



“Consistent collection of mobility indicators helps to pinpoint trends and factors that may determine the success or failure of an urban transport strategy”

Ruud van der Ploeg,
EMTA Secretary general



Foreword

This 9th edition of the Barometer of the Association of European Metropolitan Transport Authorities (EMTA) managed by focusing on key parameters to add particular value to what transport authorities consider their key indicators. The Barometer 2013 is conceived after a thorough review of indicators and their definitions. This version has now a list of about 65 indicators.

The scope of organising authorities in mainly larger metropolitan areas is extended from urban areas into conurbations and from public transit into a broader scope of multi-modal transport. Their core task includes governing other modes of transport and a wider field of competence. Except for socio-demographic indices some key indicators concerning use and demand go beyond the actual power of members or are protected by commercial disclaimers.

Despite differences in competence and business the new devised Barometer 2013 reflects a comprehensive and interesting selection of figures to compare the outcome of the EMTA membership efforts, mirrored in a legible and modern layout.

The remit, legal competences and responsibilities of a transport authority are distinguishing criteria that greatly define scope and effectiveness of a PTA in the cooperation with local operators and the local community. It would therefore be helpful to benchmark remit and competences of respondents in a next phase.

I hope the 2013 Barometer will give you food for further thought, debate or study.

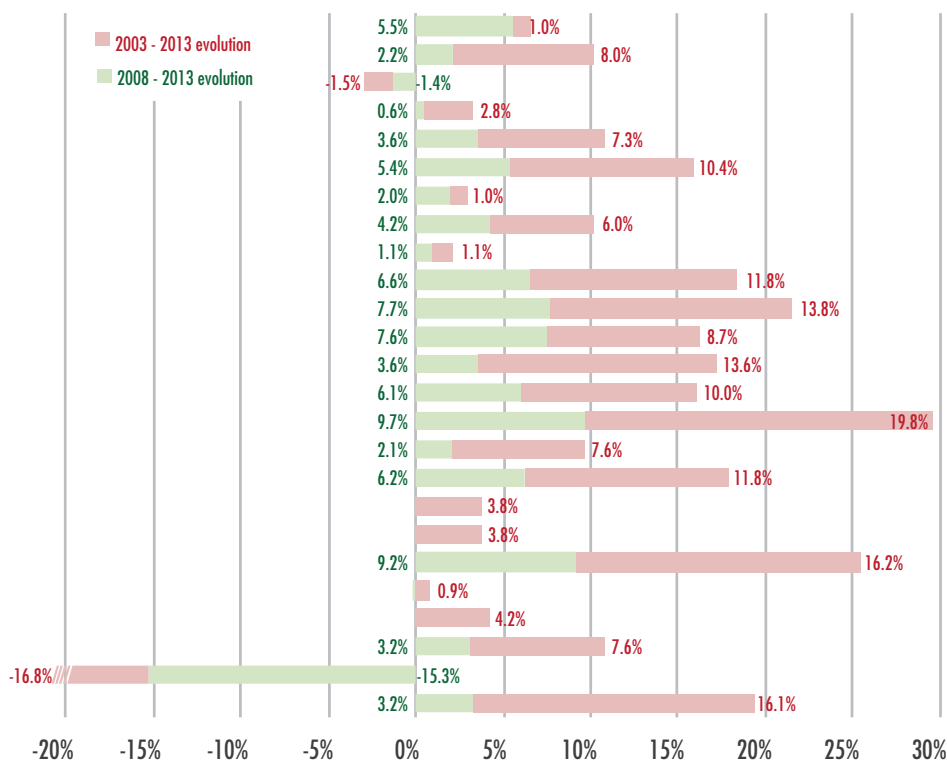
9th edition presentation

Description of the PTA⁽¹⁾ areas surveyed

| | Authority responsible | Main city population | PTA population | PTA surface (km ²) | PTA urbanised surface (km ²) | PTA density (inhab./km ²) | Annual PTA GDP ⁽²⁾ per capita (€) |
|--|-----------------------|----------------------|----------------|--------------------------------|--|---------------------------------------|--|
| Stadsregio Amsterdam | | 811,185 | 1,465,478 | 1,004 | 807 | 1,817 | 31,360 € |
| Barcelona metropolitan region | ATM | 1,612,000 | 5,041,200 | 3,239 | 607 | 8,305 | 28,800 € |
| Berlin-Brandenburg | VBB | 3,421,829 | 5,871,022 | 30,377 | 3,409 | 1,722 | 28,668 € |
| Bilbao | CTB | 347,769 | 1,150,792 | 2,217 | 241 | 4,775 | 29,249 € |
| Birmingham | CENTRO | 1,092,300 | 2,783,500 | 899 | 634 | 4,390 | 30,050 € |
| Brussels metropolitan | MRBC | 1,163,486 | 3,319,455 | 4,300 | 1,200 | 2,766 | 40,758 € |
| Central Hungarian region (Budapest) | BKK | | 1,735,711 | 525 | 358 | 4,848 | 20,555 € |
| Greater Copenhagen | MOVIA | 671,751 | 2,523,624 | 9,176 | 1,979 | 1,275 | 46,803 € |
| Frankfurt Rhein-Main | RMV | 701,350 | 5,102,866 | 14,000 | 12,342 | 413 | 38,490 € |
| Helsinki | HSL | 612,664 | 1,182,342 | 1,558 | 486 | 2,433 | 63.706 € ⁽³⁾ |
| Greater London | TFL | 8,416,500 | 8,416,500 | 1,572 | 1,042 | 8,077 | 47,098 € |
| Lyon Urban Community | SYTRAL | 636,302 | 1,300,000 | 613 | 360 | 3,611 | 42,830 € |
| Madrid region | CRTM | 3,207,247 | 6,495,551 | 8,028 | 1,043 | 6,228 | 28,915 € |
| Greater Montreal | AMT | 1,959,987 | 3,931,212 | 3,980 | | | 32,587 € |
| Oslo Akershus Region | RUTER | 634,463 | 1,210,220 | 5,005 | 247 | 4,907 | 60,362 € |
| Paris Ile-de-France | STIF | 2,273,000 | 11,978,000 | 12,000 | 2,530 | 4,734 | 51,250 € |
| Middle Bohemia region (Prague) | ROPID | 1,244,000 | 1,882,000 | 3,100 | | | 22,279 € |
| Metropolitan area The Hague | | 1,041,800 | | | | | |
| Metropolitan area Rotterdam | MRDH | 1,413,600 | 2,250,000 | 1,213 | 440 | 5,114 | 36,500 € |
| Stockholm county | SL | 897,700 | 2,163,042 | 6,526 | | | 55,347 € |
| Stuttgart region | VRS | 604,297 | 2,419,626 | 3,011 | 720 | 3,363 | 43,226 € |
| Turin metropolitan area | AMMT | 902,137 | 1,553,232 | 837 | 228 | 6,812 | 21,354 € |
| Vienna (Verkehrsverbund Ost Region) | VOR | 1,766,746 | 3,679,647 | 23,563 | 14,438 | 255 | |
| Vilnius | MESP | 539,707 | 700,000 | 9,731 | 449 | 1,559 | 15,726 € |
| Warsaw | ZTM | 1,724,404 | 2,473,388 | 2,429 | 385 | 6,424 | 15,511 € |

⁽¹⁾ PTA: Public Transport Authority. ⁽²⁾ GDP: Growth Domestic Product. ⁽³⁾ GDP value for the main city.

Evolution of population



- Amsterdam
- Barcelona
- Berlin
- Bilbao
- Birmingham
- Brussels
- Budapest
- Copenhagen
- Frankfurt
- Helsinki
- London
- Lyon
- Madrid
- Montreal
- Oslo
- Paris
- Prague
- The Hague
- Rotterdam
- Stockholm
- Stuttgart
- Turin
- Vienna
- Vilnius
- Warsaw

The average population of cities is about 1.6 million inhabitants and 3.3 million for the PTA area. The average for the PTA area increased 3% in the last five years and 7% for the last 10 years. Regarding the average area for the main cities is 355 km² and 6,055 km² for the PTA area, with an urbanized area of 1,775 km² that represents a 30% of the total PTA surface. In the case of the main cities this percentage rise up to 47%. Finally, average annual GDP in PTA area is 32,169 €.

It is significant the increase of population that has occurred in cities such as Rotterdam, Oslo and Stockholm as opposed to the loss of population over the years is taking place in Berlin or Vilnius.

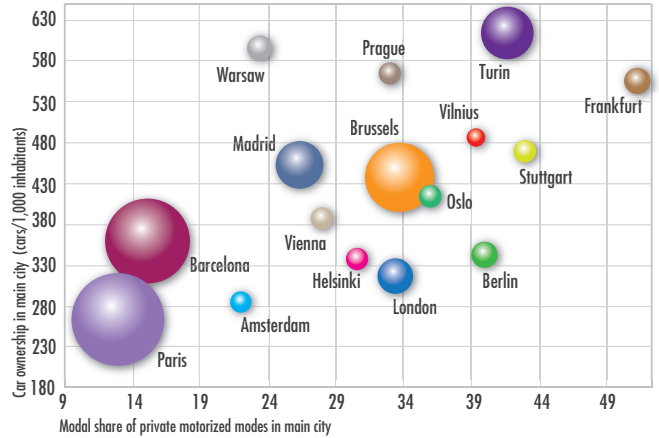
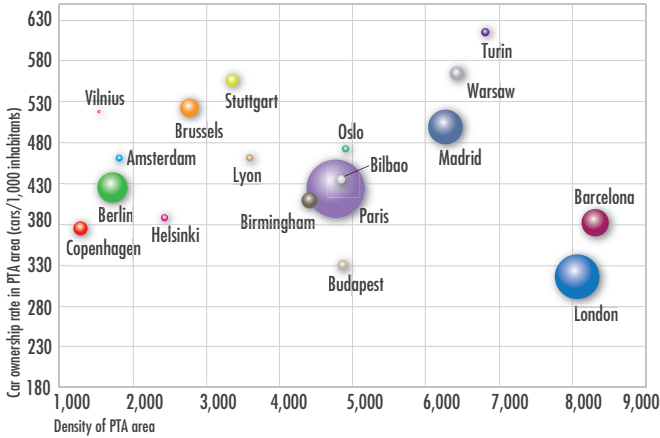
Car ownership rate

The first image represents the relation between car ownership and urbanized PTA area density. The size of the balls represents the population in the PTA area. The average density for the cities is around 4,000 inhab/km², but two cities (London and Barcelona) have more than 8,000 inhab/km² (urbanized population/area). For the great majority of cities its car ownership rate lies between 350 and 500 cars / 1,000 inhabitants.

The second image represents the relation between car ownership and modal share of private motorized modes in main city. The size of the balls represents the density of the main cities. We can observe that the greater the density, the less use of private car.

Car ownership rate vs density in PTA area

Car ownership rate vs private motorized share in main city



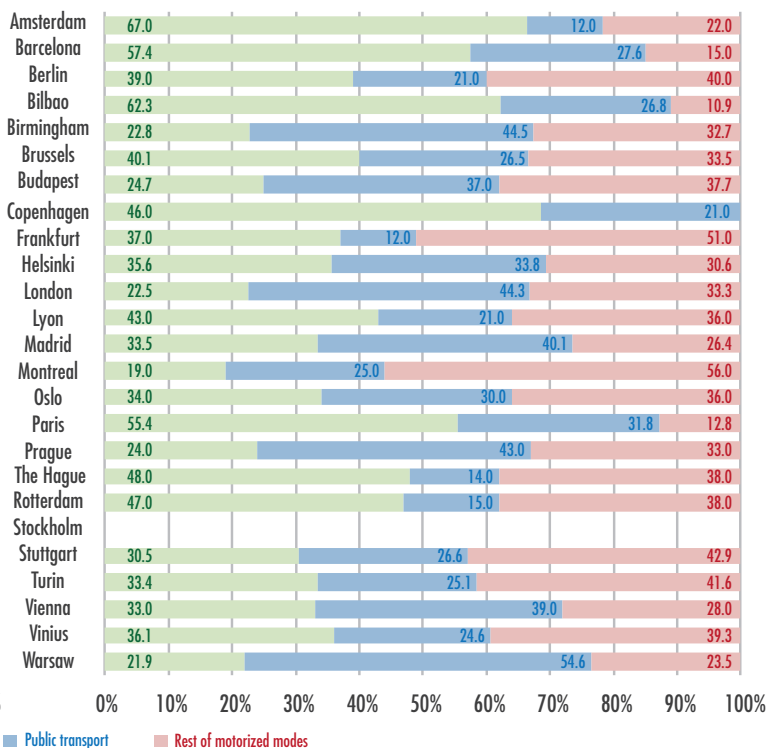
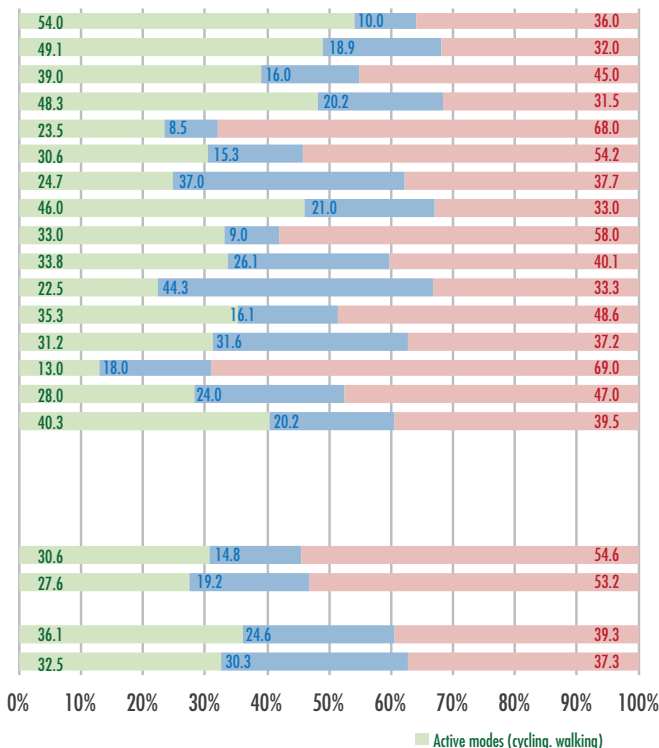
Modal share of trips

The average number of trips per capita and day in selected cities is of 2.7 and 2.8 for the PTA area. Of the latter, 35% is made in active modes, 21% in public transport and 44% by private transport. But in the main cities, public transport raises the average to 30% over other motorized modes, that gets down to 32%.

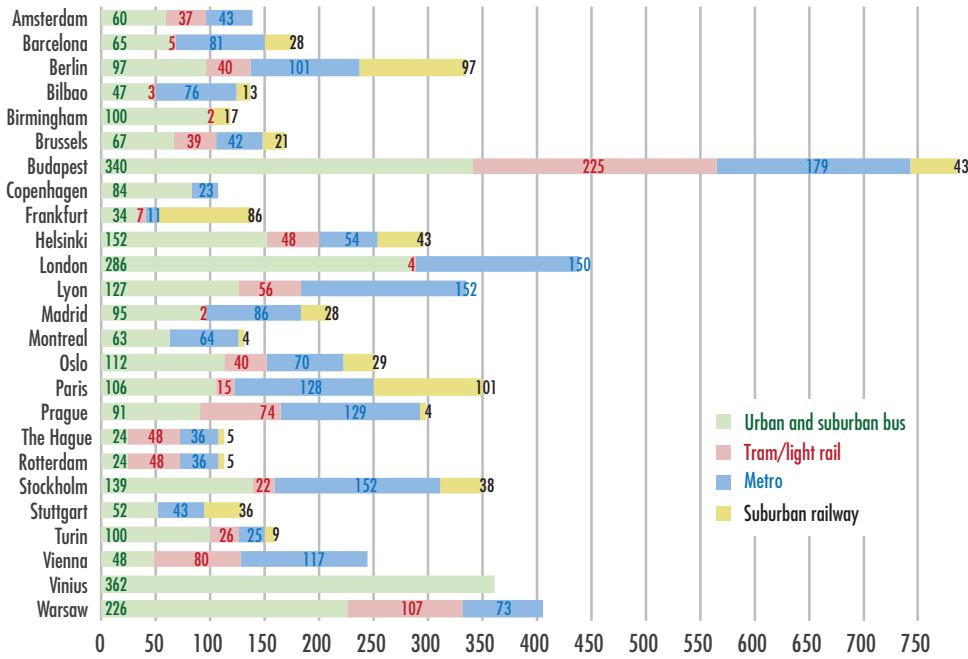
The PTA areas of Amsterdam, Barcelona, Berlin, Bilbao, Copenhagen, Paris, Vilnius and Warsaw are above the average with respect to the use of alternative transport to the car and on the other hand, cities as Birmingham, Brussels, Frankfurt, Stuttgart and Turin use motorized modes above the average in the PTA area. Barcelona, Bilbao and Paris are the most sustainable in terms of mobility. Madrid and Warsaw are good examples of a certain balance on mobility (1/3, 1/3, 1/3) that we should try to get in the whole PTA areas.

In whole PTA area

In main city



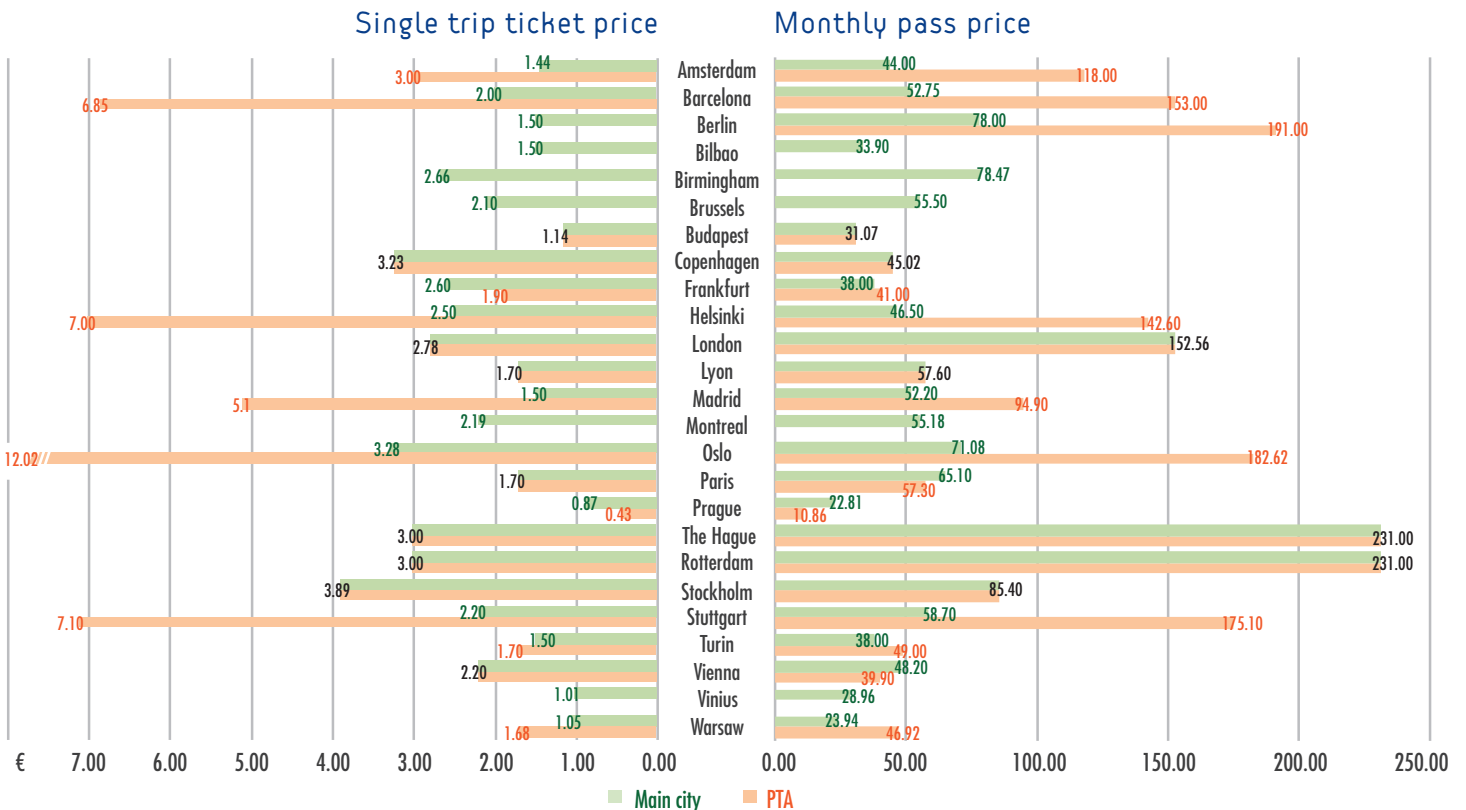
Public transport demand per inhabitant in PTA areas



Regarding the public transport demand, the trend continues upward in the use of PT. In 2011 it was 244 and in 2013 262 journeys per inhabitant, being the bus the most used transport mode (120 journeys per inhabitant) followed by the metro (83 journeys per inhabitant). Budapest, London, Vilnius and Warsaw remain above the average. In general in cities with lower population and high density the users need to transfer in a trip is much less as opposed to journeys made in cities with an extended network (and smaller mesh sizes), where making transfers is inherent to the network architecture. Some PTA-areas harbouring a renowned mega city that attracts a large potential of business related and touristic travel need to maintain a higher level of transit capacity than others, the result being an above average rate of journeys per capita (like in London, Paris and Berlin).

Ticket price for the main city & PTA

The average price for the single ticket in the main city is 2.1 € and 2.8 € in the PTA area. For the monthly pass is 69 € and 85 € respectively. The difference in both prices is approximately 30% between the main city and the PTA area. Regarding the monthly pass in the PTA area it should be noted that although most cities have their fares between 30 € and 80 €, there are seven cities that exceed 115 € without a direct relation to neither the surface nor the GDP in the PTA area.



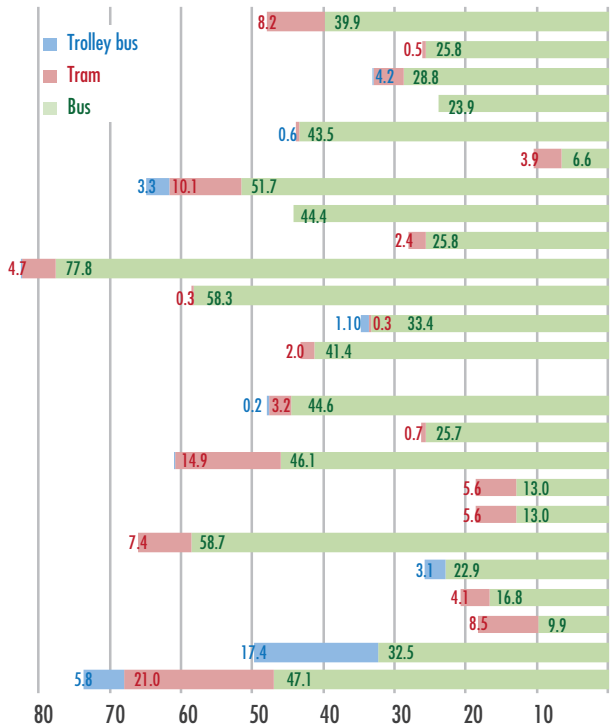
The average rate between GDP and monthly pass fare is 2.2% in main city and 3.4% for the PTA area. London continues to be the city with a higher rate, 3.9% (3.8% in 2012) and Frankfurt is in 2013 the city with a lower rate, 0.6% (1.3% in 2012) with respect to the monthly pass.

Vehicle-km per inhabitant and PTA area

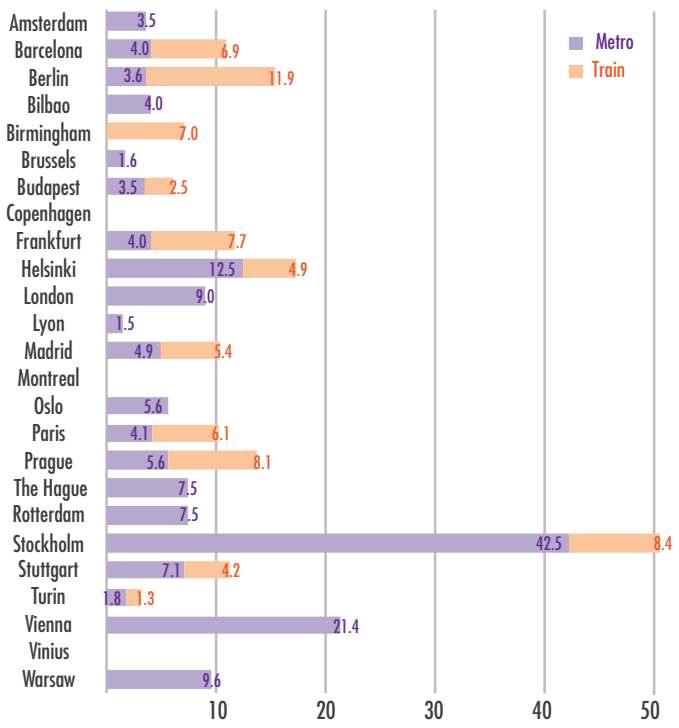
The average number of bus-km per inhabitant is 35.6, seven times more than the number of tram-km per inhabitant that it is 4.5. Just Budapest, Helsinki and London are above this average.

In relation with rail services, metro has an average of 6.8 vehicle-km per inhabitant, double the ratio for commuter train that goes down to 3.4 vehicle-km per inhabitant. It is noticeable the high ratio that Helsinki, Vienna and Stockholm have and the low ratio for Brussels or Turin.

Bus, tram & trolleybus-km per inhabitant



Metro & train vehicle-km per inhabitant

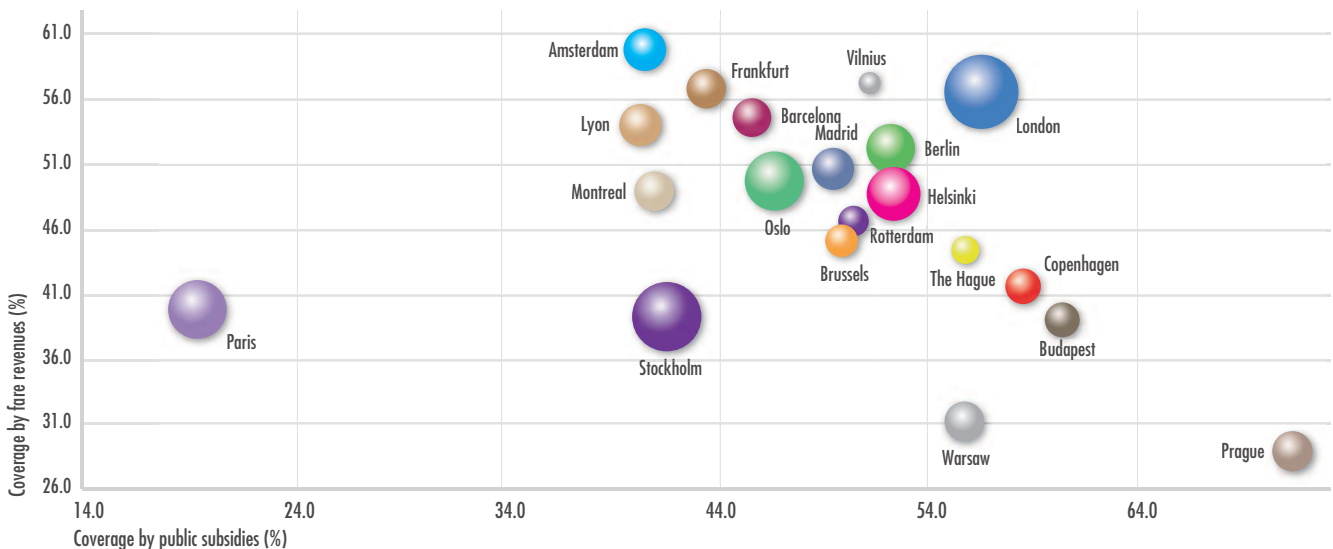


Coverage of operational costs

The ratios of coverage of operational costs by fare revenues and by public subsidies continue varying greatly. The size of the balls of the picture indicate the yearly costs of operation of public transport divided by the population of the PTA area. The average ratio of yearly operational costs per inhabitant for the main cities is about 380 €. Paris, London and Stockholm have the highest rate (more than 700 € per inhabitant and year) and Vilnius the minimum (82 € per inhabitant and year).

Most of the cities have a coverage of 40-50% of public subsidies and 45-60% of fare revenues. Related with the coverage of operational costs by fare revenues the average ratio is 47% and 49% for the coverage by public subsidies. Paris has the minimum coverage by public subsidies (19.4%) but it has a 40% of coverage of operational costs that comes by other revenues ("Versement transport tax"). Prague has the maximum coverage by public subsidies with 71.3%. We have to take into account that Prague also has the cheapest fares of all the cities so the coverage by fare revenues is only a 28.6%.

Coverage of operational costs vs annual operating cost

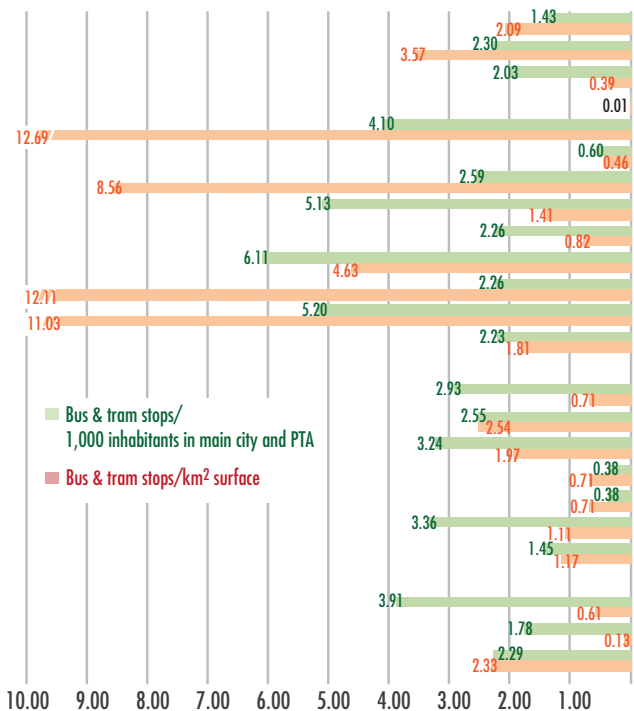


Ratio of bus stops or stations

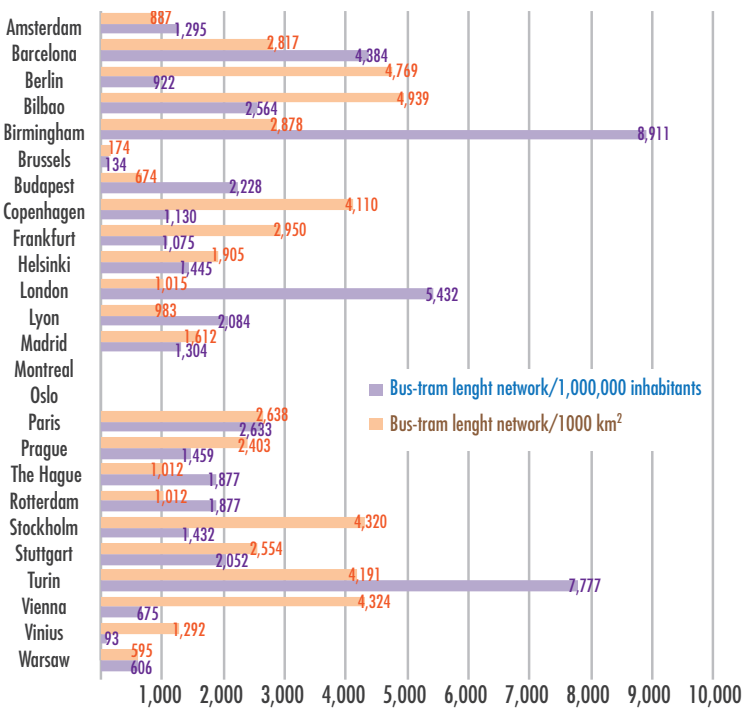
It is important when a planner is designing to know the average ratio of number of bus stops or number of railway stations compared to the network length or surface of the affected territory. Among the cities studied, we can conclude that the average ratio of bus stops per 1,000 inhabitants is 2.63 and 3.19 in the case of km².

Copenhagen, Helsinki and Lyon are above 5 stops per 1,000 inhabitants and Birmingham, Budapest, London and Lyon have a density of stops per km² well above the average. Regarding the length of bus network, the average is 2,393 km per million inhabitants and 2,320 per 100 km².

Ratio of bus and tram stops

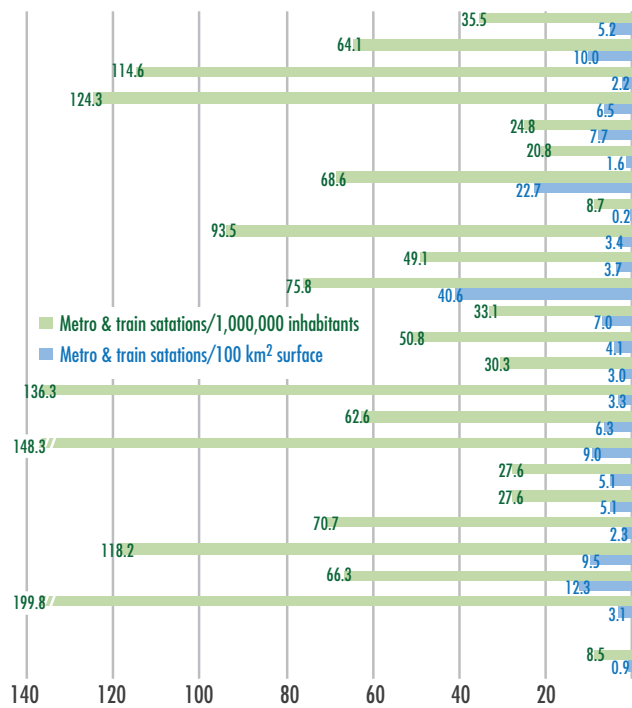


Ratio of bus and tram network length

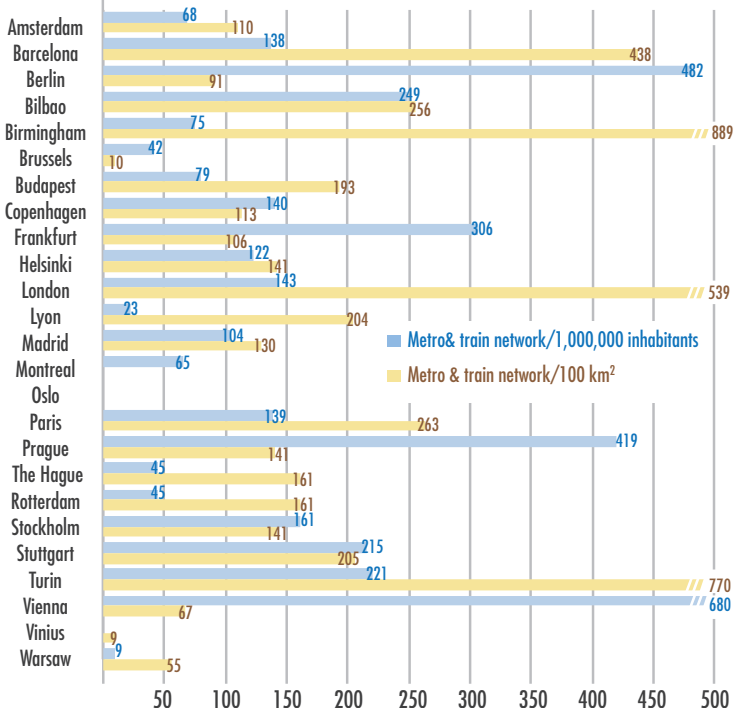


Railway systems are quite different. As average rate, they have 70 stations per million inhabitants and 7 stations per 100 km² of surface. London stands out in terms of number of stations per 100 km² of surface with 40.6 and Copenhagen, unlike the high ratio of bus stations, has only 0.2 stations per 100 km² of surface. In relation to the number of stations per million inhabitants, there are six cities that are above 100. In contrast to the bus network, the average length of metro and commuter train network per million inhabitants gets down to a tenth, 176, and the same applies per 100 km² of surface that goes down to 226 stations per 100 km².

Ratio of metro and train stations

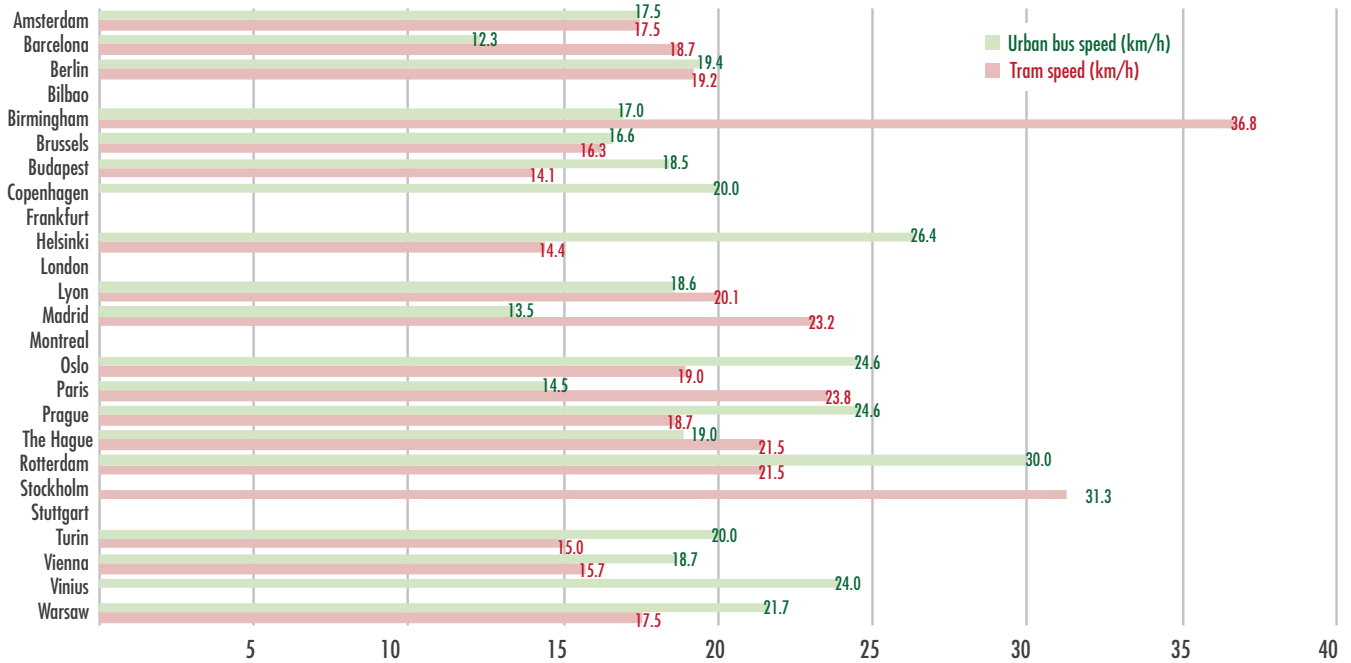


Ratio of metro and train network



Commercial speed

The commercial speed of public transport is one of the main quality issues that city planners have to deal with in urban areas. The average speed for the urban bus and the tram is about 20 km/h and for the suburban buses the average rises up to 30 km/h. The same happens with the metro and the commuter train. The metro runs at 35 km/h in average and the commuter train rises up to 30 km/h.



TFL - © Michael Garnett



MRBC



RMV



OSLO



CRTM



ZTM



STIF
© Recoura Christophe



VRS
© DBRegio AG, Stollberg



ATM - © Marc Vila



RUTER
© Käss Fore



AMSTERDAM
© Arjen Vos



| Public Transport Authority | PTA | Web Site |
|-------------------------------------|------------|--|
| STADSREGIO AMSTERDAM | | www.stadsregioamsterdam.nl |
| BARCELONA METROPOLITAN REGION | ATM | www.atm.cat |
| BERLIN-BRANDENBOURG | VBB | www.vbb.de |
| BILBAO | CTB | www.cotrabi.com |
| BIRMINGHAM | CENTRO | www.centro.org.uk |
| BRUSSELS METROPOLITAN | MRBC | www.bruxellesmobilite.irisnet.be |
| CADIZ BAY | CMTBC | www.cmtbc.es |
| CENTRAL HUNGARIAN REGION (BUDAPEST) | BKK | www.bkk.hu |
| GREATER COPENHAGEN | MOVIA | www.movia.dk |
| FRANKFURT RHEIN-MAIN | RMV | www.rmv.de |
| HELSINKI | HSL | www.hsl.fi |
| GREATER LONDON | TFL | www.tfl.gov.uk |
| LYON URBAN COMMUNITY | SYTRAL | www.sytral.fr |
| MADRID REGION | CRTM | www.crtm.es |
| GREATER MONTREAL | AMT | www.amt.qc.ca |
| OSLO AKERSHUS REGION | RUTER | www.ruter.no |
| PARIS ILE-DE-FRANCE | STIF | www.stif.info |
| MIDDLE BOHEMIA REGION (PRAGUE) | ROPID | www.ropid.cz |
| METROPOLITAN AREA THE HAGUE | MRDH | www.mrdh.nl |
| METROPOLITAN AREA ROTTERDAM | | |
| STOCKHOLM COUNTY | SL | www.sl.se |
| STUTTART REGION | VRS | www.region-stuttgart.org |
| TURIN METROPOLITAN AREA | AMMT | www.mtm.torino.it |
| VIENNA (VERKEHRSVERBUND OST REGION) | VOR | www.vor.at |
| VILNIUS | MESP | www.vilniustransport.lt |
| WARSAW | ZTM | www.ztm.waw.pl |