

12 th edition

Foreword

by Ruud van der Ploeg, EMTA Secretary general

For over a decade the EMTA Barometer collates figures from main cities and their functional transport conurbations of members networks. Parameters are widely diverse, covering demographic, socio-economic, infrastructural and financial data. Almost 60 units to support the quantitative outline of members' performance in cities and the adhering network areas. Consistent monitoring of indicators by members is increasingly challenging, in particular where the organizational span of a member changes. In Italy (Piemonte), Bohemia (Prague region) and the Netherlands (Rotterdam/The Hague) the scope of jurisdiction was scaled up, making a well-certified comparison with preceding figures impractical.

Stakeholders wish to compare data from longitudinal studies or make extrapolations. It underpins the need for harnessing data that is suited for computing and correct validation. Validation of data requires alertness: data quality can be readily compromised if we fail to consistently review the definitions and collection methods from which it originates.



Upon completion of this barometer's 12th release, this awareness has particularly pervaded my view on the consolidation phase. It collates outcomes from 25 members from 16 European countries. It dates back 12 months or more offering a compelling representation of what cities and regions are marked by, in terms of mobility and transport performance.

Methods used to collect all input strongly vary. As such no reason for scrutiny albeit that collating is done responsibly by calibration and cross-

checking. Still, to uphold and improve data quality pursuance of a better customized, digital method to collect seems inevitable. EMTA will keep pushing for unambiguous data, that creates a level of harmonisation and enables computing to produce valid comparisons, bilateral or comprehensive.

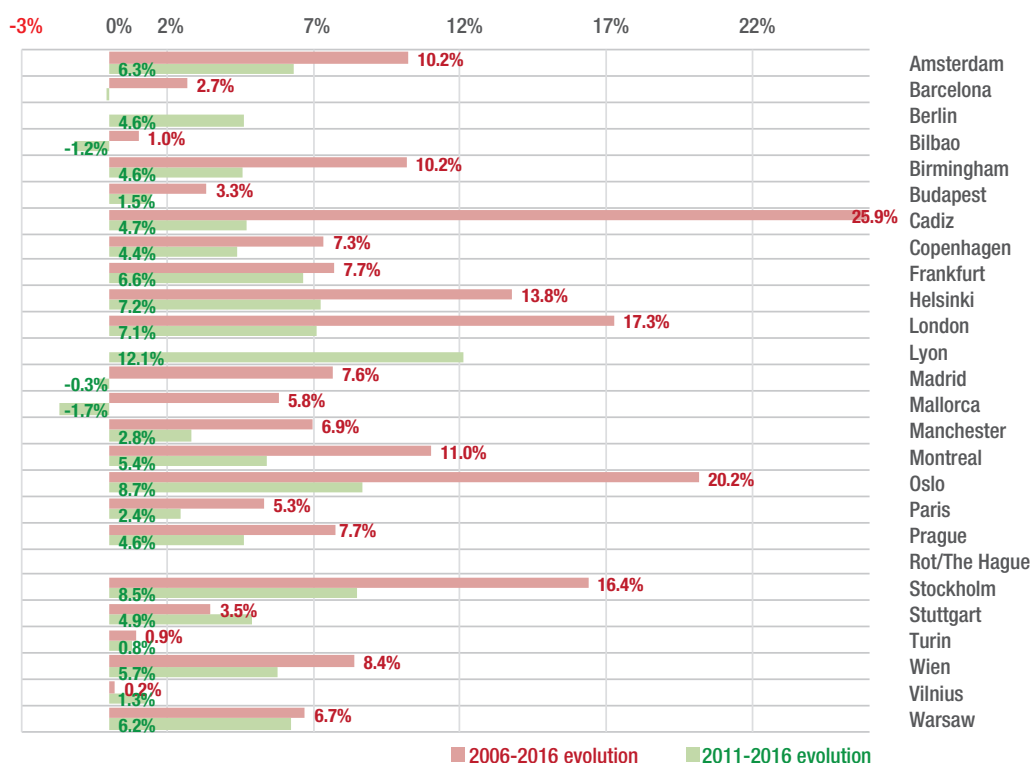
The Barometer remains unique: is unparalleled as public transport comparator. Nevertheless, our ambition has to be to continue improving the quality of data input.

Description of the PTA⁽¹⁾ areas surveyed

Authority responsible	Main city population	PTA area population	PTA surface (km ²)	PTA urbanised surface (km ²)	PTA urban density (inhab./urb. surface)	Annual PTA GDP ⁽²⁾ per capita (€)	
VA	<i>Amsterdam</i>	844,952	1,514,163	1,004	805	1,880	34,700 €
ATM	<i>Barcelona</i>	1,608,746	4,993,419	3,242	1,073	4,654	28,590 €
VBB	<i>Berlin</i>	3,556,056	6,046,015	30,546	3,438	1,759	32,743 €
CTB	<i>Bilbao</i>	1,138,852	1,138,852	2,215	235	4,846	29,432 €
WMITA	<i>Birmingham</i>	1,124,569	2,864,925	902	498	5,753	
BKK	<i>Budapest</i>	1,752,704	1,752,704	525	358	4,896	19,754 €
CMTBC	<i>Cadiz</i>	331,749	820,906	3,191			
MOVIA	<i>Copenhagen</i>	707,518	2,600,184	9,195	1,713	1,518	53,415 €
RMV	<i>Frankfurt</i>	731,009	5,364,322	23,982	3,584	1,497	43,609 €
HSL-HRT	<i>Helsinki</i>	635,181	1,232,968	1,507	411	3,002	56,600 €
TfL	<i>London</i>	8,910,868	8,910,868	1,572	1,042	8,552	47,705 €
SYTRAL	<i>Lyon</i>	655,158	1,354,476	746	360	3,762	57,384 €
CRTM	<i>Madrid</i>	3,165,541	6,466,996	8,028	1,043	6,200	32,723 €
CTM-TIB	<i>Mallorca</i>	402,949	861,430	3,636	116	7,439	24,870 €
TfGM	<i>Manchester</i>	536,000	2,770,000	1,272	959	2,888	30,925 €
ARTM	<i>Montreal</i>	2,014,221	4,044,218	3,980	1,624	2,490	32,194 €
RUTER	<i>Oslo</i>	666,759	1,271,127	5,005	324	3,923	64,729 €
STIF	<i>Paris</i>	2,243,739	12,142,802	12,000	2,728	4,451	53,921 €
ROPID	<i>Prague</i>	1,281,000	1,979,000	3,839	714	2,772	23,724 €
MRDH	<i>Rot/The Hague</i>	634,264	2,200,000	990	440	5,000	34,500 €
SL	<i>Stockholm</i>	935,619	2,269,060	6,524	880	2,579	63,125 €
VRS	<i>Stuttgart</i>	626,144	2,495,655	3,012	728	3,428	50,234 €
AMP	<i>Torino</i>	886,837	4,392,526	25,387	1,755	2,503	21,135 €
VOR	<i>Wien</i>	1,867,582	3,825,277	23,559	14,421	265	36,567 €
MESP	<i>Vilnius</i>	543,229	543,229	401	149	3,653	15,082 €
ZTM	<i>Warsaw</i>	1,753,977	2,586,527	2,676	603	4,289	17,491 €
	2016 Median	1,490,725	3,324,679	6,868	1,600	3,760	37,715 €

⁽¹⁾ PTA: Public Transport Authority. ⁽²⁾ GDP: Gross Domestic Product.

Evolution of population



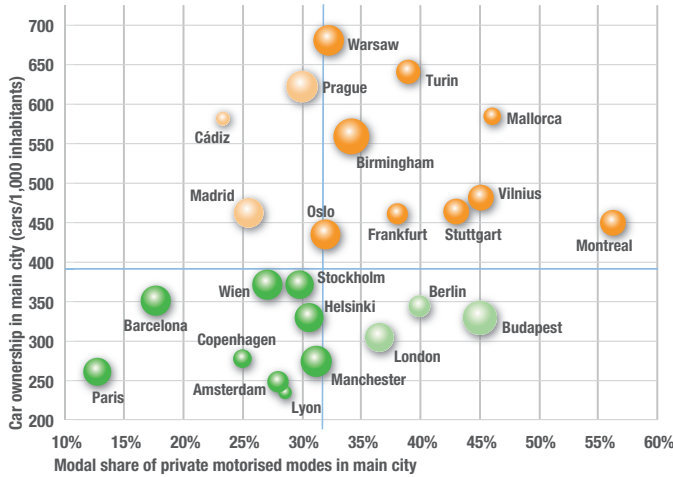
The average population of member cities is around 1.49 million inhabitants and 3.3 million for the PTA area. The average for the PTA population increased in the last five years by 4.3% and by 8.7% in the last 10 years. Regarding the average area for the main cities is 374 km² and 6,868 km² for the PTA area, with an urbanized PTA area of 1,600 km² that represents a 23% of the total PTA surface. In the case of the main cities, this percentage has risen up to 61% of the total surface. Finally, the average GDP in PTA area has increased from 36,162 € in 2015 to 37,715 € in 2016 in the PTA area (+1.9%). It should be highlighted the increase of population that continues happening in cities such Bahia de Cadiz and Nordic cities, contrary to the loss of population over the years is taking place in Spanish cities. It is important to mention that in 2016 Turin has increased the PTA area from 838 km² to 25,387 km² and the population from 1.5 to 4.4 million inhabitants.

Car ownership rate

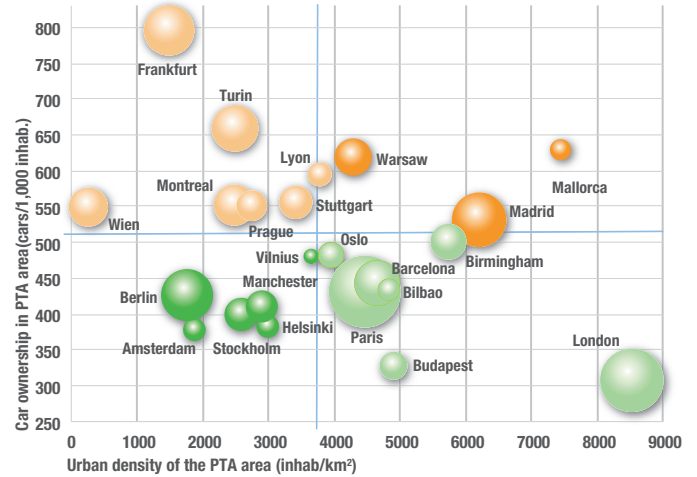
The first image represents the relation between car ownership in main city and modal share of private motorised modes also in the main city. In this graph the size of the balls represents the public transport modal share of the main cities. Comparing with previous years, two important tendencies can be clearly identified: the private car continues to decline in main cities, 415 cars ownership per 1,000 inhabitants (-2.7%) and maintain the rate in PTA areas (479 cars per 1,000 inhabitants).

The second image represents the relation between car ownership in the PTA area, expressed as cars per 1,000 inhabitants and urbanized PTA area density. The size of the balls represents the population in the PTA area. The average density of cities is 7,948 inhabitants/km² and 3,760 inhabitants/km² in PTA areas. Two PTA areas (Mallorca and London) close to 8,000 inhabitants/km² (urbanized PTA area/population), having double the density of an average PTA. For most cities the car ownership rate moves within a margin of between 350 and 550 cars / 1,000 inhabitants, the average lies at 479.

Car ownership rate versus private motorised modal share in main city



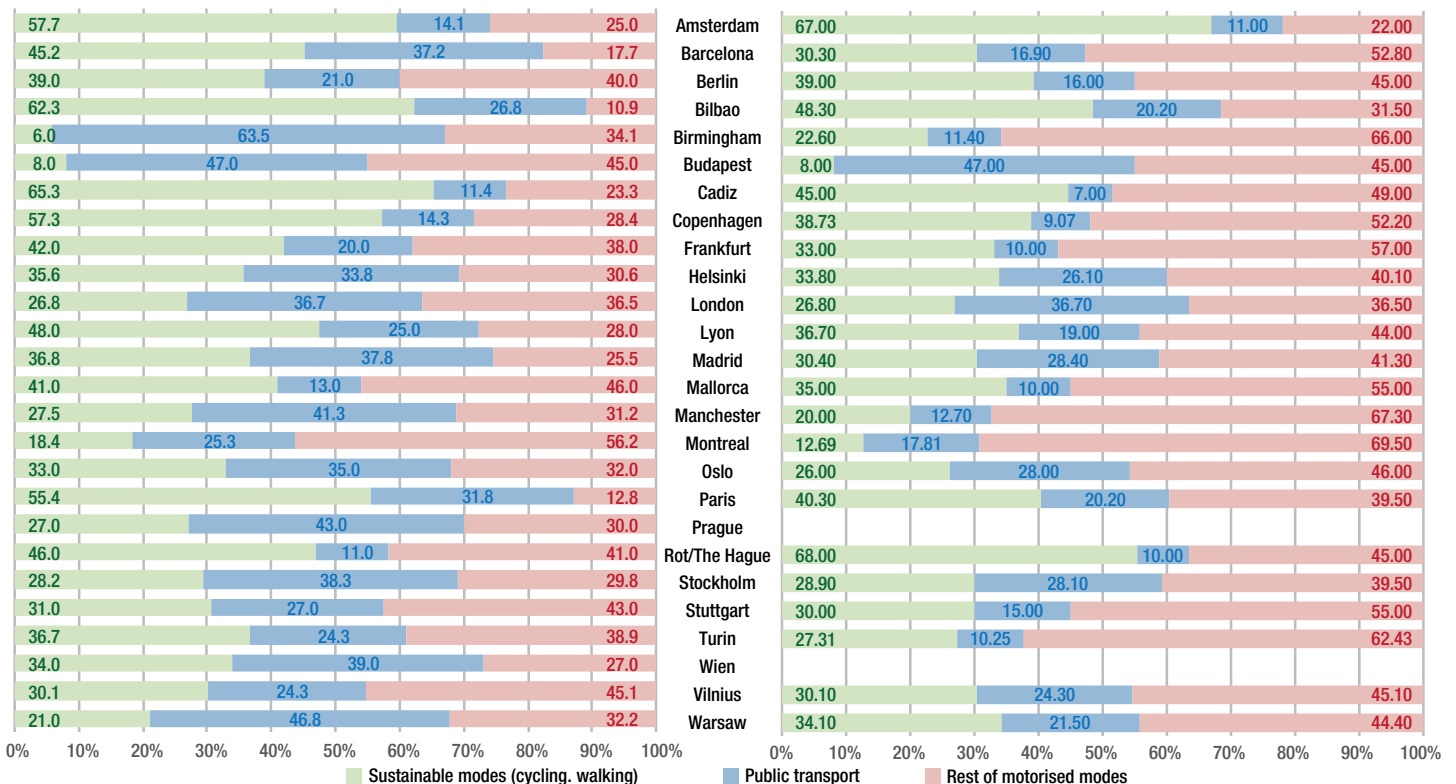
Car ownership rate versus urban density PTA area with PTA area population



Modal share in main cities & metropolitan areas

In main city

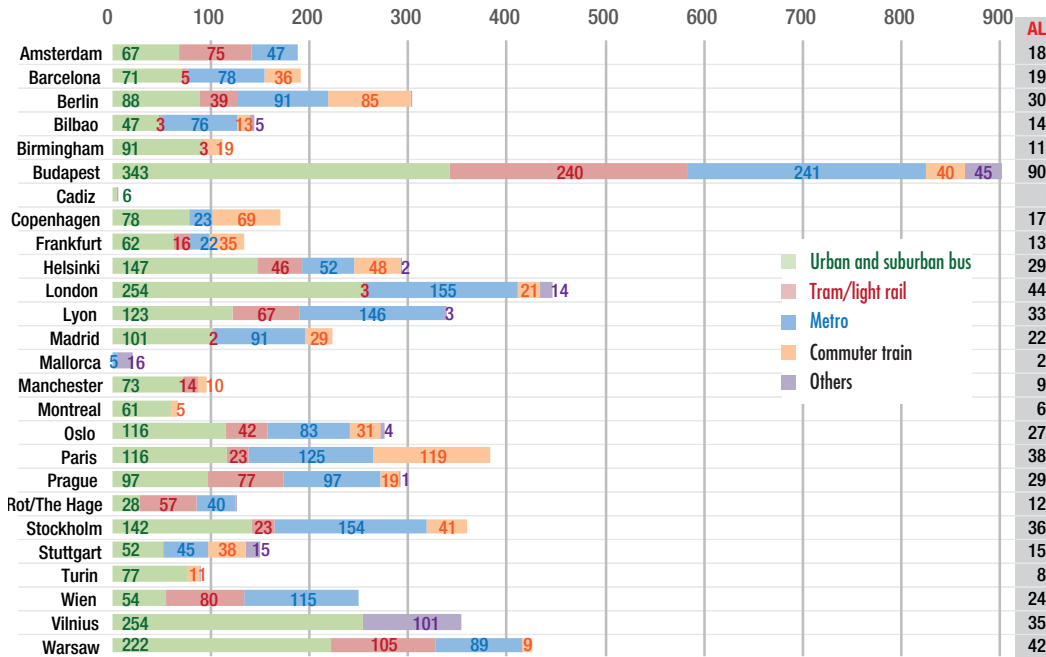
In PTA area



On average per capita per day in selected main cities and in the metropolitan areas 2.8 and 2.9 trips respectively were made (similar to 2015). Of the latter, in the PTA areas, 33% is made by sustainable modes (cycling, walking), 19% by public transport and 48% by private transport. However, in the main cities, 37% of trips are made by sustainable modes, public transport raises the average to 30% over other motorised modes that maintained its average share to 33%. It is also remarkable the use of walking in cities like Bilbao (62%), Cadiz (64%) and Paris (52%) where they have more than a 50% of the total modal share. The median in the main cities is 30% and in the PTA areas 27%. Due to a better public transport offer in main cities, than in the whole PTA areas, the share of sustainable transport modes (walking, cycling and public transport) raises up to 67% compared to 52% of the PTA areas. Main cities as Barcelona (82%), Bilbao (89%) and Paris (87%) have the highest score for sustainable transport modes as well as Bilbao (68%) and Rotterdam/The Hague (78%) have for their PTA areas.

Public transport demand per inhabitant in PTA areas

(journeys per inhabitant in PT per mode)



Regarding the public transport demand, 2016 maintains the decline in the use of PT in comparison with the last years: in 2013 the average was 303 boardings per inhabitant; 330 in 2014; 304 in 2015 and 296 boardings per inhabitant in 2016 were made. The bus being the most used transport mode (107 boardings per inhabitant, 112 in 2015) followed by the metro (92 boardings per inhabitant, 88 in 2015).

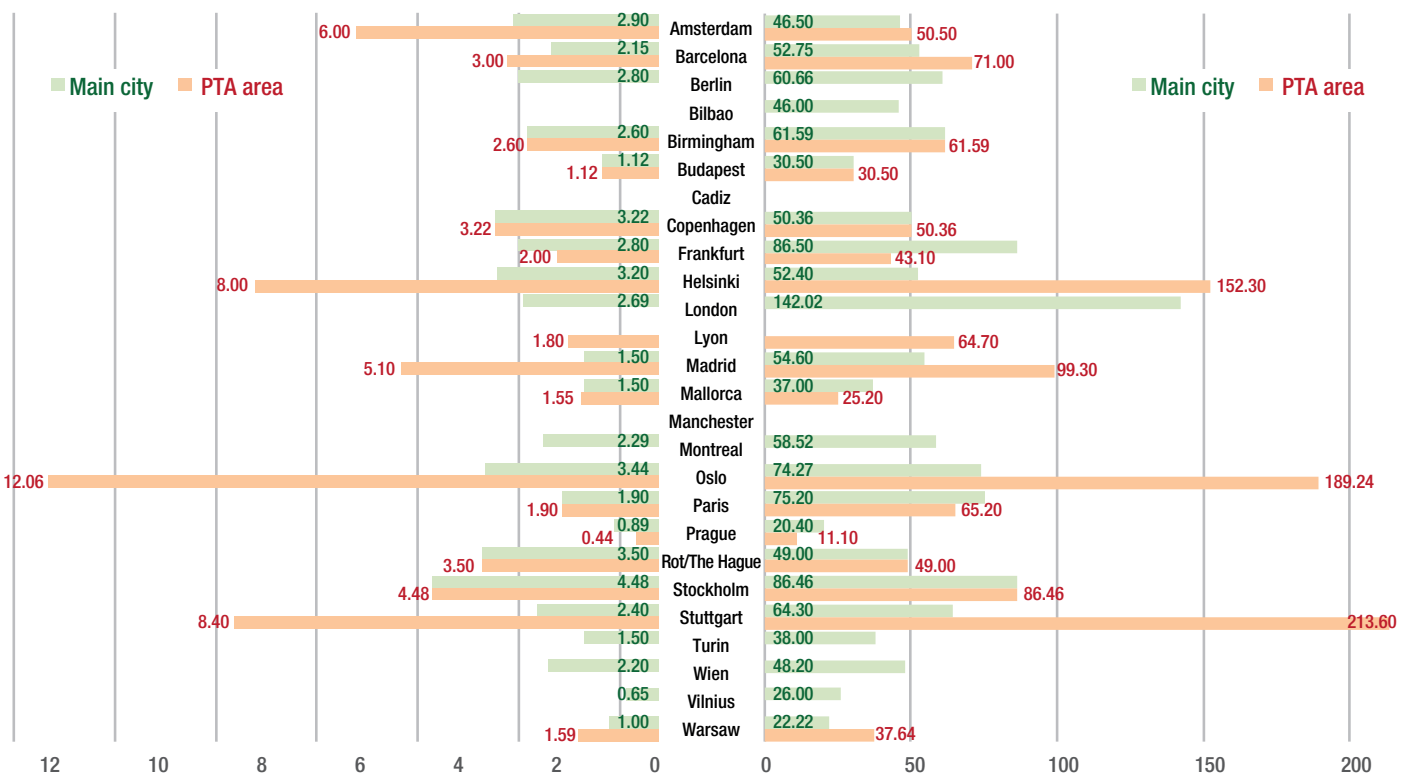
(In the case of Budapest, the high numbers are due to the fact that BKK is accountable for PT services within the city borders of Budapest only, whilst boardings in this figure include both local journeys within the city and commuter trips on services into the city vice versa. Hence, the division through the city population only, produces the high boarding figures shown above.)

Ticket price for the main city & PTA area

The average price for the single ticket in 2016 has risen compared to 2015 in the main city, 2.31 € (2.18 in 2015) and almost maintain the same price in the PTA area 3.93 € (3.97 € in 2015). For the monthly pass, the fare decreased to 56 € and 76 € respectively from ones in 2015, 60 € and 90 € for the main city and the PTA area respectively. Regarding the monthly pass in the PTA area it should be noted that Nordic cities exceed the limit of 100 € and Madrid, Oslo and Stuttgart are the PTAs with a highest rate with respect to the monthly pass and the monthly GDP.

Single trip ticket price (€)

Monthly pass price (€)



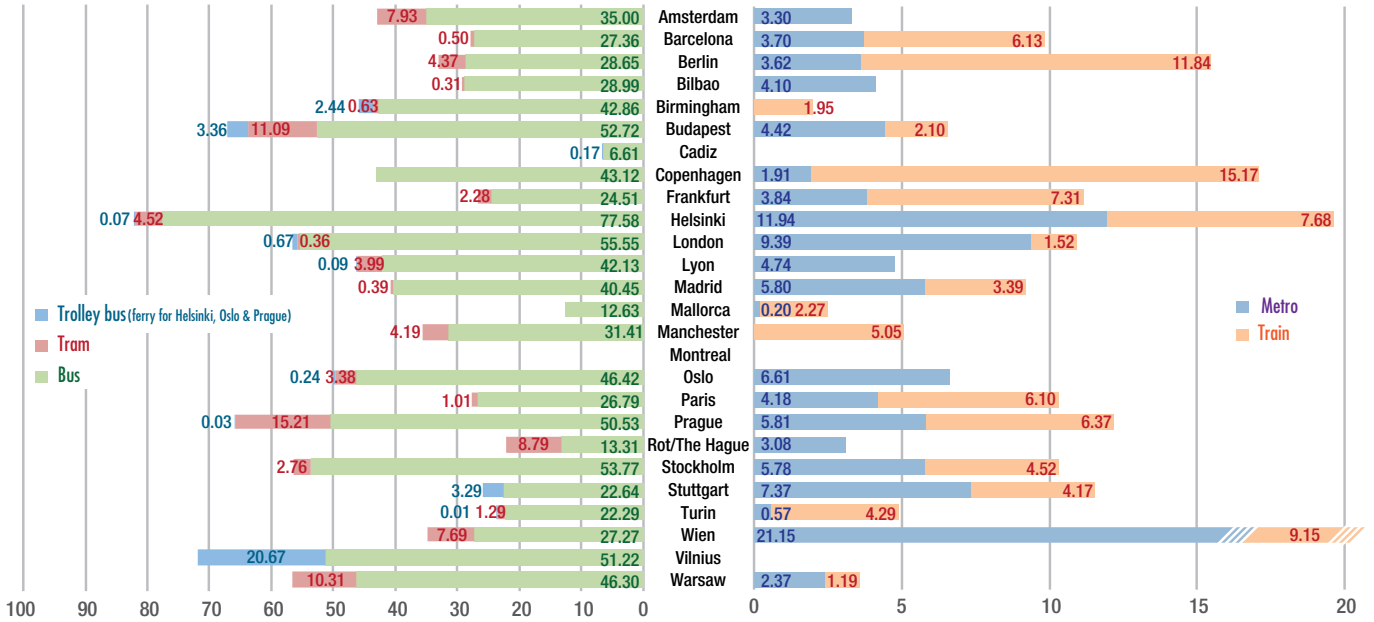
Vehicle-km per inhabitant and PTA area

The average number of bus-km per one million inhabitants is 36, nine times more than the number of tram-km per inhabitant, 4.5. Only Budapest, Helsinki, London, Prague, Stockholm and Vilnius are above 50 bus-km per inhabitant.

In the case of Helsinki, Oslo and Prague the data for "trolley" is referred to the ferry. In relation with rail services, metro has an average of 5.4 vehicles-km per one million inhabitants, similar than the ratio for commuter train that is 5.6 vehicles-km per one million inhabitants. Remarkable is the high ratio of train that Berlin and Copenhagen have, similar to metro in Wien.

Bus, tram & trolleybus-km per PTA area per inhabitant

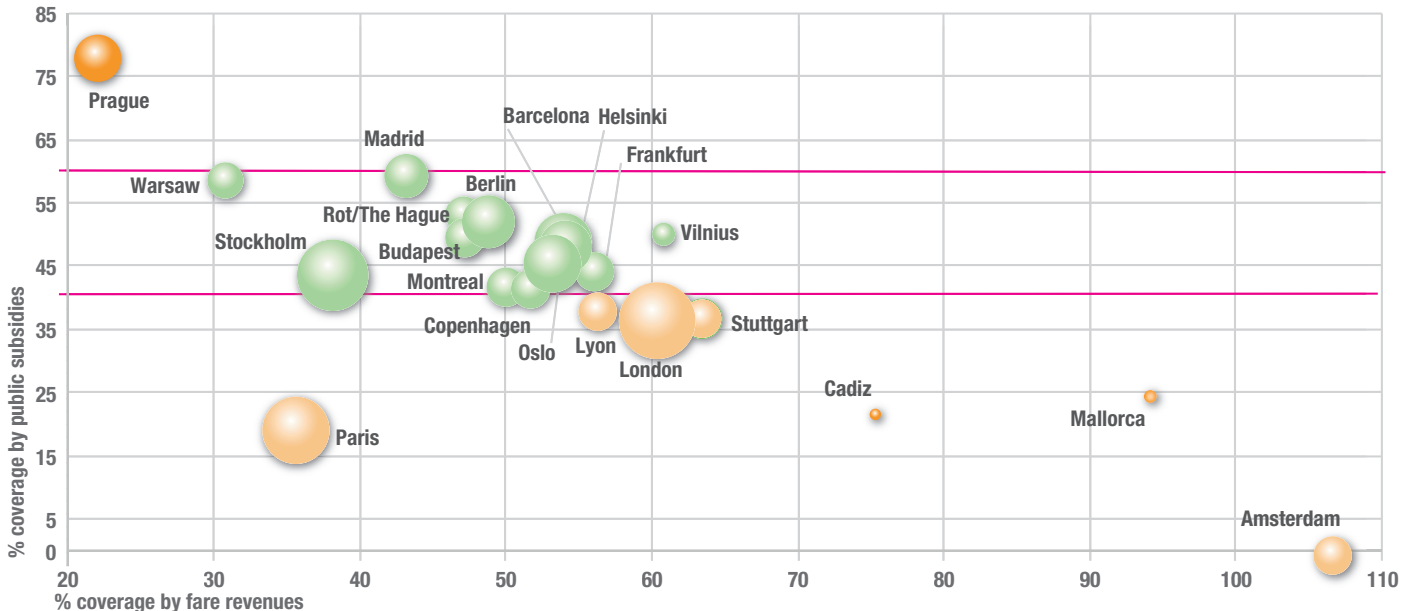
Metro & train vehicle-km per PTA area per inhabitant



Coverage of operational costs

The size of each ball in the diagram below represents the relative volume of the annual cost of operations of public transport divided by the population of the PTA area (costs/total inhabitants). The ratio of the annual operational average costs per inhabitant for the PTA areas amounts to around 379 €. The PTAs of Paris Ile-de-France, Greater London and Stockholm have the highest ratio (more than twice the average) and Cadiz Bay the lowest (14 € per inhabitant per year). Most of the cities have a cost-coverage ratio of within a margin of 40 - 60% and a fare-coverage ratio of 45% as average. Paris Ile de France has the lowest coverage by public subsidies (19%) but it has a 45% of coverage of operational costs that partly comes from the "versement transport" (a hypothecated local tax levied on the total gross salaries of all employees of companies larger than 11 employees). Prague has the highest coverage by public subsidies with a 78%, to be partly explained by the fact that Prague also has the lowest fares of all PTA's.

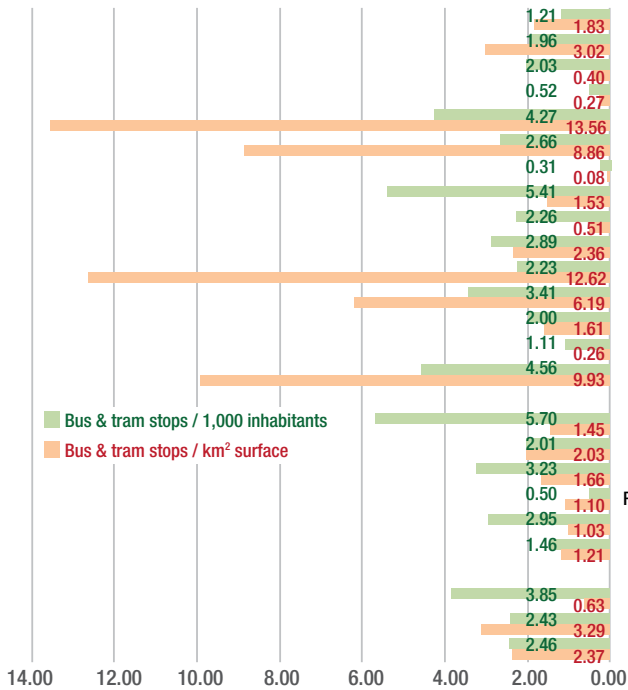
Coverage by public subsidies vs coverage by fare revenues per inhabitants in PTA area



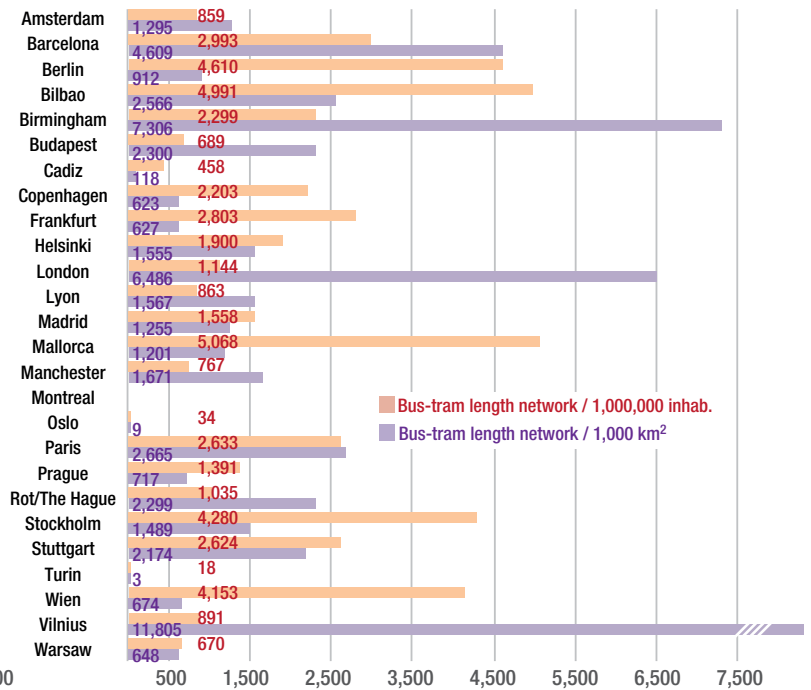
Ratio of bus and tram stops and length network

The Nordic PTAs (Copenhagen and Oslo) have the highest number of bus and tram stops per 1,000 inhabitants (>5) and the British PTAs (Birmingham, London and Manchester) have a density of stops per km² well above the average (>9). In the case of Oslo these values are only available for the tram network.

Ratio of bus and tram stops in PTA area



Ratio of bus and tram length network



Ratio of metro and train stations and length network

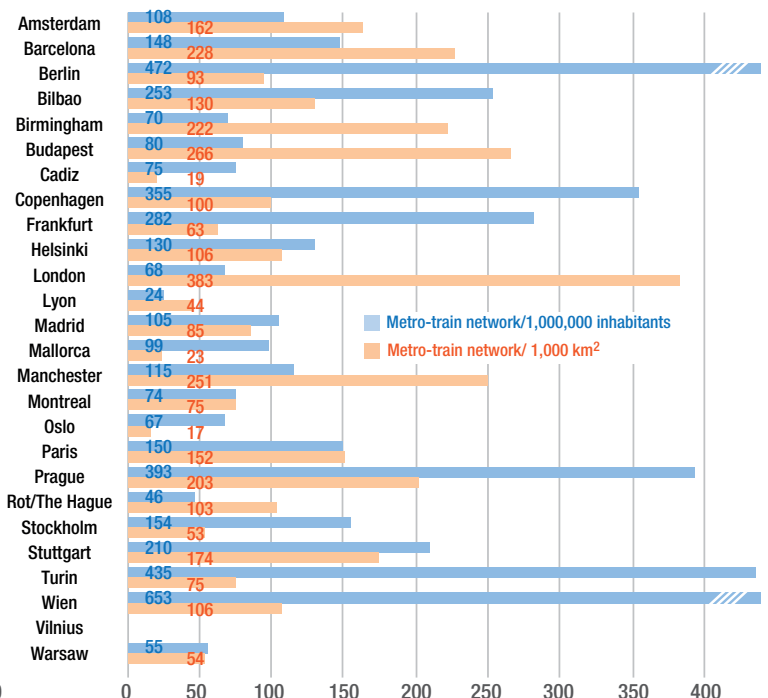
The average rate is 71 stations per 1,000 km² of surface. Budapest and London continue standing out in terms of the high number of stations per 1,000 km² of surface, both more than 250.

In relation to the number of stations per million inhabitants, 75 metro and train stations is the average rate. There are eight cities that are above 100 (Berlin, Bilbao, Budapest, Copenhagen, Oslo, Prague, Stuttgart and Wien). In the case of Oslo the values are only for the metro network.

Ratio of metro and train stations in PTA area



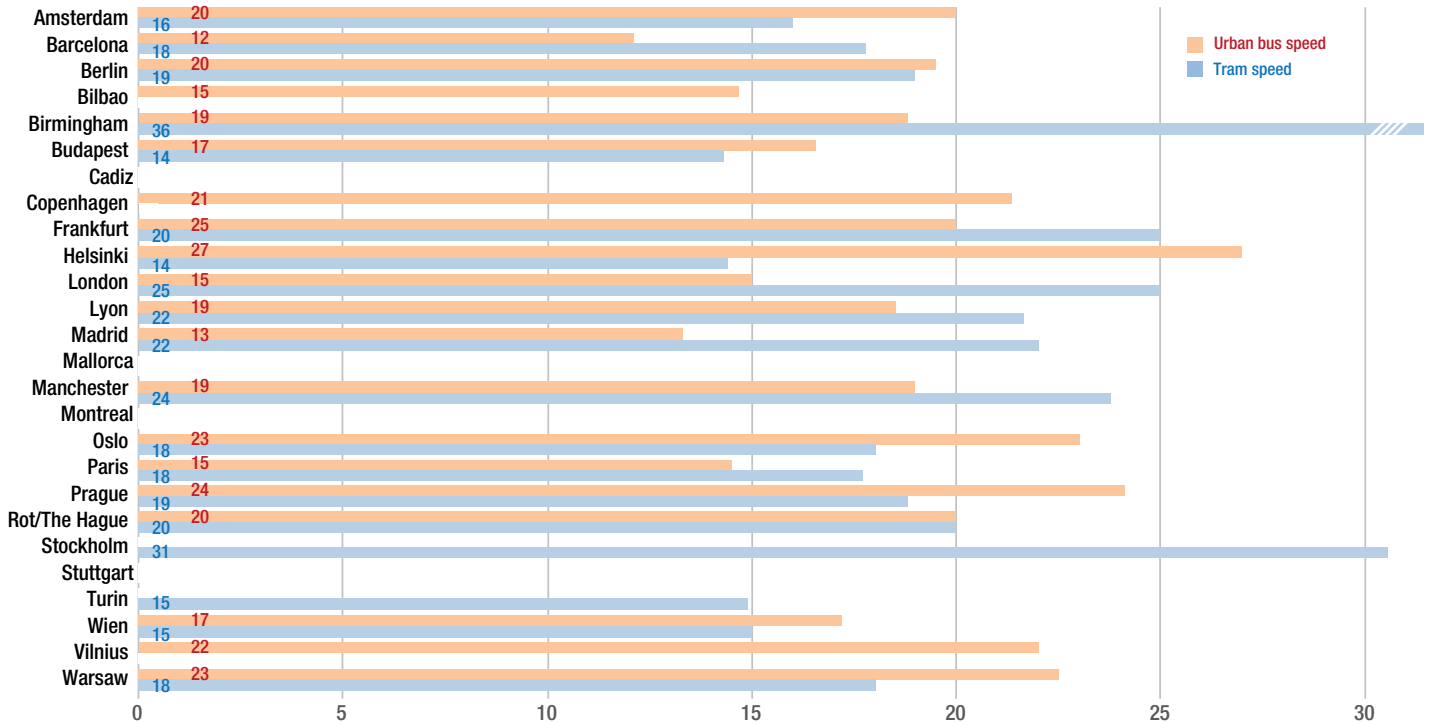
Ratio of metro and train network



Commercial speed

The commercial speed for the public transport is one of the main issues that the planners have to deal with it in the urban areas. The average speed for the urban bus and the tram is about 19 km/h and for the suburban buses the average has risen to 32 km/h. The same happened with the metro and the commuter train. The metro runs at 35 km/h in average and the commuter train has risen to 56 km/h. It is important to notice that the use of bus lanes for the public transport will enable an increase in commercial speed of the urban or suburban bus lines.

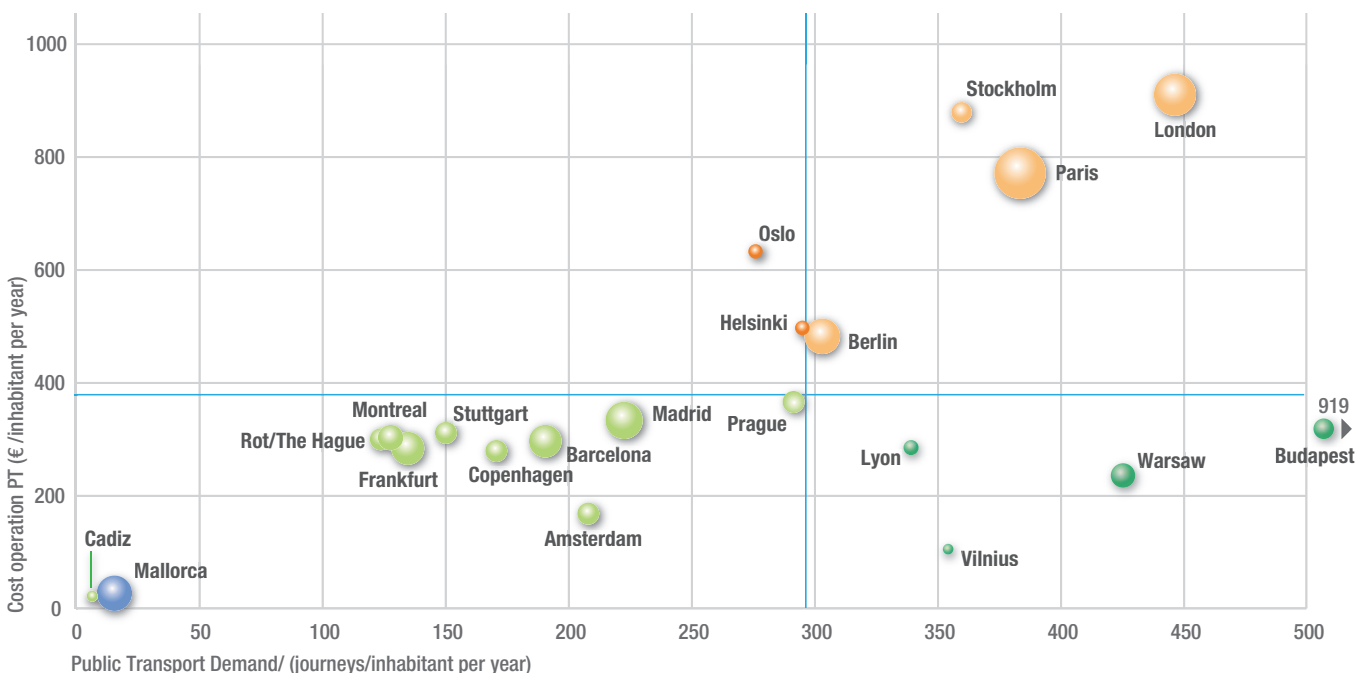
Commercial speed urban bus and tram



Public transport demand per inhabitant vs cost operation per inhabitant

As we have seen in previous chapters, the EMTA PTAs cost of operations oscillates from Bay of Cadiz (14 € per year per inhabitant) to Greater London that needed 908 € per year per person. In the graph below, we can observe a tendency on which an increase in public transport demand corresponds with an increase of the operational costs per inhabitant. The case of Greater London is exceptional, as both the level of demand per individual and the expenses per inhabitant are in a top position. It is important to note that Greater London has a great number of non-resident people that use the public transport, close to a 30%. On the other hand, Vilnius and Warsaw have a low rate of operation cost per inhabitant but a high rate of demand/inhabitant per year, a similar situation as we found in 2015.

Annual public transport demand per inhabitant vs annual cost of PT operation per inhabitant





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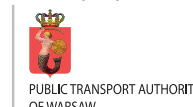
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