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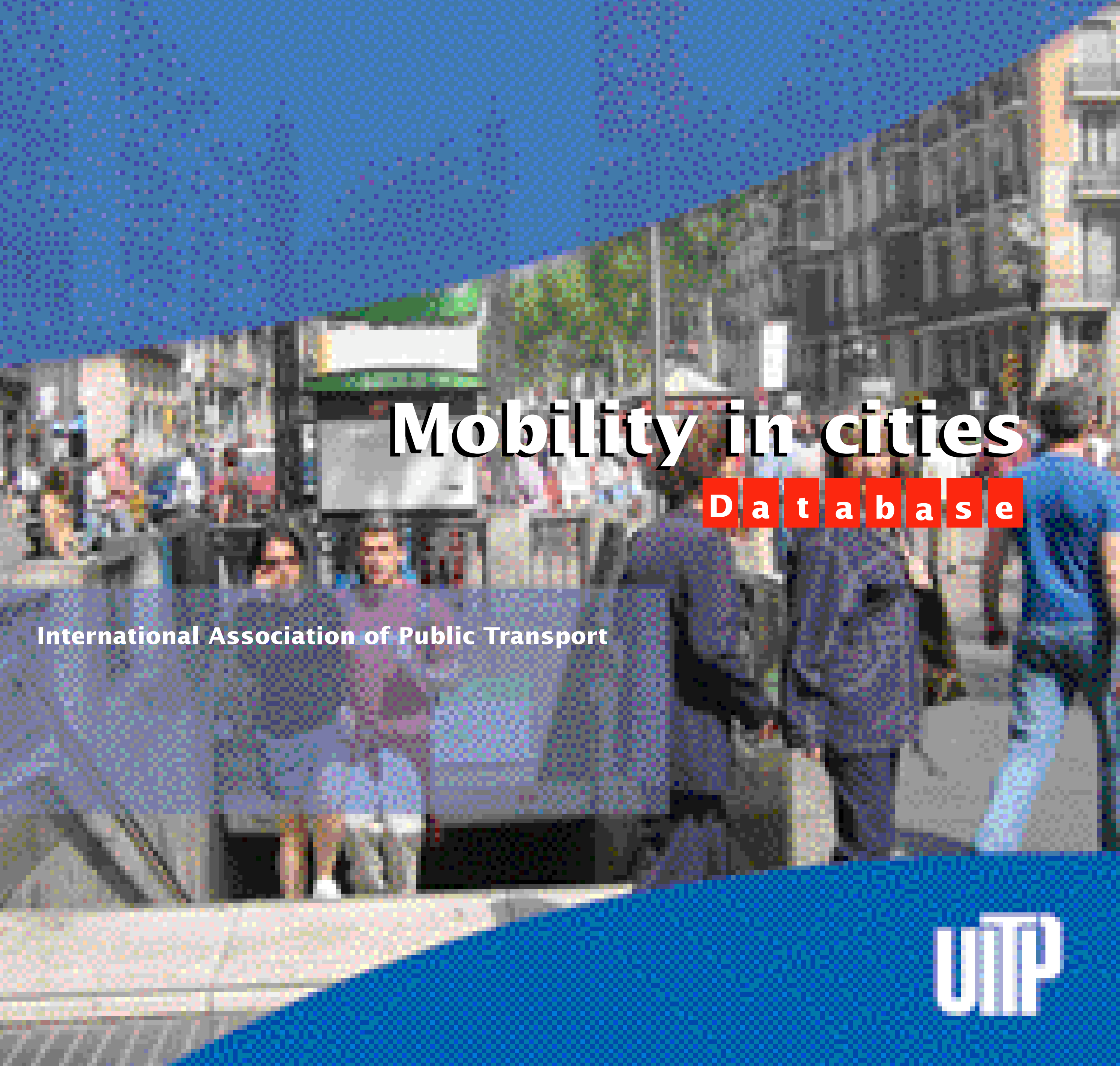
Mobility in cities

Database



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A highly important source of information

Encouraged by the success of Millennium Cities Database for Sustainable Transport (MCDB), UITP has decided to launch a new project for urban mobility data collection and analysis, the Mobility in Cities Database (MCD). **This new database covers demography, the economy, urban structure, the numbers and use of private vehicles, taxis, the road network, parking, public transport networks (infrastructure and rolling stock, service, traffic, expenditure or income), individual mobility and modal choice, the cost of transport for the community, energy consumption, atmospheric pollution and accidents**. In total, 120 gross basic indicators were collected from a sample of 50 towns for the year 2001. MCD tackles previous analyses in greater depth and examines the evolution of the main indicators of the mobility economy between 1995 and 2001. To accurately measure evolution, we have generally kept the same indicators and collection methods as well as the same definitions for metropolitan areas studied to ensure consistency between the sources and provide the most accurate comparison between the data of MCDB and that of MCD.

A CD-Rom will be on sale, containing: 120 standardised indicators for each town and a summary of the mobility policy (for a selection of towns) including a description of any initiatives carried out in the period 1990-2001 or performed or planned during 2001 and 2010, a table comparing the evolution of significant indicators and a commentary on past evolution, current strong and weak points and future perspectives. With this information, UITP wishes to provide its members with the possibility to assess the performance of their towns and networks and to devise a set of arguments tailored to their specific situation.

photo: G. Allgon ▪ RATP

Performance and costs of transport systems

Citizens and politicians are well aware of the problems caused by urban sprawl and growing car dependency, but their extent and evolution are less well known. People are generally unaware that the cost of transport for the community is clearly lower in medium or high density towns well serviced by public transport.

One of the aims of MCD is to bring to light the correlations between land-use planning and modal choice on the one hand and the costs of the mobility system on the other. The parameters analysed are as follows:

- Urban features: size of the agglomeration (ie. the urbanized area), average density of the urban area (population and jobs/ha) and concentration of economic activity in the centre (percentage of jobs in the Central Business District).
- The choice of transport mode: share of trips using public transport, walking or cycling.
- The average length of trips by public transport and by car.
- Energy consumption per year and per inhabitant: expressed in mega joules, to be able to group electric and thermal modes.
- Economic indicator: cost of transport for the community as a percentage of GDP for the metropolitan area to enable a comparison between towns (public transport expenditure in terms of investment and operation; spending on road investment and maintenance; spending on use of private motorised modes including the amortisation of vehicles excluding specific taxes to avoid biased comparisons in favour of public transport). It should be pointed out that this cost is strictly financial and does not incorporate ‘external costs’ incurred by transport (mainly by the car), such as consumption of urban space, pollution, noise and traffic accidents.

Less densely populated towns characteristically generate a great deal of motorised travel and the cost of transport is therefore high. However, in these cases a modal shift from the car to public transport would have little effect on the cost of travel for the community since public transport is not suited to servicing sparsely populated areas (except links into or towards the centre). This means that urban trips cost half as much in Singapore or Helsinki than in Chicago, Melbourne or Newcastle. This gap represents a saving of EUR 2,000 annually per inhabitant in towns with good levels of public transport ridership and use of ecological modes. Certain towns, such as Vienna or towns in Switzerland (Zurich, Bern, Geneva), have opted to provide their inhabitants with very high quality public transport (in particular in terms of comfort and frequency). This decision obviously has an impact on the cost, which however remains very low compared to that borne by towns where the car is the dominant mode.

The cost for the community is even higher when per capita GDP is low. In developing or transition countries, functions essential to economic and social life, such as transport, mobilise a greater share of resources than in wealthy towns, a share that increases when private motoring is high.

Furthermore, towns where the cost of transport is the highest spend very little on public transport (less than 10% of overall expenditure), whereas more shrewd towns share out their expenditure more evenly (between 20 and 30% for public transport).

Towns that spend the least on mobility for their inhabitants are medium or high density towns where trips are made mainly using public transport, walking and cycling. The cost of transport for the community varies from 5% of GDP in densely populated towns with strong public transport use, to over 12% in less densely populated towns where the car is virtually the exclusive mode of transport.

The cost of transport for the community (% of GDP) according to density and modal choice

Density: population + jobs per hectare

> 100	50 to 100	25 to 50	< 25
5.7%	8.6%	11.1%	12.4%

Share of trips using public transport, walking and cycling

> 55%	40 to 55%	25 to 40%	< 25%
6.3%	8.8%	10.2%	12.5%

The share of GDP spent on journeys did not vary significantly between 1995 and 2001 despite important fluctuations in certain towns. London, Paris, Helsinki and Singapore, which already scored highly in 1995, have appreciably improved on their performances. Madrid, which has extensively developed its public transport, showed a drop in the cost of transport for the community from 12.2 to 10.4 %, whilst expenditure for transport has risen in towns in the UK (bar London) and Brussels.

MCD confirms the impact that population density, public transport market share and agglomeration size have on energy consumption. The weight of towns in the United States, which are very spread out and have high energy consumption levels, push up sharply the average for large agglomerations. The gaps separating ‘energy efficient’ towns from ‘high energy consumption’ towns are considerable: from 12,000 to 16,000 mega Joules per year per inhabitant in the majority of European towns to over 30,000 in North American and Australian towns. In concrete terms, this gap represents 400 to 500kg of crude oil per inhabitant per year.

Despite the escalating price of crude oil, depletion of natural reserves and the greenhouse effect risks, the urban car-based model is not called into question, in particular in the United States.

In Europe low density urban sprawl on the periphery of towns is commonplace and is reflected in the figures: from 50 inhabitants per hectare in 1995, to an average of 47 in 2001 from the MCD sample. This mega trend, a concern for the ecological balance of the planet, does not favour public transport and ecological modes either. Several towns, however, have managed to bring urban development under control by maintaining sufficient population density and coordinating the development of new districts with the creation of new public transport services. Approaches of this kind have been used in Singapore, Helsinki, Vienna and Swiss towns.

Towns that consume the least energy for transport are medium or high density towns where journeys are mainly using public transport, cycling and walking

Annual energy consumption for travel (mega Joules per inhabitant)* according to density and modal choice

Density : population + jobs per hectare			
> 100	50 to 100	25 to 50	< 25
12,200	13,700	20,200	55,000

Urban area (hectares)		
< 30,000 ha	30,000 – 90,000 ha	> 90,000 ha
12,600	16,600	36,600

Share of trips using public transport, cycling or walking			
> 55 %	40 to 55 %	25 to 40 %	< 25 %
11,900	14,600	19,100	55,500

** consumption at source*

The share of trips using public transport, walking and cycling dropped in line with population density, but by slightly less; from 50 % to 47.5 % in the European towns in the sample. It is frequently the case that a decline in walking is compensated by a rise in public transport use. Towns that have maintained their level of population density have also managed to reduce their share of trips by private motorised mode by an ongoing development of their public transport system and effective traffic curbing and parking policies. The cost of transport for the community and energy consumption fell between 1995 and 2001 in these towns.

The more spread out the agglomeration, the longer the average duration of a motorised journey. However, this correlation is not proportional to the size of the agglomeration. The reason for this is likely because the benefit for inhabitants of having several different types of amenities close by is partially cancelled out by the traffic jams characteristic of densely populated towns and by the greater share of journeys by public transport.

Public transport nearly always takes second place to the car in terms of trip duration, not purely for the journey itself but also through walking to stations/bus stops, waiting time and connections. The only exceptions are radial rail links and trips by metro in congested centres, particularly in the rush hour. Traffic conditions are also a decisive factor and choked up towns such as Rome, Bologna, Marseille or Lisbon have remarkably high average motorised trip times (30 mins on average for these four towns) compared to towns where traffic flows smoothly such as Manchester, Newcastle, Oslo or Copenhagen (19 mins on average for these four towns).

The average duration of motorised trips increases with the size of the agglomeration and the market share of public transport…
but in towns where the car dominates, time spent daily in transportation is longer.

Average duration of a motorised journey according to urban area and market share for public transport

Urban area (hectares)		
< 30,000 ha	30,000 – 90,000 ha	> 90,000 ha
22 mins	24.5 mins	29.5 mins

Market share of public transport (% of motorised journeys)		
< 15 %	15 to 30 %	> 30 %
18 mins	24.5 mins	28 mins

Public transport consumes 2.2 times less energy and costs 1.6 times less to the community than the car per passenger x km transported.

In reality, the denser the town and greater the role of public transport, the shorter the time inhabitants spend in transport. This is only a seeming paradox: in less densely populated towns, daily basic needs require journeys too long to be compatible with walking and the traffic conditions, in general fairly fluid, are not an incentive to reduce the number of trips made. This is how inhabitants of American towns end up spending over one hour a day in their cars (up to 90 mins in Houston), whilst in European towns with a comparable population, time spent in transport does not exceed 50 to 55 mins as a general rule. The convenience that the car is supposed to bring does not prevent the increase in travel time in towns where urban development is car-based.

Public transport, particularly when service is very frequent, is clearly more energy efficient than the car, whose average occupancy rate in towns is generally between 1.2 and 1.4 persons. In the MCD sample, the consumption per passenger x km transported ratio is 3.2 in favour of public transport if vehicle consumption is measured. Taking consumption 'at source' - which for electric vehicles takes into account energy from thermal power stations - public transport's lead narrows but remains decisive: per passenger x km, public transport consumes 2.2 times less energy than the car. This average however conceals major disparities: in certain towns in the United States, public transport consumes scarcely less than the car, whilst in Japan or Hong Kong, the ratio of consumption 'at source' in favour of public transport reaches or exceeds 5.

The better cost efficiency of public transport is well-established: from the MCD sample, the "costs for the community of the passenger x km" ratio (investment included) is 1.67 in favour of public transport and 2.2 if investment is excluded. Between 1995 and 2001, this lead grew by 5%. Public transport operators having managed to keep production costs low could well be the reason for this increase. However, the comparative performances of different towns reveals marked differences. In Lille, Marseille, Manchester or Glasgow cars are less costly, whilst in Singapore, Prague, Budapest, Helsinki, Rome, Turin, Madrid, Bilbao, Seville or Lisbon public transport is clearly more efficient than the car. Public transport's advantage, when very pronounced, is a sign of high network operation performance but can also reflect the expense of owning and using a car in relation to the average income of households.

Competitivity of public transport

The main indicator used to measure the attractiveness of public transport is the market share of mechanised trips (by car, motorised two-wheelers, cycling and public transport) provided by public transport as an annual average. This indicator can have several causal indicators that explain passengers' modal choice.

The first family of indicators relates to the car:

- the motorisation rate of the population,
- the number of parking spaces in the CBD in relation to the number of jobs. This figure includes authorised roadside spaces, spaces in public car parks and spaces provided by businesses and shops.

The second family represents public transport supply and its performance in relation to the car:

- the supply volume (expressed in vehicle x km or place x km) per inhabitant and per hectare: the first indicator measures the amount of public transport available for the potential demand and the second measures the proximity of public transport and its coverage of the urban space.
- the length of dedicated lanes / length of motorways ratio, average speed on the road network / average commercial speed of public transport ratio and the share of the supply provided by rail modes. These indicators are designed to assess the capacity of public transport to compete with the car in terms of speed and regularity.
- the cost of one passenger x km borne by public transport users / cost of one passenger x km by car ratio. The cost of one passenger x km by public transport is the traffic revenue quotient (excluding subsidies to compensate for reduced fares) divided by the traffic expressed in passenger x km. The cost of one passenger x km by car includes all taxes.

Competition with the car is even stronger when the rate of motorisation is high. In households with more than one car in particular, public transport dependency is very low. However, the link between motorisation rate and public transport use is fairly weak. In Italian towns for example, where the rate of motorisation is amongst the highest in the world (over 600 vehicles per 1000 inhabitants), public transport ridership levels are high. In Prague, where the

Market share of public transport (as % of mechanised and motorised trips), according to motorisation rate and parking in the CBD

Motorisation rate (number of cars per 1000 inhabitants)			
< 350	350 - 450	450 - 550	> 550
32%	24.5%	20%	12%

Number of parking spaces per 1000 jobs in the CBD*			
< 100	100 - 250	250 - 500	> 500
40%	27%	19.5%	9.5%

** includes spaces provided by businesses and shops*

Public transport ridership tends to decline with an increase in the motorisation rate, but there are cases of towns where the market share of public transport is high despite a high rate of motorisation.

motorisation rate is well in excess of 500 vehicles per 1000 habitants, public transport is still experiencing record high use, with close to 1000 trips a year per inhabitant. On the other hand, in towns in the United Kingdom outside London, usage of public transport remains modest despite motorisation in households being relatively low. Other modal choice factors of course play a part, such as parking policy and the performance of the public transport system.

Public transport supply is concentrated for the most part in town centres and radial axes converging towards the centre. It is for this reason that parking policy in town centres has a strong influence on public transport use. When there is an abundant and relatively cheap supply of parking, it is difficult to persuade drivers to leave their car and take the bus, tram or metro instead. The table above shows how limiting the number of parking spaces on offer in the CBD has a positive effect on the competitivity of public transport. It is also important that parking charging is enough of a deterrent to dissuade drivers from taking their car to (and in) town centres. In this respect, towns like London, Copenhagen and Vienna, apply hourly parking rates of up to or in excess of 5 euros in public car parks or roadside spaces.

The volume of public transport supply in relation to the population is clearly linked to network traffic since operators adapt the service to demand, but this indicator alone is not enough to explain ridership (the occupancy rate of vehicles varies from 13 to 33% according to the town) and even less competitivity vis-à-vis the car. Over and above the supply volume per capita, it is its density (per hectare) that is the decisive factor. This indicator gives information about the proximity of stops and stations, and public transport's accessibility on foot. It is clear that the greater the cover of urban space in terms of supply, the higher the use of public transport. Networks that extensively service the urban space with adequate capacity lines are the most attractive, as seen in London, Vienna, Prague, Budapest, Helsinki, Paris, Madrid, Rome and above all Singapore.

Two further parameters that clearly act in favour of public transport's competitivity are speed and regularity. The link between commercial speed compared with average road speed and public transport's market share is undeniable, although on top of the trip in the vehicle itself, a public transport journey includes a walk to the station, generally longer than by car, waiting time and often connection time. The 'motorway length / reserved route length' ratio is also related to the market share of public transport, but the correlation is not correct, given the existence of extensive but underused suburban rail networks. On the other hand, the share of public transport supply provided by rail modes (tramways, light rail, metros and trains) is a good factor to explain the competitivity of public transport. Rail

An abundance of parking spaces in town centres is an incentive for car use. Towns where the market share of public transport is high have adopted a restrictive parking policy.

networks guarantee a speed and regularity that the car cannot ensure in rush hour periods. In Paris, Madrid, Berlin, London, Helsinki, Vienna and Prague, where over 70 % of places are supplied by rail modes, public transport's market share is between 27 and 54%.

Proximity of well serviced stops and stations; speed and regularity are positive factors decisive to the competitivity of public transport.

Market share of public transport (% of mechanised or motorised trips) in relation to certain parameters of public transport supply

Number of annual vehicle x km per hectare			
> 5000	2500 - 5000	1500 - 2500	< 1500
42.5%	24%	19.5%	6.5%

Share of rail-based public transport supply (% of place x km)			
> 70 %	40 – 70 %	10 – 40 %	< 10 %
34%	25.5%	15.5%	9.5%

Average car speed / average public transport speed			
< 1	1 – 1.25	1.25 – 1.75	> 1.75
33%	30%	18.5%	9.5%

Fare levels have little influence on the competitivity of public transport vis-à-vis the car.

From a purely statistical analysis, there is no correlation between the cost for user indicators and the choice between the car and public transport. Low subsidised fares may be necessary from a social perspective, but they do little to attract car drivers. Clearly, the main choice factors relating to the transport mode are car availability, likelihood of finding a parking space and respective journey time by car and public transport. Comfort and the feeling of security also play a part, but the MCD database does not cover these elements. Furthermore, the overall cost of owning car is also often underestimated by the user who only takes into account petrol, parking and toll costs. This said, the towns of Budapest, Prague, Lisbon, Vienna and Singapore where the market share of public transport is above 35% present a very high "cost of passenger x km by car / cost of passenger x km by public transport" ratio (above 6), whilst in Manchester and Glasgow, where the ratio cost is only around 2, the market share is below 15%.

All the towns in the table below have implemented an integrated urban mobility policy with strong points and weaker areas according to local conditions. London and Rome are very effective at restricting car access to the centre (even more so in London now with congestion charging). The Singapore network is remarkable for the density of its supply - usage is boosted by the rationing of the number of cars on the road by a very effective system for taxing the purchase of new cars. In Madrid, Paris, Berlin, London and Helsinki, commercial speed is high thanks to the development of the metro and suburban railways. Prague, despite a sharp rise in motorisation, has managed to maintain the market share of public transport well above 50% by means of a sustained effort to develop supply and an ongoing restrictive parking policy in the centre. The example of Vienna, where public transport is evenly matched with the car, is particularly remarkable for its sustainable mobility policy implemented over many long years to coordinate land-use planning and transport, bring traffic and parking under control and develop a dense and efficient public transport system.

The success of public transport requires the implementation of an integrated policy combining urban planning, traffic and parking control and the development of fast and regular public transport.

Public transport competitivity indicators for towns where the market share of public transport (PT) is around or above 30%

	Rome	London	Paris	Madrid	Berlin	Helsinki	Singapore	Vienna	Prague
Parking spaces/1000 jobs in the CBD	180	85	185	185*	**	385	180	225	45
PT vehicle x km per inhabitant	71	157	84	85	123	119	112	106	135
PT vehicle x km per hectare	4430	8630	3410	4730	6750	5520	11500	7120	5960
Length of dedicated lanes (km/million inhabitants)	108	176	152	93	198	102	30	185	235
PT commercial speed (km/h)	27.7	34.6	30.9	30.7	29.1	32.9	28.6	27.0	28.6
Share of PT rail supply as % of place x km	52.5	75	86.5	71	75.5	43.5	40	87.5	72.5
Market share of motorised and mechanised trips by PT (as a %)	26.5	26.8	27.5	29.1	33.6	34.6	45.3	46.6	54.2

** excludes spaces provided by businesses and shops*
*** data collection ongoing*

Evolution of public transport networks

Between 1995 and 2001, urban sprawl had extended in the majority of towns studied, whilst central and inner suburban areas were experiencing population decline. This appreciable fall in population density (- 6% in only 6 years) is a real challenge for public transport, which by its very nature its not suited to servicing sparsely populated areas. In parallel, the motorisation rate has grown by 11% (from 400 to 445 cars per 1000 inhabitants). In spite of this development, which does not favour competitive conditions, public transport has managed to boost ridership by 4.5% and stabilise its market share of motorised and mechanized trips at 27%. This overall satisfying result however conceals some sharply contrasting situations. In towns in the UK outside London, patronage has decreased and public transport's market share to an even greater extent, whilst the ridership levels and market share have stabilised or grown in Madrid, Paris, London, Geneva, Vienna, Helsinki and Singapore.

Between 1991 and 2001, average investment levels stood at around 0.45% of GDP for urban areas, but showed considerable disparities. In some towns, such as Marseille or Bologna, only the maintenance of the potential was

The 4.5% rise in ridership and the stabilisation of public transport's market share were made possible due to the 5.5% increase in supply volume per capita and 11% rise in reserved routes length'.

Development in supply and use of public transport (PT)

	1995	2001
Vehicles x km PT per inhabitant	80	84,5
Vehicles x km PT per hectare	3,960	4,060
Length of reserved routes (km/million inhabitants)	119	132
Investment in PT (as % of GDP)	0.43	0.45
Commercial speed PT (km/h)	26.2	26.7
Market share of PT (% of motorised and mechanised trips)	27.6	26.8
Number of trips per year per inhabitant by PT*	325	340

** traffic including non-residents*

The public transport sector has successfully managed to keep its production costs in check, whilst at the same time maintaining its market share of trips in a challenging context.

Operating costs before amortisation and public transport fares

	2001 value in euro cents	Annual fluctuation between 1995 and 2001*
Cost of vehicle x km	366	+ 1.0 %
Cost of place x km **	3.75	
Cost of trip	105	+ 1.3 %
Cost of passenger x km	20.1	+ 0.5 %
Revenue per trip***	54.7	+ 2.3 %

** fluctuation calculated in local money, in real terms (inflation adjusted)*
*** data not available in 1995*
**** revenue from traffic, excluding subsidies to compensate for reduced fares*

guaranteed (but in these two towns major developments are underway or planned). The heaviest levels of investment over this ten year period (between 0.6 and 1.2 % of GDP) were in Madrid, London, Vienna, Prague, Lille and Singapore.

Whilst the volume of supply rose sharply, the density of supply per hectare, which measures the cover of the urban space by the network, only increased by 2.5%, which is in fact remarkable given the expansion of urban areas.

Investment in network expansion essentially focused on developing rail modes: tramways, light rail and metros. The rapid extension of Madrid's metro (50 km in 6 years) is particularly spectacular, but we should also mention the sustained development of metro expansion in Singapore, Vienna, Prague, Helsinki, Rome, London, Paris et Lille and the tramway in Lyon, Nantes and Geneva. The development of segregated rights-of-way for rail modes in the majority of towns has enabled public transport to maintain its average commercial speed despite the degradation in traffic conditions for buses. The largest increases in speed have been seen in Madrid, thanks to the development of its metro, and in London, which applies a very effective bus priority policy.

Before commenting on specific situations, it is necessary to underline the precautions to be taken when making cost

comparisons. First of all, public transport being a labour intensive industry, production costs are necessarily linked to wage levels. In this respect, important disparities between the towns in the sample should be pointed out: GDP per capita is four times higher in Oslo than in Seville or Budapest. Furthermore, the collection of financial data is not an easy task. Deregulation and privatisation result in a multitude of players and a growing reticence to communicate accounting information. The apparition of complex arrangements supposed to encourage productivity and service quality often leads to opaque situations where the collection and analysis of costs is not easy. Despite this, the data collected during MCD are nearly always from an official source and where estimates have been made, these have generally been submitted to local managers.

Amongst the most efficient in terms of production of place x km, are those towns where labour is relatively cheap such as Seville, Budapest, Prague or Newcastle. However, strong performance from Singapore, Madrid, Helsinki and Copenhagen can be explained rather by their well above average efficiency, which results from a combination of the following factors: recent infrastructure and equipment, high commercial speed, efficient management organisation, high staff productivity in relation to the total payroll.

The criteria for costs per passenger and per passenger x km also depend on ridership levels. The networks of towns in the UK (outside London) that have fairly low production costs rank less well on this criterion, because of their low level of attractiveness. A high vehicle occupancy rate (such as in Lisbon, Rome, Turin, Budapest, Prague and Singapore), whilst not conducive to customer comfort, is on the other hand an important productivity factor. The evolution of costs between 1995 and 2001 varies according to town. A clear improvement in efficiency can be observed in Paris, Madrid, Rome, Vienna and Singapore. On the other hand, the evolution of costs is less pronounced in Copenhagen, Oslo and London (towns where productivity remains satisfactory) as well as Brussels and Geneva.

Fare policies vary greatly: the rate of operating costs coverage from revenue before amortisation is below the 30% mark in Brussels, Rome and Turin, whereas the network in Singapore makes a profit and Manchester and Newcastle's networks are close to breaking even. Between 1995 and 2001, there was no significant evolution in the average cost coverage rate (improvement in the 'revenue / cost' ratio per trip being cancelled out by the fall in subsidies as compensation for social fares). It was possible to note that there was no link between the cost coverage rate and network productivity. Amongst the networks with satisfactory efficiency levels, cost coverage rates below 50% were found (in Nantes and Paris, Vienna, Prague and Italian towns).

Recommendations for sustainable urban mobility

UITP is one of the most informed and credible advocates of a sustainable urban mobility based on a global and dynamic urban policy, traffic and parking control and public transport development. The advantages of sufficiently dense urban development well irrigated by high performance public transport were clearly demonstrated by 'Millennium Cities Database for Sustainable Transport.' With MCD, which sheds objective light on the evolution of the urban mobility economy over the last years, UITP intends to present a more in-depth diagnosis and formulate new proposals concerning the three pillars of sustainable mobility: urban planning, traffic and parking, and public transport.

Statistical analyses carried out by UITP reveal that when population density is halved (from 100 to 50 inhabitants + jobs per hectare), the cost for the community (expressed as a % of GDP) and energy consumption for urban trips rise by over 50%.

In order to put a brake on urban sprawl - the driver for the increase in transport expenditure and non-renewable energy consumption - to conserve the historical and cultural heritage of cities and stimulate economic dynamism and combat segregation and exclusion, UITP recommends:

- establishing urban developments plans that slow construction on un-built zones on the edges of towns,
- incorporating public transport supply into any urban development project to promote densification around stations – integrated urban planning,
- to apply a housing policy encouraging construction of sufficiently dense residential zones and the proper upkeep of older buildings in town centres and densely populated areas,
- strictly limiting the number of parking spaces in office blocks and shopping facilities in line with the level of public transport services available in the area.

Fostering urban growth that is dynamic, community-focused and under control

Between 1995 and 2001, the average population density fell by 6% whilst the share of trips by car rose by 5%. The consequences of urban sprawl are nevertheless well known: longer journey time, increase in transport expenses, rise in energy consumption and the greenhouse effect, dissolving of the social fabric of neighbourhoods and marginalisation of “non car owners” in the absence of effective public transport servicing low density areas.

The evolution towards ever more sprawling and disparate urban development is not however fatal. Towns such as Helsinki, Vienna and Singapore demonstrate that an urban development control policy is feasible and can be profitable for the mobility economy and boost economic dynamism. Furthermore, the desire for space and moving to the countryside is far from being widespread when you look at the trend for households returning to the centre, provided town centres are lively, well serviced by public transport and housing prices remain affordable. By championing the cause of the compact town, well irrigated by quality public transport, UITP is not only supporting the cause for public transport, but on a more general level, that of an urban civilisation that is dynamic, community focused and concerned with the shape of things for future generations.

Outside of low density areas, cars are clearly less efficient than public transport. Based on the sample of towns in MCD, per passenger x km transported, public transport consumes 2.2 times less energy and costs 1.6 times less to the community than the car. Public transport's advantage is even greater if external transport costs are taken into account (amount of space taken up, pollution, noise and traffic accidents).

UITP is fully aware that the car is an essential factor to economic activity and remains one of the favourite consumer goods of our fellow citizens. This said, "too many cars kill the car and kill the town" and, to reduce congestion and improve the quality of urban life, UITP recommends :

- reassigning road space to pedestrians, bikes, public transport vehicles and taxis,
- limiting access to town centres, either through congestion charging, as in London, or regulatory measures, as in Rome,
- developing "quiet neighbourhoods" where speed is limited and road space managed to foster the security and comfort of residents,
- restricting the number of parking spaces in town centres and the construction of new public car parks to residents' parking,
- making roadside charging widespread, charging non-residents, stepping up parking inspection and improving fine recovery systems,
- discouraging companies from providing free parking spaces for their employees.

photo: Jeffrey Parnes, Oak Hill, VA ▪ 2004

Promoting car-congestion free towns

Congestion, with the secondary problems it brings such as time lost in traffic jams, economic wastage, frustration and stress, is a scourge afflicting the vast majority of our cities. Excessive car use in towns damages inhabitants' health through pollution and noise, and contributes to the depletion of non-renewable energy sources and creates green house gas emissions, despite efforts by the automobile industry to improve the energy and environmental performance of engines. Outside more sparsely populated peripheral areas, the solution does not involve building more motorways, but implementing a rational policy for road use that gives priority to public transport, bikes and pedestrians, ie. the modes of transport that use up the least space.

A growing number of politicians have taken this fact on board and are committed to reducing car dependence and re-appropriating space for public transport, bikes and pedestrians in their town centres. UITP encourages the fostering "civilised spaces" of this kind to put an end to irrational car use and improve environmental quality. Highly restrictive parking policies in force in London, Geneva or Graz for example, are also very effective. The most spectacular example is surely Singapore where congestion charging is used to reinforce the highly deterrent tax applied to the acquisition of new cars.

The main conditions for making public transport attractive are well known: development of comprehensive public transport supply on a network that fully covers the urban area, improvement in speed and regularity through the creation of reserved routes and development of high capacity rail and road modes. Service should be improved without an appreciable increase in expenditure the cost of passenger x km transported remained virtually unchanged between 1995 and 2001.

Public transport provides all city dwellers, motorised or not, with accessibility to jobs, education, services, shopping and leisure facilities. It is energy-saving, respectful of the environment and health of city-dwellers and outside low density areas, costs less to the community than the car. To foster the development of public transport, UITP recommends:

- extending the responsibilities of the organising authorities to cover traffic and parking issues and the coordination between land use planning and transport for urban area as a whole (cf. London or Helsinki),
- maintaining or stepping up investment in public transport to at least bring it up to the level of that for the road network,
- develop reserved routes for public transport, the only real alternative to the car in terms of speed and regularity; rail modes are particularly effective in this respect,
- ensuring bus and tram priority through reserved corridors and traffic priority systems,
- guaranteeing to operators, through appropriate fare and subsidy policies, the financial means to offer their users a service of high enough quality to be able to compete with the car (frequency, comfort, passenger information, safety and qualified staff),
- selecting the most effective relationship model between organising authorities and operators to suit the local political and social context in order to foster quality service and keep operating costs under control.

For high performance public transport appreciated by users

It is remarkable that public transport has managed to maintain its market share of trips between 1995 and 2001, in the face of a 6% drop in population density and 11% increase in the motorisation rate. This performance is to the credit of politicians who began to apply the recommendations drawn up by UITP and the public transport industry to offer and attractive service to users.

This general remark obviously requires further detail. The most remarkable success stories are Vienna, Helsinki and Singapore, where the majority of the conditions for success were met: restriction of car use, sustained investment in public transport, extension of rail networks, high volume of supply (per capita and per hectare) in constant progression, and control of operating costs. Neither fare policy nor organisational modes seem to be decisive in determining service quality, growth in traffic or cost control. The 'integrated network' choice operated by and large by companies as a monopoly has not prevented Paris or Madrid from winning customers and reducing the cost of passenger x km. This said, systematic or partial opening up to competition has also yielded positive results in Helsinki or in London. Deregulation, a feature of the United Kingdom situation outside London, allows low production costs but has caused a drop in the market share of public transport and a rise in the cost of trips for the community.

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