

## 5.1. Ridership and market share

Between 1995 and 2001, the majority of cities in the sample saw a marked growth in urban sprawl. At the same time, population levels fell in central and inner-urban areas. This major drop in density (-5% in only six years) is a real challenge for public transport, which is by nature ill-suited to providing services in less densely populated areas. Over this same period, car ownership rose by around 11% (from 375 to 415 cars per 1000 inhabitants).

*In spite of a deterioration in competitive conditions, public transport managed to maintain its passenger numbers and its share of the mobility market.*

**Table 19: Evolution in the annual number of journeys per inhabitant and in public transport market share between 1995 and 2001**

	1995	2001
Annual number of journeys by public transport per inhabitant*	360	360
Market share of motorised and mechanised journeys by PT (%)	31.5	30.6

\* traffic including non-residents

This overall satisfactory result nonetheless conceals highly contrasting individual situations. In cities around the United Kingdom (excluding London), public transport traffic fell, and market share even more sharply. Public transport networks in Berlin and Copenhagen also suffered a sharp erosion in traffic and competitiveness. Cycling is used far more than public transport in Copenhagen. The drop in ridership in Moscow has been spectacular, but the level of public transport use remains very high. Passenger numbers and market share have been maintained or have increased in Madrid, Paris, London, Geneva, Vienna, Stockholm, Helsinki, Hong Kong and Singapore. The advance in the annual number of trips in Munich, Budapest and Prague has been accompanied by a sharp fall in market share. These three cities nonetheless remain exemplary in terms of public transport competitiveness and intensity of PT use. In Warsaw, Budapest and Prague, a sustained growth in car numbers after the collapse of Communism left fears of a plummeting market share. This has been averted thanks to a policy of network modernisation and restrictions on city-centre parking.

The divergences in public transport market share are considerable, ranging from 6 to 74% depending on the city: under 15% in Chicago, Dubai, Melbourne, Ghent, Lille, Clermont-Ferrand, Manchester and Glasgow; between 15 and 25% in French cities (excluding Paris), Seville and Valencia, Bologna, Geneva, Graz, Stuttgart, Brussels, Newcastle and cities in Scandinavia (except Helsinki); 25 to 40% in Lisbon, Madrid, Barcelona and Bilbao, Rome and Turin, Athens, Paris, London, Stockholm, Helsinki, Bern and Zurich, Berlin and Munich; 40 to 50% in Vienna and Singapore; and over 50% in Eastern European capitals and in Hong Kong.

## 5.2. Modes running on exclusive rights-of-way: investment and development

To measure the evolution in investment in public transport (infrastructure and rolling stock), the study recorded the amount of average annual expenditure for the periods 1991-1995 and 1996-2001. The scale of investment is in relation to a conurbation's GDP. Extensions to networks running on exclusive rights-of-way are related to its number of inhabitants.

*In order to maintain its market share, the public transport system has developed networks running on exclusive rights-of-way, in particular rail modes. The proportion of exclusive right-of-way per inhabitant increased by some 9% between 1995 and 2001.*

**Table 20: Investment levels and length of exclusive rights-of-way**

	1991-1995	1996-2001
Annual average investment (% of GDP)	0.43	0.50
Length of exclusive rights-of-way (km/millions of inhabitants)	126.5	137.5

Between 1991 and 2001, the average investment level remained at between 0.45 and 0.5% of urban area GDP, but with significant variations. In some cities, such as Ghent, Seville, Marseille and Bologna, only the potential has been maintained (in the latter two cities, however, major developments are underway or planned). Higher levels of investment over this 10-year period (between 0.6 and 1.2% of GDP) could be seen in Madrid, Lisbon, London, Berlin, Vienna, Oslo, Prague, Lille, Hong Kong and Singapore. Athens, Lyon, Brussels, Bilbao, Stockholm and Copenhagen have a level of investment which is lower, but still above the average.

Investments in network extensions have focused essentially on the development of rail modes: tramways, light rail systems and metro systems. The rapid expansion of the Madrid metro (50km in six years) is particularly spectacular, but we should also mention the sustained development of metro (and/or RER) networks in Hong Kong, Singapore, Munich, Vienna, Prague, Helsinki, Athens, Rome, London, Paris and Lille, and tramway in Lyon, Nantes and Geneva.

### **5.3. Journey speed**

*The development of modes running on exclusive rights-of-way has enabled a roughly 3% increase in public transport journey speed.*

**Table 21: Public transport commercial speed**

	1995	2001
PT commercial speed (in km/h)	27.3	28.1

The development of rail modes running on exclusive rights-of-way in the majority of the cities in the sample has enabled public transport to slightly improve average commercial speed (all modes combined) despite the degradation in bus traffic conditions. The biggest speed increases were recorded in Madrid, Athens, Vienna and Singapore, as a result of metro development, and in London, which has been effective in implementing a bus traffic priority policy.

The highest speeds (35 km/h and above) are seen in cities where rail networks provide over 70% of transport supply (London, Barcelona, Moscow, Munich, Stuttgart and Oslo). The network in Copenhagen also ranks among the fastest, offering over 60% of network seats on rail modes and providing good conditions for bus traffic. With speeds of between 30 and 35km/h, Chicago, Paris, Madrid, Bilbao, Berlin, Hamburg, Zurich, Glasgow, Stockholm and Helsinki have a highly developed rail network and/or enjoy adequate traffic conditions for

their buses and tramways. Speeds fell in cities where rail modes running on exclusive rights-of-way are absent or very minor, such as Bologna and Graz, speeds fell, since buses and tramways are mixed in with overall traffic and were therefore increasingly caught up by traffic jams.

#### **5.4. Supply volume**

***An increase of 7.5% in supply volume per inhabitant and of around 4% in supply volume per hectare have enabled passenger numbers to remain steady and public transport's market share to stabilise.***

**Table 22: Public transport supply volume\***

	<b>1995</b>	<b>2001</b>
<b>PT vehicle x km per inhabitant</b>	80	86
<b>PT vehicle x km per hectare</b>	3950	4100

\* excluding Moscow and Hong Kong (whose very high 2001 values for supply distort analysis of average changes)

Supply density per hectare, which measures a network's urban-space coverage, has increased by around 4%, which is remarkable given the expansion of urban areas. In terms of place x km available (the best indicator of supply volume), the increase per inhabitant is certainly higher still. Indeed, the development of rail modes has been accompanied by a rise in average vehicle capacity (an articulated tramway carries 2 to 3 times more passengers than a bus, and a metro car 1.5 to 2 times more). It has not been possible, however, to make the comparison since information on the "place x km" indicator was not collected in 1995's "Millennium Cities Database for Sustainable Transport".

Madrid, Munich and Vienna recorded the largest supply increases (up by over 20% from what was already a high level in 1995). The increase in vehicle x km per inhabitant is marked (between 5 and 20%) in Paris, Nantes, Brussels, Berlin, London, Stockholm, Helsinki, Prague, Athens, Bologna, Rome, Hong Kong and Singapore. In some of these cities, supply density nonetheless levelled off or fell as a result of an urban area expansion that was more intense than for public transport services (Paris, Athens, Bologna and Rome). Falls in service levels per inhabitant and per hectare were recorded in cities around the United Kingdom, excluding London, in Budapest and in Moscow (in the latter two cities, supply remains very dense).

In 2001, the highest levels of service were observed in Hong Kong and Moscow (respectively: 172 and 155 vehicle x km per inhabitant and 49,000 and 25,000 vehicle x km per hectare). Singapore, London, Berlin, Munich, Vienna, Bern, Zurich, Helsinki, Prague and Warsaw recorded figures above 100 vehicle x km per inhabitant and above 5,500 per hectare. Paris, Brussels, Stockholm, Madrid, Rome, Newcastle and Budapest then followed with a supply level higher than 75 vehicle x km per inhabitant and 3,000 per hectare. Chicago, Dubai, Melbourne, Seville and Clermont-Ferrand were the least well-served cities.

**Table 23 Indicators of public transport competitiveness in various cities where public transport (PT) market share grew between 1995 and 2001**

		London*	Madrid	Vienna	Singapore	Hong Kong	Paris
Market share of motorised and mechanised journeys by PT (%)	1995	23.9	27.2	43.2	44.2	71.8	27.1
	2001	26.8	30.2	46.6	45.7	73.9	27.5
Annual number of journeys on public transport per inhabitant*	90-95	345	250	490	480	545	260
	96-01	390	290	495	485	525	310
Average annual investment (% of GDP)	1995	1.13	0.88	1.07	0.44	0.37	0.45
	2001	0.64	0.81	0.62	0.84	1.00	0.32
Length of exclusive rights-of-way (km/millions of inhabitants)	1995	172	84.5	174	22.5	17.5	149.5
	2001	176	92.5	185	29.5	22.5	151.5
PT speed (in km/h)	1995	31.3	28.5	24.9	27.0	26.4	31.6
	2001	34.6	30.7	27.0	28.6	26.0	30.9
PT vehicle x km/hectare per inhabitant	1995	145	67.5	87	110	146	71.5
	2001	157	85	106	112	172	84
PT vehicle x km per hectare	1995	7.850	4,500	5.850	10,300	46,700	3,400
	2001	8.650	4.750	7,100	11,500	49,200	3,400

\* traffic including non-residents

In Madrid, the success of public transport is largely attributable to the development of the metro and the modernisation of the railway network. Extensions to networks running on exclusive rights-of-way and service densification, together with an urban planning policy effectively incorporating public transport development, allowed the network in Vienna to consolidate its leading position in Western Europe. In Paris, where investment levels fell, public transport performed respectably thanks to a consolidation of services (new automated metro line and tramway extension) and the difficulties facing car traffic. Metro upgrading and expansion and commuter railway modernisation, following years of neglect, as well as the speeding-up of bus traffic, were the drivers of vastly improved public transport competitiveness in London, where PT use, although expensive for users, is aided by adverse car traffic conditions and an effective clampdown on parking in the centre. In Singapore and in Hong Kong, extensions to high-capacity metro networks and service densification explained the growth in public transport market share. The attractiveness of PT was also boosted by the expansion of the urban road toll scheme in Singapore and by traffic difficulties in Hong Kong.