bicycles on public transport vary widely between cities in the working group, although this can be largely attributed to local economic conditions. Only in Glasgow is it possible to take a bicycle on a train without incurring an additional charge.
- Secure cycle parking and cycle hire facilities are increasingly becoming available in the cities in the working group and are likely to become commonplace amongst larger cities in the next 5 years. This technical development is then likely to filter down to public transport interchanges in order to facilitate combined journeys. These would involve securely parking one's bicycle at a public transport stop/station in order to enable the remainder of a journey to be completed on foot and/or by using public transport modes.

- The approaches to the marketing of cycling are individual to the aims of each of the working group cities. Glasgow and Brescia have focused specifically upon targeting the needs of children travelling to school sustainably and the needs of their parents (e.g. safe, independent or supervised, access to school). Conversely the activities in Copenhagen and Malmö have been devised to gain greater political support for cycling in the cities, as well as encouraging cycling as a replacement for commuter and shopping trips otherwise performed by car.
- The cities agreed that as well as the benefits from carrying out ‘cross-city’ analysis (i.e. benchmarking), the Urban Transport Benchmarking Initiative had also been valuable in terms of internally reviewing progress within their cities.

Behavioural and Social Issues in Public Transport

The Behavioural and Social Issues in Public Transport working group was made up of representatives of 6 cities which are listed below.

- | | |
|-------------------------|------------------------|
| • Paris / Ile de France | • Cardiff |
| • Lisbon | • Bietigheim-Bissingen |
| • Emilia Romagna Region | • Athens |

The working group attended site visits in Paris, Brescia (which was shared with the Cycling working group and is reported in Annex A6 to this document) and Bologna and focused upon the research topic of:

“Young people as a target group for public transport marketing.”

The thematic data indicators collected by the group during year one of the Urban Transport Benchmarking Initiative were re-defined and augmented before the data was collected by the working group. The following interesting conclusions can be drawn from the analysis of the working group’s activities;

- In the majority of the cities and regions in the working group approximately 20% of the total population are aged between 10-25 years old. The Emilia Romagna region is the key exception, where the population is significantly “older” than the others in the working group. The proportion of public transport trips made by people in this age group is encouraging and suggests that younger people are relatively intensive users of public transport services.
- Cardiff, Paris and Athens are the cities with the greatest proportions of students and people in full time education. The cities and regions with the greatest proportions of the target user-group falling within the independent traveller ages (18-25) are Lisbon, Cardiff and the Ile de France region.
- After trips for study & education purposes, work and leisure are the most common reasons for people in the target age group of 10-25 to make trips by public transport. It is therefore possible to suggest that fare offers and other incentive schemes designed to encourage public transport use could target these types of trips, possible in the form of all-inclusive public transport travel-cards which are made available at a reduced rate.

- Larger cities are in an advantageous position in terms of their ability to encourage younger people to use public transport, because of the size of their transport networks. As a general rule, larger cities have more densely developed urban transport networks and a wider range of modes, operating very frequently, which present a more viable alternative to car use (particularly where traffic congestion is a serious issue). Smaller cities, where it remains easy to drive into the city centre and park at relatively low cost, are less likely to be able to provide public transport services to rival this level of mobility.
- Larger cities also have a distinct advantage in terms of the absolute number of people who fall into the target group and can be viewed as potential members of public transport discount schemes, such as Imagin'R in Paris. This critical mass of potential users has enabled larger cities to develop loyalty schemes and free events for younger people, which have attracted commercial sponsorship and enabled non-transport related discounts to be offered alongside cheaper public transport fares.
- While bigger cities are able to use the critical mass of younger people in order to develop fare offers which match their needs this option may not be a possibility for smaller cities. Instead it is possible to suggest that wider organisational levels, such as at the national level (Portugal) regions (Emilia Romagna), metropolitan transport areas (Athens) and public transport fare areas (VVS – the Stuttgart public transport fare region which incorporates Bietigheim-Bissingen) may be able to develop special, integrated tariffs for younger people.
- The fact that younger people do appear to use public transport fairly intensively has been attributed to the fact that, prior to the age of 18, they have a more limited range of travel options. The age of 18 is relatively uniform across the cities and regions involved in the working group as the age at which it is possible to commence driving. Prior to this age younger people are not legally allowed to drive and are therefore more likely to be reliant upon public transport in order to get around.
- The age of 18 can therefore be considered as a form of “threshold” after which younger people are likely to become less reliant upon public transport. Collecting data which relates to the age breakdown of car owners in the city was not considered by the group, but could be collected in future to provide a statistical basis for this, largely anecdotal, finding.
- This concept of a “threshold” age at which younger people may begin to use public transport less in order to make urban trips has the potential to be utilised by cities in order to structure their approaches to marketing and incentivising public transport for younger people. The core principles of this have been discussed by the working group at the site visits throughout year two of the benchmarking initiative:
 - Young Independent Travellers (10-14)
 - Targets for information and educational materials (e.g. through school trips and visits).
 - This group are at the age where they are more likely to travel in groups (e.g. to school), of friends, but are unlikely to travel extensively across cities on their own without parental supervision.
 - This group of younger people tend not to travel far beyond their local areas, because they use amenities local to them.

- The working group participants suggested that this is the age at which younger people need to learn about the importance of travelling sustainably and should be made aware of the public transport services available to them.
 - Including educational materials into the public transport syllabus and encouraging younger people to “think sustainably” was proposed as the optimum solution for engaging with young independent travellers.
- Independent pre-driving age (15-17)
 - 15-17 year olds were considered by the participants to be the age group which begins to make monetary decisions regarding public transport.
 - As a result this age group is a prime target for information about public transport services, special fare offers aimed at their interests and, where feasible, loyalty-type schemes which provide non-monetary benefits to public transport use.
 - Driving age (18-25)
 - Younger people over the age of 18 are considered by the working group to be the most mobile of all of the age-based sub-groups, with University students in particular being the target of fare discounts and reduced rate travel for urban transport trips.
 - The working group’s perception was that many people will continue to use public transport all the while it is offered to them at a reduced rate, but once they are too old to qualify for discounted public transport travel (often over the age of 26) the attractiveness of public transport is significantly diminished.
 - Developing a form of “parachute package” for this age group, in order to encourage them to continue using public transport once they are no longer eligible for incentives and special offers, was also identified as an important target which public transport operators and authorities could aim to achieve.
- Some of the cities in the Behavioural and Social Issues in Public Transport working group are already undertaking aspects of fare reduction, promotion and marketing for each of these age groups. However, in very few cities does there appear to be an overarching strategy which has been designed to develop greater awareness or improve the appeal of public transport for younger people.
 - A limited degree of mobility management activities are evident amongst the cities in the working group. In Paris the main focus is upon young children starting school (age 4-6), while in Bietigheim-Bissingen school children of all ages are targeted in conjunction with the public transport fare offers that area available. In the Emilia Romagna region mobility management activities are aimed specifically at the target user–group of 10-25 year olds. The GITAS project has been taking place in the city of Modena with the aim of encouraging children at secondary schools and their parents to use more sustainable modes to travel and encourage modal shifts from private car use.
 - School visits are a common feature among the cities involved in the working group, although in many cases these are not formally recorded and as a result data was not available for most cities. Bietigheim-Bissingen was the only one of the working group’s cities to have developed specific links with the local Universities (in the Greater Stuttgart area) which were identified as major. In Athens the University has its own public transport information centre, which provides a dual role of informing the city’s large student population about the public transport fare offers that

are available to them, as well as improving the two-way communication between the public transport authority and the city's students.

- The case study example of Imagin'R, the loyalty program operated for younger people in Paris, which was cited in section 5 of the report, has been credited as a successful example of how younger people can respond to a dedicated fare offer. In Paris trips by people aged 10-25 represent 16% of all the public transport trips made in the city. This is encouraging and is the largest proportion of public transport trips made by the 10-25 age groups in a city in the working group.
- A range of services specifically aimed at younger people also operate in some of the cities participating in the working group, with the most frequently cited based upon themed bus routes/services, such as late night weekend services and disco buses. These services have demonstrated that they can be successful in meeting the needs of younger people who require transport to and from popular night spots which is reliable and more cost effective than a taxi. In Cardiff this has also served to meet social objectives through reducing public disorder and alcohol related disturbances which used to occur as people tried to travel home.
- Although there are a wide range of integrated timetables and website media through which public transport information can be accessed, Paris is the only city represented in the working group that has a website⁵ specifically dedicated for younger people. The site is used as both a promotional and informative tool for the Imagin'R loyalty program which has operated specifically for people in the target user-group aged 10-25 years old since 1998. During 2003 this site received 210,830 hits.
- In Lisbon the public transport operator Carris has an SMS service which can be used by passengers seeking to find out the next services from a bus stop and this service will also be made available via the internet. This is not specifically aimed at the target user-group of 10-25 year olds, but can be used by anyone with a mobile phone. Similar services are available in Bietigheim-Bissingen and Bologna, in the Emilia Romagna region and have the potential to be developed into SMS ticketing facilities.

Public Transport Organisation and Policy

The Public Transport Organisation and Policy working group was made up of representatives from 9 cities. These were:

- | | | |
|------------|-------------|---------------|
| • Athens | • Bucharest | • Mersey side |
| • Alicante | • Prague | • Stuttgart |
| • Brussels | • Madrid | • Belfast |

The representatives from these cities attended a total of 3 site visits which took place in Madrid, Stuttgart and Athens. During the first year of the Urban Transport Benchmarking project, the participants of the working group on Public Transport Organisation and Policy compared their performance, notably in the area of service quality, and a number of benchmarks were identified among participants for selected aspects of service quality (quality of supply, accessibility, and integration).

⁵ Imagin'r website available at: <http://www.imagine-r.com/>, accessed on 06/05/2005.

The purpose of the second year was to look beyond those benchmarks and to explore practices that account for the best performance levels, with a particular focus on contracts between operators and authorities. The analysis of the benchmarks identified at the end of the first year had highlighted the role of contracts in the attainment of such high performance levels.

Contracts are a tool to clearly define objectives, responsibilities and activities of public transport operators and authorities. They are based on a mutual commitment and provide transparency of finance and operations. The issue of contracts was thus of high interest to both operators and authorities. Focussing on contracts was also timely, given the debate on the clarification of the respective roles of operators and authorities which currently takes place at the EU level.

The Public Transport Organisation and Policy working group collected mainly qualitative information in order to enable the cities in the group to undertake in-depth comparisons of the contractual agreements between operators and public transport authorities in cities. The main findings from the group's activities were:

- The use of contracts between public transport operators and authorities is considered or planned in most networks represented in the working group, but they currently are fully implemented only in few networks.
- Most public transport networks currently using contracts, or planning to use them, have included quality provisions. However, the variety and the type of quality indicators included in the contract vary significantly between networks, as well as the methods used to measure and assess quality. This variety of approaches to quality in contracts reflects the variety of purposes of public transport contracts. For this reason, fruitful comparisons between networks require to consider the objectives and specific features of each contract into detail.
- It became apparent during the discussions that quality provisions in contracts between public transport operators and authorities were not always part of a comprehensive quality approach based on customer perceptions and expectations. The quality approach naturally exceeds the framework of the contract between the operator and its authority, and it involves the whole service production process.
- In relation with the previous point, participants recognised that the assessment of the impact on customer satisfaction of implementing a contract, and in particular its quality provisions, was usually a missing element in their management process. In that respect the regular opinion surveys of S-Bahn passengers carried out on behalf of the Verband Region Stuttgart emerged as an interesting example to follow.
- The approach of the working group on Public Transport Organisation and Policy involved investigating practices behind the benchmarks. This approach was appreciated by the participants who gained a practical and detailed understanding of the contractual practices of the other networks, including the context in which contracts take place. Each participant could identify which practices would be adequate in their own situation. The difficulty however lay in the absence of a common self-assessment framework, in other words, in the absence of common methods to assess to what extent the introduction of quality provisions in the contract has led to an improvement of the performance. There is thus a degree of subjectivity in the assessment of the respective practices of the participants in the working group.

Demand Management

The Demand Management working group was made up of 5 cities, including;

- Ile de France
- London
- Dublin
- The Hague
- Oulu

The Demand Management working group visited 3 cities during the course of year two of the Urban Transport Benchmarking Initiative (Dublin, The Hague and Paris) and decided to narrow the focus of the research activities to consider;

The relationship between land use planning and transport planning.

In order to consider this research question a range of quantitative and qualitative information was collected by the group. The participants chose to develop the thematic data indicators collected during year one of the Urban Transport Benchmarking Initiative and also added a number of qualitative questions regarding the strategic links between land-use and transport planning policies in cities. The following key findings were drawn from the analysis of the working group's activities;

Conclusions from Quantitative Data Collection

The following general conclusions and observations can be drawn from the data collected by the working group;

- Again, the working group has encountered difficulties in obtaining parking data. Even though the group made a determined effort to re-define the area for which parking data is collected, the different data collection regimes and administrative structures in the working group cities have made comparison between cities difficult. Even after the re-definition of the parking indicator to focus on parking spaces accessible to the public in the Central Business District, all cities could not provide complete data although the data collection proved more successful than in year one. To implement schemes to manage demand in cities, city planners require detailed information on parking supply but this seems to be lacking. The demand management working group has found that city planners tend only to have access to information on public parking areas and that obtaining such data often requires collection of information from a number of sources, usually local authority and district councils. Information on the number of private parking spaces is not generally available.
- The working group discussed the impact of urban density on transport performance in depth as there was a mixture of high and low density cities in the group. By comparing population density and job density with the modal share for car journeys (from the common indicators), it was found that car use was lower in the most densely populated areas whereas less densely populated cities had higher levels of car use. The same trend was observed for job density; where the density of jobs was higher, the use of cars was lower.
- The length of journeys by private modes was longer in cities with smaller populations.
- Trips by public transport modes in the least densely populated city, Oulu, are longest. In The Hague and London, public transport trips are quite short at 3km and 5km respectively.

- The working group discussed the role of Park & Ride in cities. In the Ile de France, the Park & Ride network at rail stations has historically grown without a strategic plan to develop it but now the regional authority sees it as a good way of intercepting car trips from the outer region. Similarly, in Dublin and The Hague, Park & Ride is viewed as a transport mode for trips being made from the region into the metropolitan area. Such Park & Ride sites are ideally situated at the edge of the metropolitan area or outside it. City authorities in the working group prefer a policy of encouraging “walk and ride” trips on public transport in the metropolitan area, rather than encouraging Park & Ride by metropolitan residents. Park & Ride sites within the metropolitan area, closer to the centre of the city, are seen as being a useful way of intercepting journeys made by visitors to the city, particularly tourists in the case of The Hague. The Hague provided a good example of targeted dynamic travel information to encourage tourists travelling to the beach resort in The Hague to use Park & Ride within the metropolitan area, to relieve congestion at the resort.
- The priority given to encouraging Park & Ride for trips made from the region to the metropolitan area in the Ile de France is clear; there are 12 Park & Ride spaces per 1000 inhabitants, easily the highest of all the cities.
- The Hague imposes charges on all its parking spaces in the Central Business District, followed by Dublin where 90% of on street parking spaces are charged (100% of off street parking spaces are charged).
- There was a variety of different types of residents’ parking schemes across the cities and the charges for residents ranged from €133 per year in London (Islington) to a free scheme in Ile de France.
- On street and off street parking charges differ between the cities but all have a policy of higher parking charges towards the centre of the city.
- Data collection for average trip lengths proved to be a problem; public transport trip lengths in some cities were sometimes only available from “stop to stop”; in some cities only certain types of trip are measured (for example trips to work / education). Also, trip length measurement may only take into account trips made within the metropolitan area or from the region into the metropolitan area. Information on different types of trip, for example those made from one side of the region to the other side of the region, via the metropolitan area, is lacking in most of the cities.
- The length of journeys by private modes is longer in cities with smaller populations

Conclusions from Qualitative Data Collection

- In all of the cities, parking policies are linked to development so that parking limits are imposed depending on factors such as proximity to the centre and accessibility of public transport. Parking policies are explicitly linked to public transport in three of the five cities although none of the cities has public incentives for developments to locate close to public transport.

- Most of the cities either already have an integrated land use and transport plan implemented by one authority responsible for strategic land use and transport planning, or are in the process of introducing this structure. The frequency with which cities review these plans varies from 1 year in London to 10 years in Oulu. In all cities, the integrated land use and transport plan covers to “travel to work area” of the city.
- All cities, apart from Dublin, have a policy aimed at increasing the extent of cycling facilities in the Urban Administrative Area. London is most active at promoting cycling through marketing and awareness raising campaigns. In cities where cycling is already established as a popular mode, the emphasis is on developing and maintaining cycling infrastructure.
- Most cities already have pedestrianised areas in the urban centre so town centre pedestrianisation is not a priority. Improvement of pedestrian facilities in cities now focuses on improving existing pedestrian areas by widening footpaths, creating quiet zones and improving the pedestrian environment through use of street furniture and making footpaths more accessible to wheelchair users and people with reduced mobility. The larger cities of the group have the most focus on promotion of walking as a transport mode; in Paris this is achieved through the “Paris Respire” event when, on Sundays and public holidays, pedestrians, rollerbladers and cyclists are permitted to use roads closed for vehicles. In London, initiatives promote the benefits of walking by focusing on walking to school and work and encouraging walking rather than driving for short journeys. In four of the cities, children are actively encouraged to walk and cycle to school though cycle training, safer routes to school and walking buses.
- In four of the cities, there is an active policy to increase the cost of car parking within the Urban Administrative Area of the city; in London, the policy is the responsibility of individual boroughs rather than a city-wide policy.
- Cities tend to have active policies to restrict parking supply for new developments and/or to link it to public transport access but these are often applied in different ways and can vary between local authorities within the metropolitan area.
- The criteria for the selection of land for development in coming years tend to focus on the protection of open spaces and devising policies to ensure that developments are located close to transport infrastructure although this includes, in some cities, proximity to motorway junctions and access by road on the outskirts of the metropolitan area.
- None of the cities offers financial incentives to encourage private enterprises to locate close to existing/planned public transport links.
- Assessment of the success of the land use and transport strategy is undertaken in four of the five working group cities. All working group cities acknowledge that there is a need to improve the way the strategy is assessed and analysed.
- None of the cities could state clearly whether the land use and transport strategy targets had been met but generally, in each city there had been some good examples of successful strategies (London congestion charge zone) and some examples of bad practice (such as urban sprawl and location of developments close to motorways on the outskirts of cities).

Conclusions from Site Visits

The most valuable benchmarking has been at the site visits where working group members have observed various city planning policies and innovative demand management measures. The experience of discussing demand management issues in depth and receiving presentations from local city experts on demand management measures such as bus lanes, Park & Ride and integrated land use and transport planning has been extremely useful for participants to inform their strategic planning processes. This section summarises some of the best practice examples observed during the site visits and some of the barriers encountered by the cities in planning the urban transport system.

Best Practice: Funding Transport Improvements

In France, companies with more than 9 employees must pay a transport tax to fund transport improvements. This tax is applied as a fixed percentage of staff salary, dependent on the location of the company with higher levels of tax in central areas than in outer areas. For example, companies within central areas of major cities would pay 2-6% of salaries, companies based in outer areas pay 1% of salaries.

In Dublin, development levies are provided for under Section 49 of the Planning and Development Act 2000, and allow for local authorities to collect levies from developers who profit from the implementation of the light rail lines (or any public infrastructure). The act does not impose a limit on the timeframe for the collection of these levies.

Best Practice: Combating initial opposition to schemes

The examples of Quality Bus Corridors (QBCs) and the implementation of a new tram line in Dublin support the findings of the year one of benchmarking where good planning and political will have helped to combat public opposition to new schemes. Quality Bus Corridors were met with strong opposition from traders initially but are now widely accepted by the public and very popular. The QBCs have been introduced and extended gradually which has helped to moderate the public opposition toward them and gain public acceptance. The perception amongst traders that all customers arrive by car is being gradually challenged by the introduction of LUAS and QBCs. In year one of benchmarking, the group saw how such opposition was also combated in London (congestion charge) and Barcelona (pedestrianisation).

Best Practice: Combining functions at transport interchanges

Central station is a key transport node in The Hague and is surrounded by high density office buildings where 50% of the staff travel to work by sustainable modes, many through central station – it is planned to increase this modal share to 70%. This area has been developed to include a variety of land use so that buildings are used for business, residential and commercial purposes.

In some areas of Paris, especially where stations are situated close to town centres, there can be a conflict between developing Park & Ride facilities, (retaining low density) and developing housing or commercial sites (increasing density). It was noted that a combination of commercial services and parking at Park & Ride sites can offer added value to users, for example locating laundrettes, shoe repairs and other shops at the Park & Ride site.

Best Practice: Achieving high density without compromising quality of life

The Hague proposes to increase the density of housing along public transport corridors so that a greater proportion of the population lives close to a tram stop/rail station.

Best Practice: Minimising the impact of transport infrastructure

The Hague has reduced the impact of the motorway through the city by using the space above the road for office and housing development. This enables the city to retain a high density of development and reduces the community severance effects of a high speed road passing through the city centre.

In Dublin, where the LUAS tram was thought to have a potentially negative effect on the quality of life for citizens through higher noise levels, the constructors built a sound barrier to deaden the sound of the trams.

In Ile de France, the STIF has learnt from best practice examples of Park & Ride sites in other parts of France, for example in Nantes, a long walk from the car park to the station platform has been made more pleasant by planting trees and plants.

Area for Improvement: Institutional problems

Dublin: Although Quality Bus Corridors are now well established and accepted by the Dublin public, there is no formal agreement between the bus operators and the city council which means the bus lanes could be removed if the council decided to do so. The two LUAS lines have been constructed separately without joining in the city centre, as agreement has not yet been reached on the best alignment through the city centre. This has increased costs as there are two depots, two separate fleets of trams and trams cannot be transferred from one line to another unless transported by a lorry.

Ile de France: The STIF has a problem of lack of control over private operators in the outer areas of the region so potential for passenger growth is dependent on the co-operation of these operators.

Area for Improvement: Changing Public Attitudes towards High Density Living

The Hague: Architects have been contracted to ensure that the designs of the high density housing remain attractive and complement the local environment. However, the demand for housing amongst local people is divided into people who want to live in a city centre apartment and those who want to live in a suburban house with a garden. There is a reluctance to embrace the concept of high density living in suburban areas.

Dublin: It was not thought possible to construct buildings to the same height in Dublin as has been achieved in The Hague as it may spoil the character of the city. The perception of high rise, high density buildings amongst the population in Dublin was generally negative but the imagination and design of buildings in The Hague was thought to be impressive.

Ile de France: "High density" was often a "taboo" subject in discussing urban planning in France as it was seen to have negative connotations, but the example of The Hague proved that this need not be the case, as high density development can be achieved without compromising quality of life.

5. CONCLUSIONS

5.1 Overview of year two of the Urban Transport Benchmarking Initiative

During its second year the Urban Transport Benchmarking Initiative has continued to develop the theme of benchmarking in the European arena of urban transport by enlarging upon the baseline of data and good practices developed during year one of the project. A total of 26 cities and regions from Europe have been represented in the initiative, with 23 collecting common indicator data for year two of the initiative. Supplementing this data with that collected during year one of the initiative and the PLUME benchmarking exercise, undertaken as part of the activities of the City of Tomorrow Cultural and Key Heritage Action funded by the EC DG RESEARCH, has enabled a broader range of cities to be compared in year two of the benchmarking exercise.

Following the year two launch workshop, all five thematic working groups were quickly established but, owing to limited interest from city representatives, the City Logistics working group did not proceed beyond February 2005. The remaining four working groups all completed successful comparative analyses of their collected data-sets, which were defined entirely by the cities in the working groups with guidance from the respective experts.

Each working group attended three site visits, which provided participants with invaluable first hand experiences of interesting urban transport practices in other cities. The site visits have taken on greater significance during year two of the Urban Transport Benchmarking Initiative, with the participants in the project expressing greater interest in a case-study based learning approach by focusing primarily upon examples of good practice in their respective themes. In response to the interests of the participants a greater proportion of time at site visits has been given over to the observation of good practices and in the year two working group reports the majority of the groups have selected to present examples of good practice within the main report as well as in annexes.

The site visits have been reported as case studies and are available on the project website (<http://www.transportbenchmarks.org/events/site-visits.html>) as well as the annexes which accompany this report (Annex A2.1 – A5.1). It is possible that in year three of the initiative the case-study approach to reporting the findings of the project may be further developed into an online showcase of good practices identified through the activities of the Urban Transport Benchmarking Initiative.

The 26 participants were each able to provide data for the thematic working groups and a total of 23 sets of data were received for the year two common indicators. This disparity reflects the fact that some cities were effectively duplicated by representation from a regional level as well as at the city level (e.g. Paris / Ile de France region and Bietigheim-Bissingen / Stuttgart) as well as the fact that some cities did not update their common indicators from year one of the initiative. The year one common indicators were comprehensively redefined in order to improve the ease of data collection for the participating cities and also improve the comparability of the collected information. This process involved extensive consultation with the participating cities and led to a number of revisions being made to the definition of data indicators and the data collection forms used by the participants to submit their information.

Where possible the comparability of the common indicators with data collected by cities in year one of the initiative (study year 2002) has been maintained. One success of this approach is that it has been possible to incorporate the common indicator data collected by year one cities no longer participating in the initiative along with the data collected by the PLUME benchmarking exercise in

the analysis of year two common indicators. This has meant that for the common indicators data from 41 cities was compared, greatly improved the quality of the results.

The findings of each of the working groups are described in full in Annexes A2 through A5 and the full report of the common indicators is available in Annex A1. The headline results covered in these reports were presented at the End of Year Two conference, which took place on June 29th 2005. Presentations from this event and the reports described above can be found on the project website www.transportbenchmarks.org which is the main dissemination point for the project. Further presentations at non-project events will continue to be used to raise awareness of the results of year one as will other networks such as POLIS, ACCESS, The Transport Statistics User Group (TSUG) and ELTIS.

Due to the fact that there were four working groups during the second half of year two of the Urban Transport Benchmarking Initiative, the project team was able to use its additional resources to organise a joint working group workshop session in Brescia. The issue of greater joint-working between groups is something that the project team has strived to facilitate during year two of the project and the joint workshop session held between the Behavioural and Social Issues in Public Transport and the Cycling working groups is one of the best examples of this. The two groups met in Brescia for a jointly organised site visit which enabled the groups to participate in a joint working group discussion session. The discussion session covered the integration of public transport and cycling modes and the potential for developing this as a mode of urban transport which could provide freedom of movement to rival that of the private car. The groups produced a separate report outlining the main issues arising from the discussion session (available in Annex A6 of these reports) and intend to further develop the concept of intermodality during year three of the Urban Transport Benchmarking Initiative. At the End of Year Two Conference the participants in the initiative explained that one of their key interests for year three of the project was to give further consideration to the links between the findings from the group's activities over the past two years.

In addition to supporting a greater degree of cross-over between the working groups the project team was also able to establish the interactive benchmarking tool which is available online, via the project website: <http://www.transportbenchmarks.org/tool/benchmarking-tool.php>. The online benchmarking tool has been established to assist in recruiting cities to the initiative, although it may also enable online data collection to be supported through the project website. The online benchmarking tool provides the capability for representatives from cities not involved in the initiative to make real-time comparisons against the database being established by the Urban Transport Benchmarking Initiative. This may also prove to be useful tool for the participants in the initiative who wish to make "on-demand" comparisons with other cities in the initiative. The feedback received from participants at the End of Year Two Conference was positive and encourage further development of the online benchmarking tool in year three of the initiative.

The remainder of the concluding section of this report contains a summary of potential policy implications (section 5.2) which have arisen from the findings identified from year two of the Urban Transport Benchmarking Initiative. Section 5.3 contains recommendations for improvements in the process of benchmarking based upon lessons learned, while section 5.4 outlines the next steps and future intentions for year three of the Urban Transport Benchmarking Initiative.

5.2 Policy implications

One of the wider aims of the Urban Transport Benchmarking Initiative has been to try and link the findings of the project to urban transport policy and suggest some factors that may have an impact

upon these policies. The findings from the common indicators have provoked a series of policy implications which have been identified according to the size of a city's population as well as for cities in Central and Eastern European states. These have been outlined below:

Policy implications for larger cities (populations of more than 1 million inhabitants)

Larger cities demonstrate the most densely developed transport networks with the widest variety of public transport modes and are most likely to have metro systems and urban heavy rail networks, which provide rapid transit in central areas and are unaffected by road traffic congestion. Bus networks in larger cities often act as feeder services for tram/heavy rail/metro systems and, compared to those in less populated cities, a smaller proportion of the bus fleet in larger cities is wheelchair accessible. The Urban Transport Benchmarking Initiative's findings suggest that metro systems coincide with greater public transport modal shares in cities. The presence of a metro encourages greater public transport use, because it is rapid, efficient, segregated and easy use. The cities with the largest populations and population densities have all introduced metro systems, because they represent the most efficient way of transporting large numbers of passengers. The need for a sufficient critical mass of citizens (or potential metro users) is a basic requirement for successfully introducing a metro system. In this respect larger cities have a distinct advantage over medium-sized and smaller cities, because their densely developed central areas and larger populations provide the ideal conditions for sustainable transport use compared to private car travel for urban trips.

The larger cities involved in the Urban Transport Benchmarking Initiative tend to be national or regional economic centres which face the issue of managing the demand for travel into their metropolitan areas. Unlike in less-populated cities policy makers in large cities, which are usually core zones of economic growth and inward investment, have greater potential to make bold transport policy decisions. The fact that larger cities often have public transport networks in place which provide better access to central areas than is possible by car means that policy makers in these cities have the potential to implement demand management measures aimed at encouraging further modal shift to public transport and sustainable modes. Rome and London are good examples where demand management measures have been successfully adopted in order to discourage car use and encourage public transport travel.

Larger cities provide less support for cycling as a mode of transport, demonstrating relatively small cycle networks as a proportion of the total road network. Two main types of barriers prevent city authorities from promoting cycle use in the same manner as medium-sized and smaller cities.

- Land space is at a premium in the centre of large cities as a result of the dense urban development. As a result there is often not sufficient space to integrate cycling infrastructure into the existing environment without severe disruption and cost. It is hard to promote cycling or developing a cycling culture when the physical infrastructure which cyclists require is not in place.
- Road traffic congestion, pollution and the lack of safe routes deters people from attempting to cycle.

These barriers need to be addressed through bold policy making to encourage cycling in larger cities. The finding from smaller cities suggests that the uptake of cycling is often infrastructure led and therefore if larger cities can engineer solutions which overcome the lack of space for cycling infrastructure then it should be possible to generate a cycling culture and increase the uptake of cycling.

A key finding of the research of the Urban Transport Benchmarking Initiative is that the challenge for policy makers in larger cities is to manage the existing transport infrastructure in order to optimise the use of public transport and reduce car use, primarily through the implementation of demand management measures. Larger cities should focus upon creating opportunities for sustainable modes of transport (walking and cycling) to increase their modal share and improve the accessibility of the existing public transport system in order to open up urban transport systems to provide equality of access for disabled people.

Policy implications for medium-sized cities (300,000 – 1 million inhabitants)

The cities with between 300,000 and 1 million inhabitants (medium sized cities) demonstrate a broad range of urban transport issues which overlap with both the smallest and largest cities involved in the Urban Transport Benchmarking Initiative. The medium-sized cities are often local or regional economic centres, which are likely to have bus and light rail networks and approximately half have metro systems, some of which are being expanded or are planned for expansion to meet the needs of growing populations and nearby conurbations (e.g. Rotterdam, Helsinki and Lisbon).

These medium-sized cities therefore share the policy implications for both smaller and larger cities, since many are large enough to support high-load mass transit systems, but are not as densely developed as the largest cities in the initiative and therefore also display relatively high levels of car use. The resultant challenge for policy makers in medium-sized cities is to balance the pressure of car use through careful demand management and parking controls which increase the cost and reduce the accessibility of private motorised travel, yet simultaneously seek to encourage greater levels of public transport use, walking and cycling through the development of infrastructure which reflects the size and stature of the city.

Policy implications for smaller cities (less than 300,000 inhabitants)

Smaller cities involved in the benchmarking initiative demonstrate much lower density public transport networks and are largely reliant upon bus networks to provide public transport services. A key obstacle for transport policy makers in these cities is that the road network can often provide the car or motorcycle user with a faster, more convenient journey than the public transport system can offer. As a result car use is generally higher in the less populated cities and, although there is considerable potential for demand management measures to be applied in these cities, it is possible that local authorities are often reluctant to use them because of the risk reducing the attractiveness of the city to businesses and visitors.

In terms of cycle use in cities a key finding was that the highest levels of cycle use and the largest cycle networks as a proportion of total road space were found to exist in smaller cities. The lower densities demonstrated by less populated cities and greater availability of land for traffic-free cycle routes have provided transport policy makers with ideal conditions to encourage cycling. Urban planners in larger cities may seek to learn from the practices of smaller cities in this field in order to encourage greater use of cycling.

Transport policy makers in cities with smaller populations are faced with the challenge of encouraging public transport use where there may be an insufficient critical mass to provide an extensive, high frequency public transport network and where car use is very high. Subtle use of demand management measures aimed primarily at reallocating road space to sustainable modes, the continued development of sustainable modes (walking and cycling) through pedestrian and cycling

infrastructure and the development of high quality, accessible bus services could be considered as key challenges for policy makers in cities with smaller populations.

Policy implications for cities in Central and Eastern Europe

Cities in New Member States consistently display large public transport modal shares relative to car use, although levels of car ownership are increasing in these cities. The experiences of cities located in Southern Europe (e.g. Lisbon) suggest that levels of car ownership dramatically increase following accession to the EU, primarily as a result of the growth in income levels. The Urban Transport Benchmarking Initiative has demonstrated a link between the selection of modes and the level of GDP per capita (a proxy indicator for economic activity and, indirectly, the average income level) and it is therefore possible that cities in New Member States will experience similarly rapid growth in the level of car use.

One challenge for transport policy makers in Central and Eastern European Countries is therefore to continue to maintain the high levels of public transport use in the face of rising car ownership. One way of assisting this process is to carefully benchmark the development of new road space in cities in Central and Eastern Europe, because these cities currently demonstrate significantly less road space per square kilometre when compared to EU15 cities. It is possible that continuing to constrain the size of the urban road networks in these cities could act as a natural form of demand management measure. Integrating the development of urban transport systems with land-use planning in cities in Central and Eastern Europe may also help to regulate the pressure for rapid development which many observers are predicting as an outcome of accession to the EU.

Promotional and awareness campaigns are likely to be a useful tool in encouraging sustainable travel in cities in New Member States and Accession Countries. While it seems inevitable that levels of car ownership will rise in these countries, it is possible that excessive car use can be deterred by encouraging citizens to consider using alternative modes of travel by marketing and promotion campaigns and innovative transport planning.

The working groups also identified a number of policy implications as a result of their research from year two of the Urban Transport Benchmarking Initiative:

Cycling

- Policies to integrate cycling and public transport modes remain in their infancy, with a limited degree of budgetary support and few formalised links between local authority cycling departments and public transport operators. As a result there is considerable potential for the cycling working group to develop this topic in year three of the Urban Transport Benchmarking Initiative. There is also considerable potential for this to be taken on at a broader level, because the integration of public transport and cycling modes is currently considered to be poor in most European cities, with few cities being able to offer adequate bike and ride facilities.
- It is widely agreed within the cycling group that the commitment to encouraging young people to cycle in these regions is one of the main factors which drives the popularity of cycling as a practical mode of transport. In year one of the initiative all of the cities in the group were promoting the concept of “safe routes to schools” and “school travel plans”. In year two of the initiative the site visit to Glasgow highlighted the potential for involving school children in the travel planning process and this was of great interest to the other members of the working group. The group felt that this was beginning to be addressed in many cities, although in many

cities there is a lack of clear, overarching regional or national government strategies in order to push municipal authorities into action and bring the issue onto the political agenda.

- The issue of cycle parking first mentioned during year one of the initiative was readdressed by the group during year two. Even in the more developed cycling cities, it appears that the satisfactory provision of cycle parking is an issue, although this is largely as a result of the excessive demand for cycle facilities rather than due to the poor supply. A lack of cycle parking at public transport facilities was particularly highlighted by the group during year two of the initiative, in line with the research question relating to intermodality. It is possible to suggest that much could be learned from The Netherlands, where most public transport facilities have parking facilities to cater for the large demand from cyclists. This is a key issue for urban planners and creates a policy challenge and potential land-use issue for cities seeking to develop a vibrant cycling culture.
- While the group has only begun to consider the potential of cycling marketing activities during year two of the Urban Transport Benchmarking Initiative, it is evident that there is potential for a deeper exchange of ideas regarding good practices in cycle marketing and the impact that can be made as a result. This was discussed during the joint working group session held with the Behavioural and Social Issues in Public Transport Working Group in Brescia and a key point to arise from that session was the way that the two modes of public transport and cycling are perceived as additional barriers to sustainable modal shift in cities. It is therefore possible to suggest that an important issue facing proponents of cycling in cities relates to the successful development of a “brand” which conveys the core messages of “fun”, “healthy” and “freedom of movement” which can be associated with cycling. This is a key challenge for policy makers and may be of interest to those cities seeking to encourage greater cycle use through the provision of cycling infrastructure, which should ideally be supported by targeted marketing in order that the positive modal-shift effects can be maximised.

A document setting out guidelines to the successful collection of cycling data and demonstrating how this information can be used to monitor the success of cycling policy could prove invaluable to cities both within, and beyond, the working group seeking to monitor the impact of cycling policies and react to their findings.

Behavioural and Social Issues in Public Transport

- The group stressed the importance of raising awareness about public transport among younger people *before* they are able to drive. This way the regular use of public transport becomes almost second nature to them and it is possible that their motivation to drive is less (i.e. development of a public transport culture).
- Schools, local authorities and public transport authorities should seek to become more integrated in order to develop a proactive approach to driving the process of promotional activities for schools. It was also agreed that local synergies between operators, schools, parents and the local council would help to implement the good practices identified by projects such as the Urban Transport Benchmarking Initiative.
- Financially incentivising public transport for the right age groups is of paramount importance. The group agreed that young independent travellers (aged 15-18) are prime targets for marketing and financial incentives because they are too young to drive a car, but are likely to want to travel independently. Similarly, students in further education and young employees

aged 18-26 should be targeted with attractive fare offers which may encourage them not only to travel by public transport, but also to travel more often, thereby increasing the demand for public transport services.

- Incentivising public transport for younger people will only be successful if the public transport service available in the city/region presents a viable alternative to the car. As a result there is a need to consider whether schemes such as loyalty programs (which rely upon critical mass of passengers) are of value in locations where the public transport service already in place is not adequate enough to provide a realistic alternative to car use.
- Consideration should be given to including parents in the activities for the promotion of public transport, particularly in relation to the younger ages of the target group (e.g. 10-14), because the parents of children of these ages are often seen as barriers to their independent travel. The group also suggested that it should be the role of doctors and medical staff to promote the health benefits of travelling sustainably. The group agreed that in order to achieve long term behavioural change it is important to encourage topics relating to public transport to be included in the school teaching curriculum.
- The development of a number of standard indicators, which could be used for data collection relating to younger people's use of public transport, would prove to be highly beneficial to long term aims of monitoring and improving younger people's use and awareness of public transport options open to them.
- The working group agreed that the car sharing facility in Bologna represented a specific type of lifestyle and one that could be replicated for the promotion of a "public transport lifestyle". The group suggested that being able to tap into this sort of image and replicate it for public transport (i.e. smart, "cool", intelligent, fun and good for the environment) could help marketing executives to improve the public transport brand in cities.
- The group suggested that, at a macro level, there is a clear need to integrate mobility in city plans with main structural plans in order that public transport is given greater priority.

Public Transport Organisation & Policy

- The development of contracts between public transport operators and authorities is recommended in order to clarify the share of responsibilities between actors. This clarity in the share of responsibilities is essential to the effective implementation of quality.
- The impact of the inclusion of quality provisions in public transport contracts is significantly improved when these provisions are part of a comprehensive quality approach based on customer satisfaction, and not defined in isolation. In particular, it is advised to ensure an adequate balance between objective and subjective quality indicators in the contract, and make sure that the opinion of the customer is sufficiently taken into account.
- The financial weight of the reward/penalty scheme, as a proportion of the total value of the contract, varies from one network to another. There was a consensus among participants that the amounts involved had to be sufficiently high to constitute an incentive, without affecting the cost of the contract on the other hand.

- Finally, using the revenue raised through the penalty (malus) scheme as a way to fund the upgrade of the infrastructure, as in the case of Stuttgart, was considered as an interesting practice.

Demand Management

- The working group discussed the role of Park & Ride in cities. In the Ile de France, the Park & Ride network at rail stations has historically grown without a strategic plan to develop it but now the regional authority sees it as a good way of intercepting car trips from the outer region. Similarly, in Dublin and The Hague, Park & Ride is viewed as a transport mode for trips being made from the region into the metropolitan area. Such Park & Ride sites are ideally situated at the edge of the metropolitan area or outside it. City authorities in the working group prefer a policy of encouraging “walk and ride” trips on public transport in the metropolitan area, rather than encouraging Park & Ride by metropolitan residents. Park & Ride sites within the metropolitan area, closer to the centre of the city, are seen as being a useful way of intercepting journeys made by visitors to the city, particularly tourists in the case of The Hague. The relative lack of park & ride policies within the working group reflects the perception that these schemes have limited impact at an intra-urban level, although this is likely to be heavily dependent upon the spatial coverage of a city and the size of the surrounding region. A key policy implication is therefore the apparent lack of focus upon “walk and ride” and “bike and ride” for intra-urban trips by residents of metropolitan areas.
- In all of the cities, parking policies are linked to development so that parking limits are imposed depending on factors such as proximity to the centre and accessibility of public transport. Parking policies are explicitly linked to public transport in three of the five cities although none of the cities has public incentives for developments to locate close to public transport. In four of the cities, there is an active policy to increase the cost of car parking within the Urban Administrative Area of the city; in London, the policy is the responsibility of individual boroughs rather than a city wide policy. The cities also tended to have active policies to restrict parking supply for new developments and/or to link it to public transport access but these are often applied in different ways and can vary between local authorities within the metropolitan area. The relatively widespread use, within the working group, of policies linking parking provision and pricing with sustainable goals to reduce the space available for cars suggests that this is a clear policy recommendation for cities seeking to reduce traffic congestion in central areas. There is great potential for cities looking for examples of these policies in action to learn from the work of the demand management group.
- Most cities in the working group demonstrated that they already have pedestrianised areas in the urban centre, and as a result town centre pedestrianisation is not a priority. Improvement of pedestrian facilities in cities now focuses on improving existing pedestrian areas by widening footpaths, creating quiet zones and improving the pedestrian environment through use of street furniture and making footpaths more accessible to wheelchair users and people with reduced mobility. The larger cities of the group have the most focus on promotion of walking as a transport mode; in Paris this is achieved through the “Paris Respire” event when, on Sundays and public holidays, pedestrians, rollerbladers and cyclists are permitted to use roads closed for vehicles. In London, initiatives promote the benefits of walking by focusing on walking to school and work and encouraging walking rather than driving for short journeys. In four of the cities, children are actively encouraged to walk and cycle to school through cycle training, safer routes to school and walking buses. These examples of improving the existing pedestrianised areas in the Demand Management working group’s cities indicate a policy shift from the basic

provision of car free space in town centres to considerations of the quality of pedestrianised spaces. This shift in emphasis reflects the fact that many cities are now giving consideration to how urban car free space can be safely accessed and enjoyed by people choosing to walk, cycle and use public transport alongside the use of private cars.

5.3 Recommendations for improving the benchmarking process in year three

Based upon the experiences from year two of the Urban Transport Benchmarking Initiative, the following general recommendations can be made in order to attempt to improve the process of benchmarking:

- The common indicator revisions made at the end of year one of the initiative were generally successful, with the data received from participants in year two of the initiative being of a better quality than in year one. In order to accommodate a suggestion of a set of “integration indicators”, which will allow the working groups to nominate three indicators which they wish all of the project’s participants to collect, and to ensure consistency of collected information, only minimal changes to the common indicators are proposed. These are likely to include the addition of indicators relating to the proportion of bus fleets which are made up of clean vehicles and the average age of the bus fleet in the cities.
- The data entry forms were more user-friendly in year two of the Urban Transport Benchmarking Initiative and further revisions will be made in line with any requests from participants in the initiative. The project team will also investigate the potential to use the online benchmarking tool as a facility for the submission of data.
- The online benchmarking facility was developed during year two of the Urban Transport Benchmarking Initiative which will enable cities not participating in the initiative to submit items of data into selected graphs to see how their city compares to those that have participated in the initiative. Accessible via the project website (<http://www.transportbenchmarks.org/tool/benchmarking-tool.php>), this facility will be a valuable tool in attracting cities to the initiative, as well as aiding the dissemination of the results. The ongoing development of this tool will be a feature of year three of the Urban Transport Benchmarking Initiative.

In addition the working groups have each made their own recommendations and they are summarised below and are available in full in the working group reports (Annex A2 – A6). The recommendations include:

- Considering the links between the working group themes as a priority for year three. This idea was piloted through the use of a joint site visit between the Cycling and Behavioural and Social Issues in Public Transport working groups, however it could be further developed in year three, by suggesting each group participates in at least one joint site visit and workshop session. These sessions could be used primarily to discuss the integration of the topics being considered by the themes, e.g. cycling and public transport, or demand management measures to reduce road-space and implications for disabled people in cities.
- The integration of themes appears to be a key issue and one proposal for the working groups to pursue in year three of the Urban Transport Benchmarking Initiative is to develop a set of 15 “integration indicators” which are based upon those collected by each of the thematic working groups (3 contributed per group). This would allow a more formal, quantitative and

qualitative exchange of information to support the joint site visits which have been proposed by the participants in the initiative.

- Continuing to focus the working group themes upon one, relatively narrow topic, has led to a more effective benchmarking exercise and should be continued for the purposes of additional data collection in year three.
- Being realistic in terms of the amount of data which the groups can collect has enabled them to achieve a much more detailed analysis during year two of the benchmarking initiative. Consideration should be given to further refining the process of data indicator definition in order to reduce the collection of indicators which do not produce data robust enough for analysis.
- Qualitative information has proved to be equally useful as quantitative data in a benchmarking exercise and should continue to be developed as a way of identifying local trends and being developed into case studies.
- Case studies have proved to be of great value in allowing the participants in the working groups to learn about the good practices evident in other cities in the benchmarking project in detail. Consideration should therefore be given to some form of publication available via the website which publicises the good practice case studies which have been produced by the Urban Transport Benchmarking Initiative's working groups.

5.4 Next steps and future intentions

The next steps of the project are outlined below;

- Continue to disseminate the second year results to urban transport stakeholders via the project website, European transport networks and conference presentations.
- Continue to monitor progress achieved by other transport benchmarking initiatives and establish links with relevant organisations.
- Allow the outputs and feedback received from participants in year two of the Urban Transport Benchmarking Initiative to contribute to the planning for year three's activities.
- Attempt to encourage greater synergies between the working groups with greater emphasis upon the use of joint site visits and the collection of indicators which consider the issues which overlap the working group themes.
- Continue to develop the interactive benchmarking facility and link it to other benchmarking projects
- Promote the year three launch workshop, taking place on 22 September 2005, in order to attract more urban transport stakeholders and potential participants.