EMTA barometer 2015 DATA

European Metropolitan Transport Authorities

Foreword

by Ruud van der Ploeg, EMTA Secretary general

Collecting annual performance indicators from urban transport authorities is not as simple and straightforward as it seems. Systematic monitoring of passenger mobility patterns and trends is an important work to assess if public sector investments in sustainable urban transport in fact and figure paid off. Comprehensive overviews of mobility indicators on urban passenger transport in Europe have been attempted. None have ever really succeeded to circumvent recurring methodical obstacles, like the lack of comparable geographies, not accounting for spatial distribution of the population and the volatility of transport frequencies. Collecting data on a relatively small scale like in EMTA requires continuity and an ability to fine tune the various applications.

EMTA members have enabled us once more to release this Barometer report by providing us with the necessary data. I congratulate our CRTM colleagues and especially Javier Aldecoa with the publication of this 11th edition of the EMTA Barometer that shows us a numerical wide shot of key indicators of an urban or metropolitan network, as a dashboard of figures and ratios corresponding with the state of play of cities in any given year. A value free attempt is made to profile a median set of values of what an average EMTA authority entails, should anyone like to know.

Sparking a modal shift to sustainable and active modes is a key strategy for cities to raise awareness on alternatives for the car use. From the perspective of sustainable urban planning the embedding of figures on bicycles and bike sharing seems a step forward. The bicycle has gained popularity, mainly as first and last mile solution in nearly all cities significantly. Over 60% of trips in urban areas cover less than 10 kilometres. As far as they were available data on bikes and park and bike facilities in this edition have been monitored.

Digitisation of open data and open source for software application should enable to make data comparison available faster, easier and more tailored to meet specific information needs. End of 2016 EMTA launched a survey to research how members could benefit more from making more in depth analysis for benchmarking with the Barometer results. Providing tools for interactive data processing could help the authority's executives to make better choices and enhance corporate agility.

A pilot with digitisation of a 2015 Barometer data selection has been set off. Members will ultimately have to decide themselves if they are willing and able to dedicate time and resources to provide and share open data. I am convinced digitisation of data serves the dialogue among members and with the users. It is a game changer enabling direct channels for contact with users to give feedback on their perceived quality of transport service.

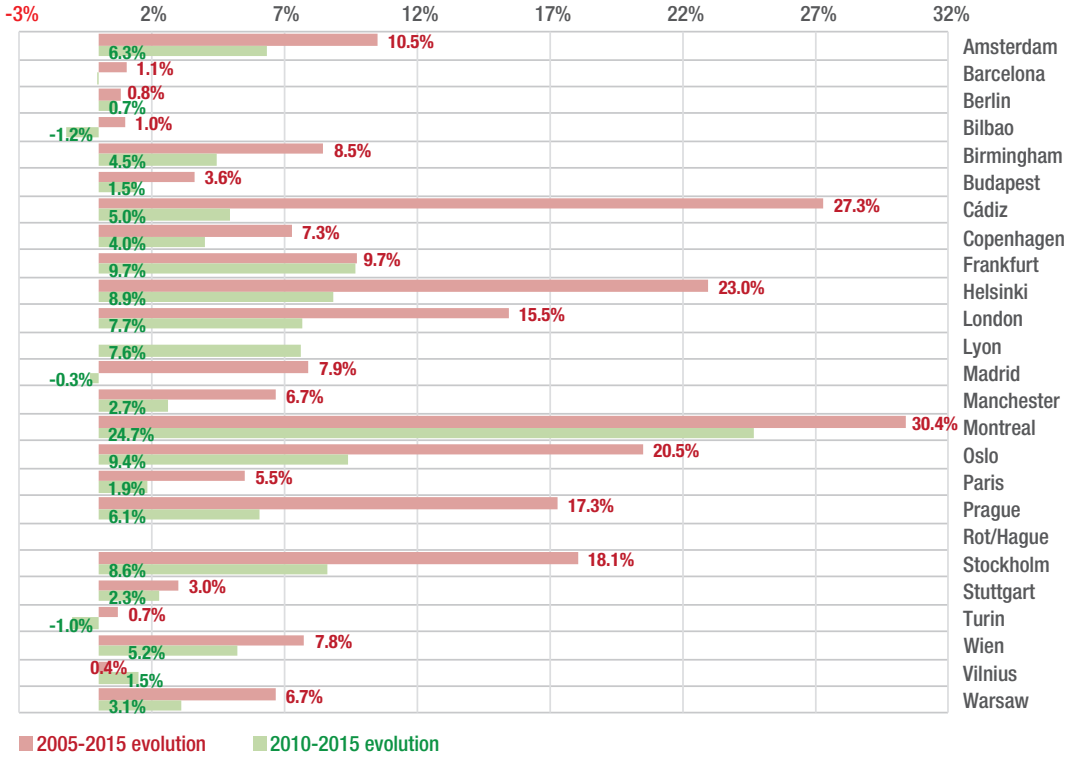
11th edition presentation

Description of the PTA[1] areas surveyed

Authority responsible		Main city population	PTA area population	PTA surface (km²)	PTA urbanised surface (km²)	PTA urban density (inhab./urb. surface)	Annual PTA GDP[2] per capita (€)
VA	*Amsterdam*	834,000	1,500,500	1,004	345	4,352	34,000 €
ATM	*Barcelona*	1,609,550	5,028,258	3,239	634	7,931	30,840 €
VBB	*Berlin*	3,520,031	6,004,857	30,546	3,400	1,766	31,558 €
CTB	*Bilbao*	1,138,852	1,138,852	2,215	235	4,846	29,432 €
WMITA	*Birmingham*	1,111,300	2,833,600	902	498	5,690	23,536 €
BKK	*Budapest*	1,759,407	1,759,407	525	358	4,915	22,067 €
CMTBC	*Cádiz*	331,749	820,906	3,191			
MOVIA	*Copenhagen*	695,962	2,576,826	9,195			49,216 €
RMV	*Frankfurt*	732,688	5,550,619	14,755	12,342	450	41,106 €
HSL-HRT	*Helsinki*	628,208	1,2 15,442	1,558	411	2,959	
TfL	*London*	8,681,900	8,681,900	1,572	1,042	8,332	55,598 €
SYTRAL	*Lyon*	636,302	1,300,000	746	360	3,611	42,830 €
CRTM	*Madrid*	3,141,991	6,436,996	8,028	1,043	6,172	31,812 €
TfGM	*Manchester*	525,000	2,745,000	1,272	959	2,862	26,673 €
AMT	*Montreal*	1,997,706	4,731,947	3,980	1,624	2,913	32,294 €
RUTER	*Oslo*	658,390	1,252,923	5,005	323	3,879	69,023 €
STIF	*Paris*	2,218,536	12,073,914	12,000	2,530	4,772	53,639 €
ROPID	*Prague*	1,267,449	1,942,681	3,654	680	2,857	22,194 €
MRDH	*Rot/The Hague*	1,150,303	2,200,000	990	440	5,000	36,500 €
SL	*Stockholm*	923,516	2,2 31,439	6,524	880	2,537	58,570 €
VRS	*Stuttgart*	623,738	2,482,676	3,011	727	3,415	48,236 €
AMMT	*Turin*	890,529	1,541,780	838	228	6,762	21,285 €
VOR	*Wien*	1,840,226	3,784,928	23,563	3,349	1,130	36,608 €
MESP	*Vilnius*	532,762	532., 62	401	149	3,582	18,100 €
ZTM	*Warsaw*	1,744,351	2,529,892	2,513	388	6,520	16,620 €
	2015 Median	**1,535,923**	**3,315,924**	**5,649**	**1,432**	**4,262**	**36,162 €**

[1] *PTA: Public Transport Authority.* [2] *GDP: Gross Domestic Product.*

Evolution of population



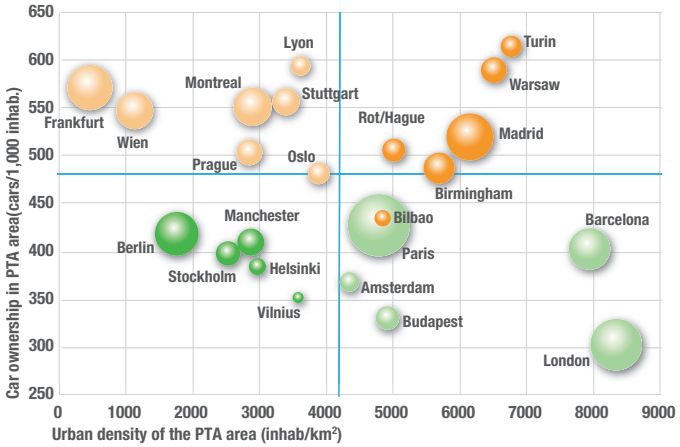
The average population of member cities is around 1.53 million inhabitants and 3.3 million for the PTA area. The average for the PTA population increased in the last five years with 4,69% and with 10,15% in the last 10 years. Regarding the average area for the main cities is 399 km² and 5,649 km² for the PTA area, with an urbanized PTA area of 1.432 km² that represents a 25% 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 have decreased from 36,952 € in 2014 to 36,162 € in the PTA area (-2.31%). It should be highlighted the increase of population that has occurred in cities such Bahia de Cadiz, Montreal and Helsinki. Contrary to the loss of population over the years is taking place in Bilbao, Madrid or Turin. In 2015 Berlin and Vilnius has returned to positive data.

Car ownership rate

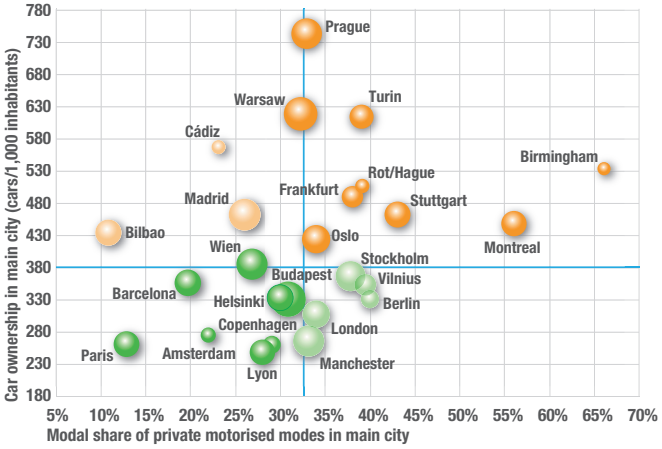
The first image represents the relation between car ownership in the PTA area, expressed as cars per 1,000 inhabitants and urbanized PTA area density. The size of the balls represents the population in the PTA area. The average density of cities is 4,261 inhabitants/km^2. Two PTA areas (Barcelona and London) cover close to 8,000 inhabitants/km^2 (urbanized area/population), having double the density of an average PTA (4,261 inhabitants/km^2). For most cities the car ownership rate moves within a margin of between 350 and 550 cars / 1,000 inhabitants, the average lies at 468.

The second image represents the relation between car ownership in main city and modal share of private motorized 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 is popular in Prague while the number of car owners in London city continues to decline. The median is stabilized in 33% of modal share and 415 cars ownership per 1,000 inhabitants in the main cities.

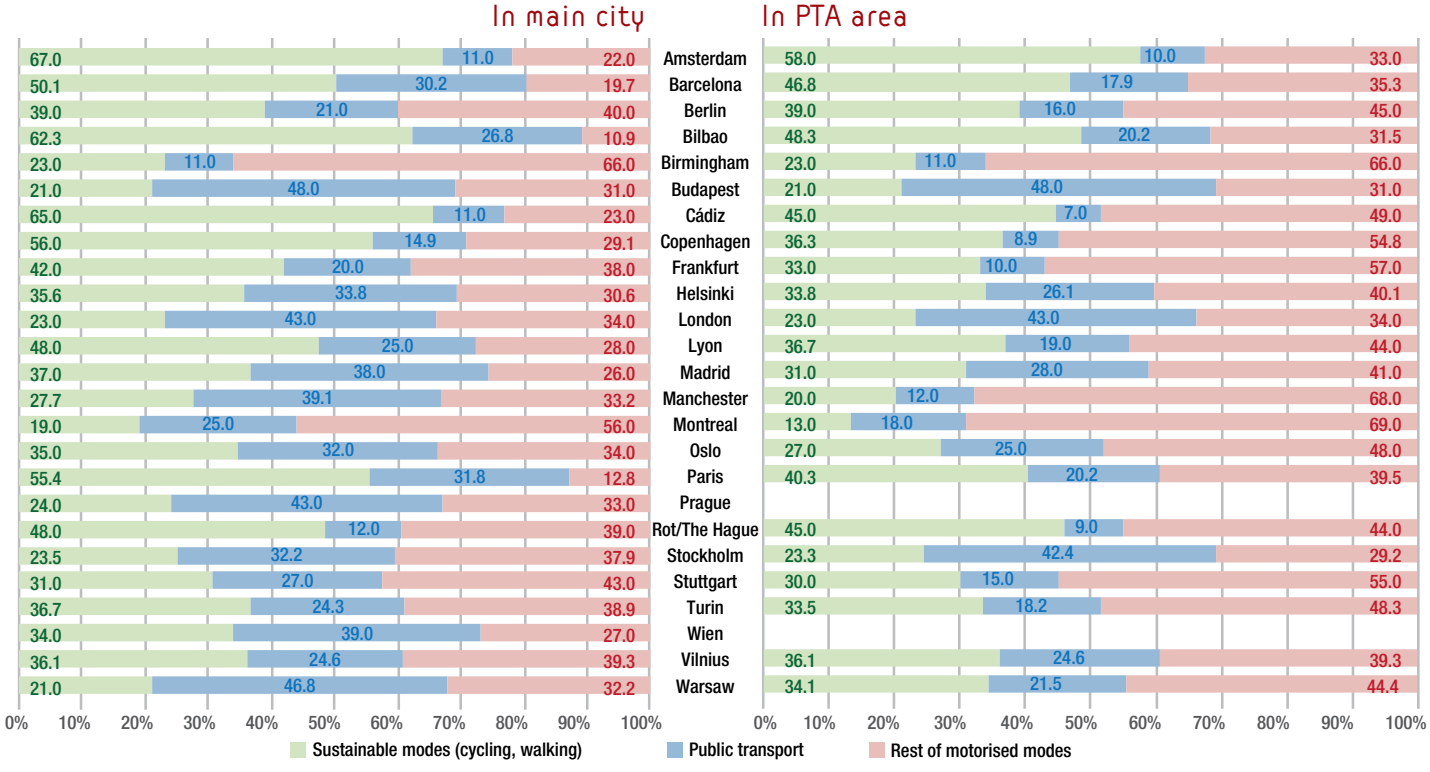
Car ownership rate versus urban density PTA area with PTA area population



Car ownership rate versus modal share in main city



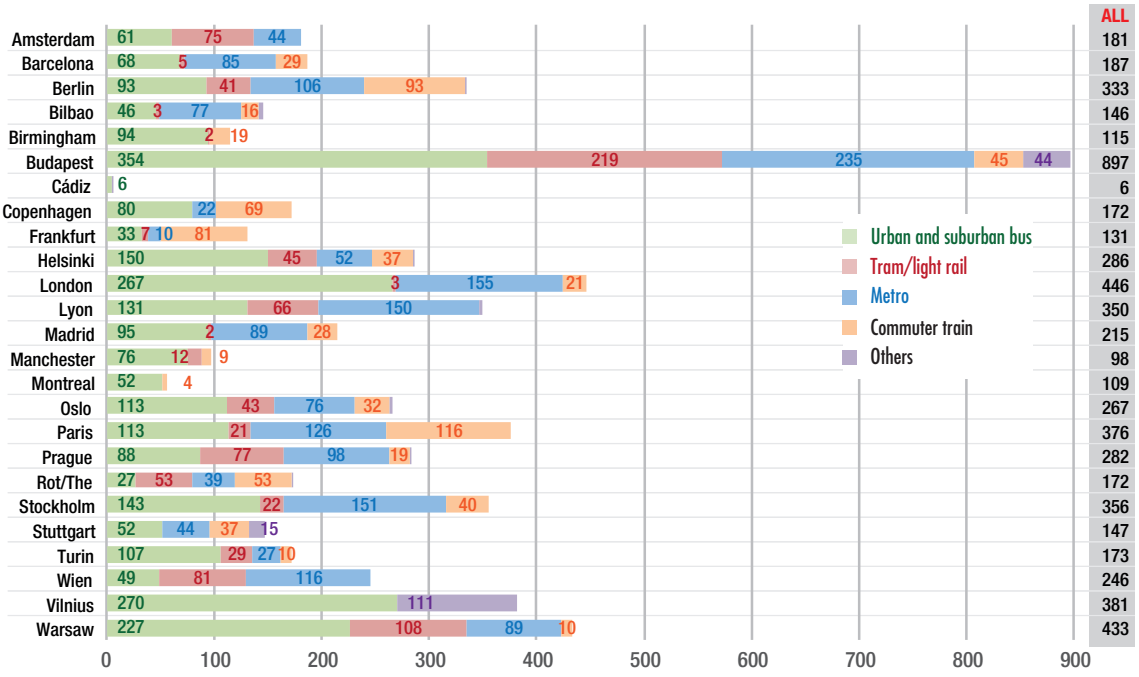
Modal share in main cities & metropolitan areas



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 2014). Of the latter, in the PTA areas, 33.8% is made by sustainable modes (cycling, walking), 20.5% by public transport and 45,5% by private transport. However, in the main cities, 38,42% of trips are made by sustainable modes, public transport raises the average to 28,4% over other motorized modes that maintained its average share to 33%. It is also remarkable the use of walking in cities like Barcelona, Bilbao, Copenhagen, Frankfurt, Lyon and Paris where they have more than a 40% of the total modal share. The median in the main cities is 31% and in the PTA areas 28%.

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 66,8% compared to 54,3% of the PTA areas. The PTA areas of Amsterdam, Barcelona, Berlin, Bilbao, Budapest, Helsinki, London, Lyon, Madrid, Paris, Stockholm, Vilnius and Warsaw score above average with respect to the use of sustainable alternatives to the car. On the other hand, citizens and businesses in Birmingham, Frankfurt, Manchester and Montreal use motorized modes more than in the average in their metropolitan area.

Public transport demand per inhabitant in PTA areas

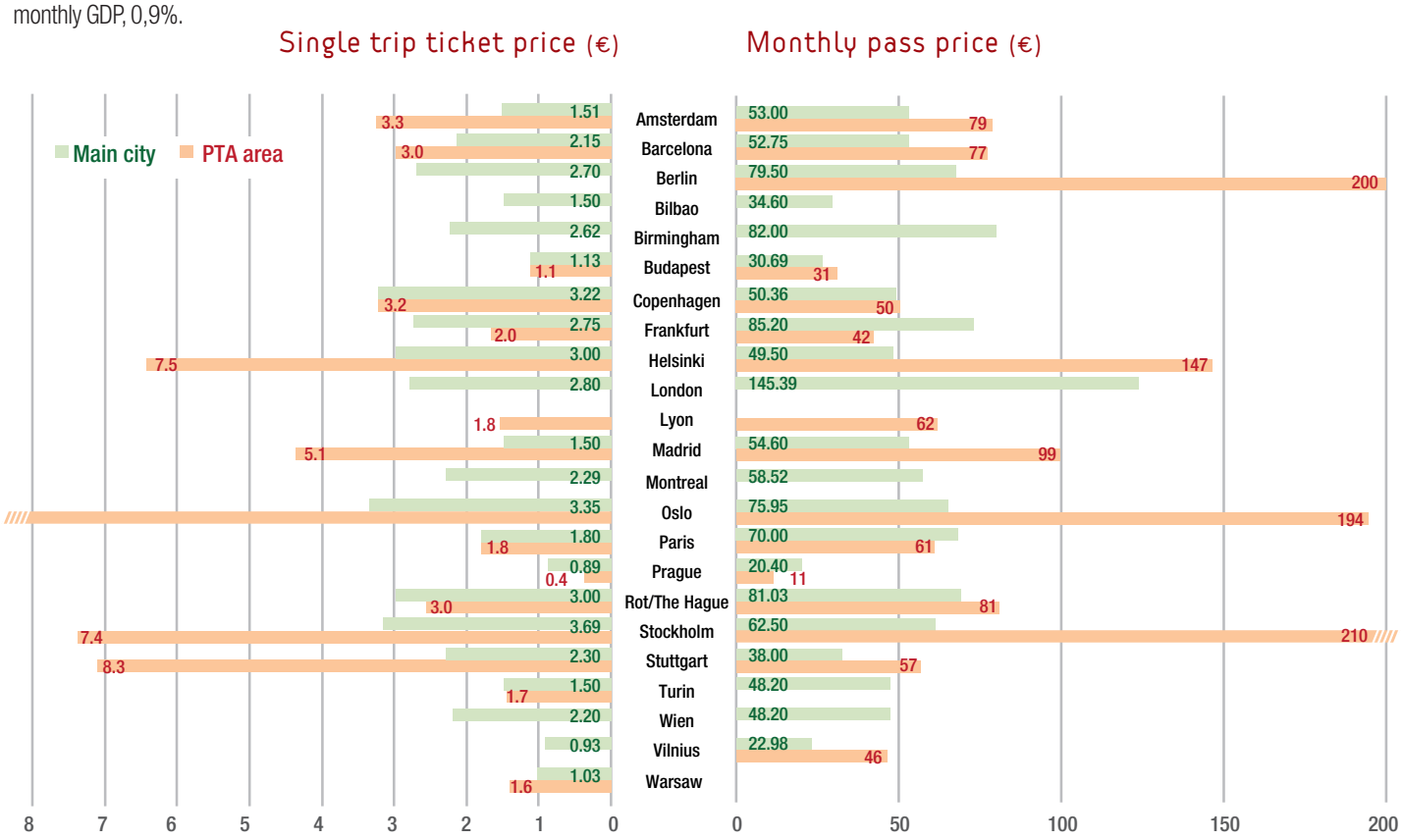


Regarding the public transport demand, in 2015 has been a decline in the use of PT in comparison with the last years, in 2011 on average 244 journeys per inhabitant; 262 in 2013; 276 in 2014 and 260 journeys per inhabitant in 2015 were made. The bus being the most used transport mode (112 journeys per inhabitant, 124 in 2014) followed by the metro (72 journeys per inhabitant, 95 in 2013).

Ticket price for the main city & PTA area

The average price for the single ticket in 2015 has risen compared to 2014. In the main city is 2.18 € (2.17 in 2014) and 3.97 € (3.05 € in 2014) in the PTA area. For the monthly pass the fare rose to 59 € and 90 € respectively. Regarding the monthly pass in the PTA area it should be noted that there are four cities that exceed the limit of 100 € without a direct relationship to be explained to neither the surface nor to the increase in GDP in the PTA area. With the exception of Berlin which has by far the largest PTA area.

The average ratio between GDP and monthly pass fare is 1.8% in main city and 2.8% for the PTA area. Berlin, because of its large surface, continues to be the PTA with a higher ratio in the PTA area, 7.6% and Copenhagen and Warsaw are in 2015 the cities with a lower rate with respect to the monthly pass and the monthly GDP, 0,9%.

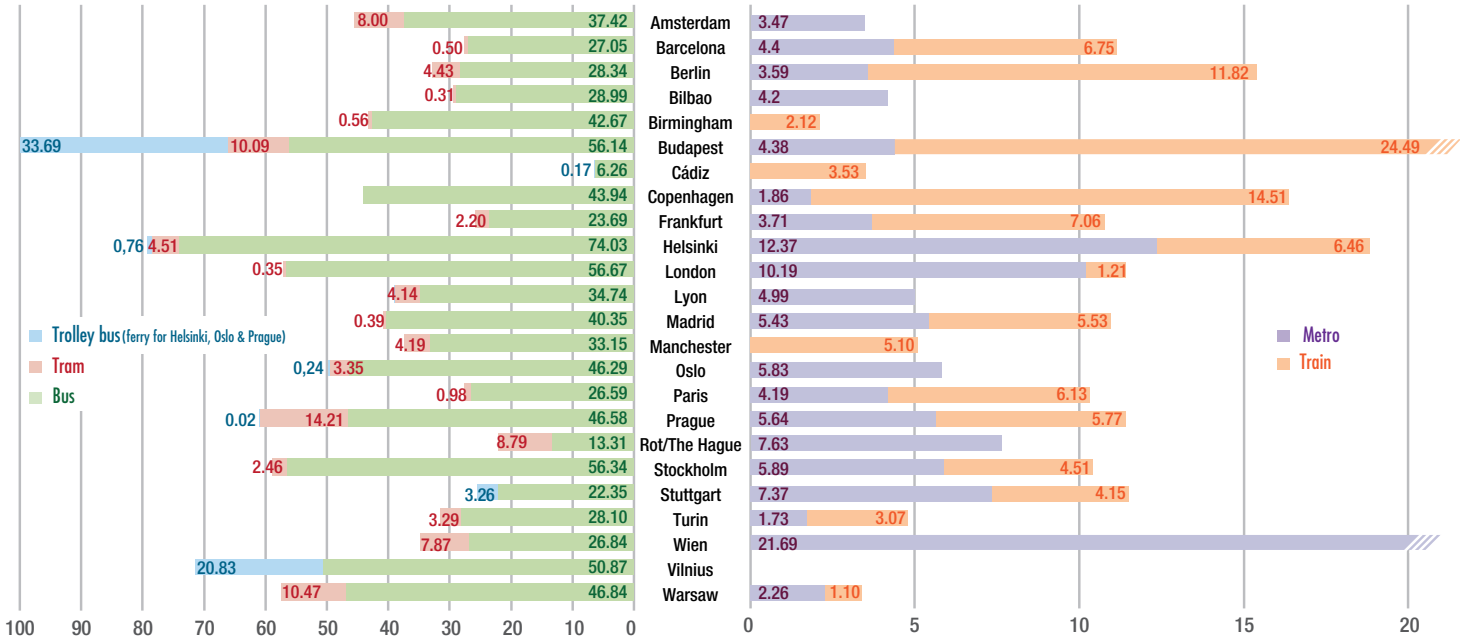


Vehicle-km per inhabitant and PTA area

The average number of bus-km per one million inhabitants is 38, seven times more than the number of tram-km per inhabitant (5 km). Only Budapest, Helsinki, London, 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 6.4 vehicles-km per one million inhabitants, similar than the ratio for commuter train is 6.9 vehicles-km per one million inhabitants. Remarkable is the high ratio of train that Berlin, Budapest and Copenhagen have. Oslo is lacking vehicle-km for train.

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

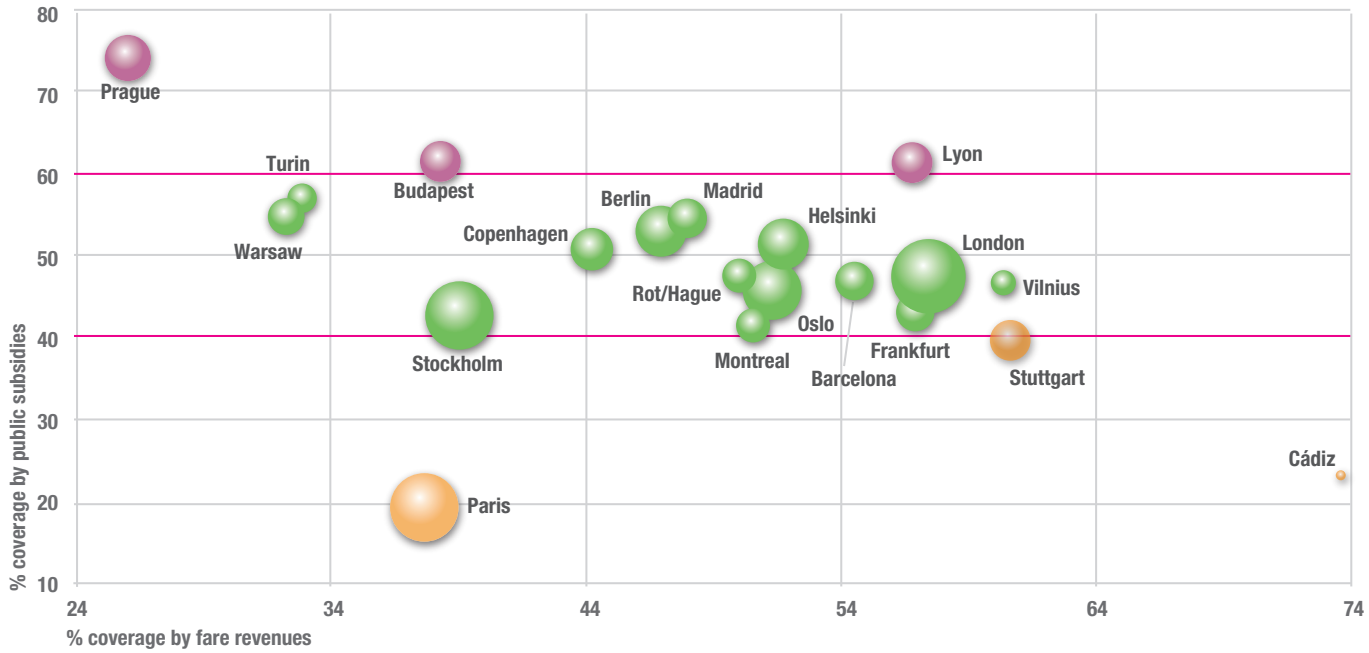
Metro & train vehicle-km per PTA area´ inhabitant



Coverage of operational costs

The size of each ball in the picture indicates the volume of the annual cost of operations of public transport divided by the population of the PTA area (costs/total inhabitants). The average ratio of yearly operational costs per inhabitant for the PTA areas amounts to around 393 €. The PTAs of Paris Île-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% for public subsidies and for covering by fare revenues with an average of 48% paid from public subsidies and of 52% from fare box revenues. Paris Ile de France has the lowest coverage by public subsidies (19.5%) but it has a 42.8% of coverage of operational costs that partly comes from a different source of income typical for France only ("versement transport"). Prague has the highest coverage by public subsidies with a 74%, to be partly explained by the fact that Prague also has the lowest fares of all PTA's to put the cost-coverage from fare box revenues down to only a 26%.

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

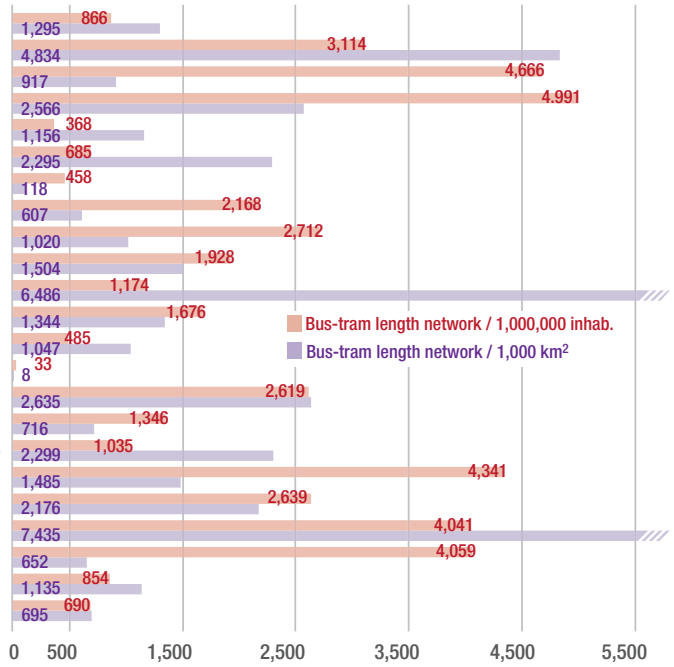


Ratio of bus and tram stops and length network

The Nordic PTAs (Copenhagen, Helsinki and Oslo) has the highest number of bus and tram stops per 1,000 inhabitants (>5) and the British PTAs (Birmingham, London and Manchester) has a density of stops per km² well above the average (>9). Oslo is lacking bus network, that explains their extremely low level.

Ratio of bus and tram stops in PTA area

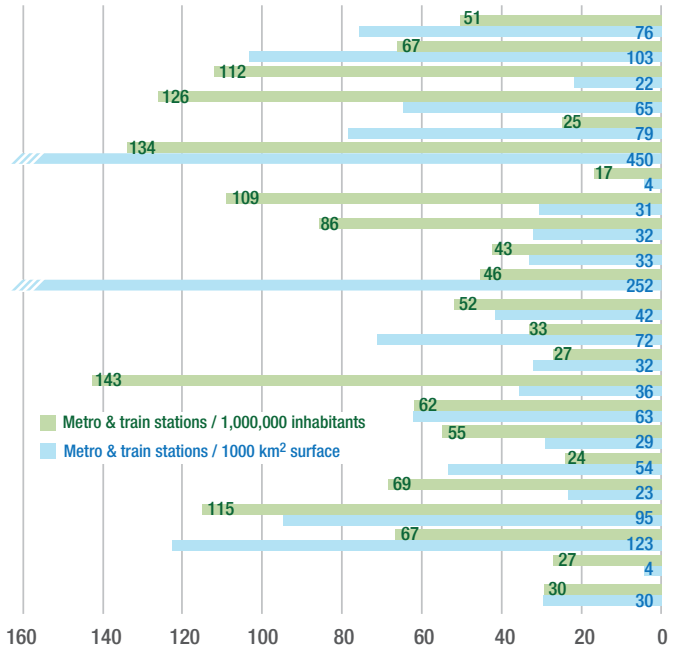
Ratio of bus and tram length network



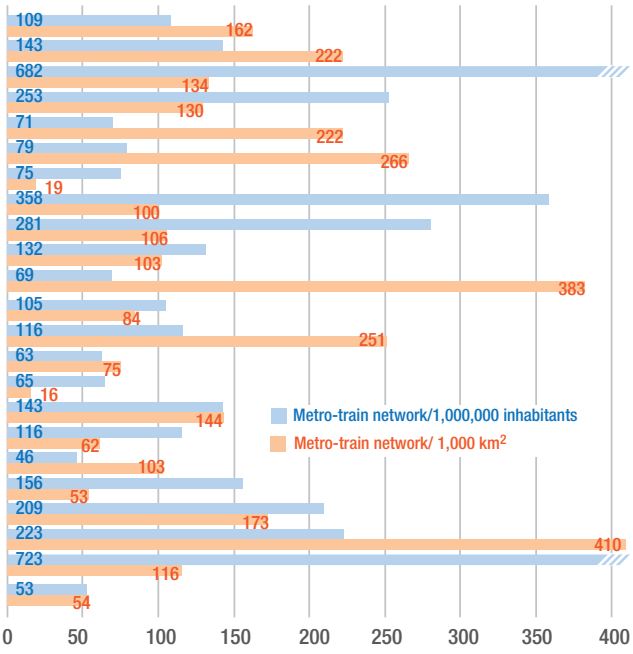
Ratio of metro and train stations and length network

Railway systems are quite different and is changing from 2014. In 2015 they have more length network and less metro and train stations. As average rate, they have 61 (75 in 2014) stations per million inhabitants and 78 (89 in 2014) stations per 1,000 km² of surface. Budapest and London stand out in terms of the high number of stations per 1,000 km² of surface both more than 250 when the average is 79 metro-train stations per 1,000 km². In relation to the number of stations per million inhabitants, there are only six cities that are above 100 (Berlin, Bilbao, Budapest, Copenhagen, Oslo and Stuttgart). Oslo is lacking train network, that explains their extremely low level.

Ratio of metro and train stations in PTA area



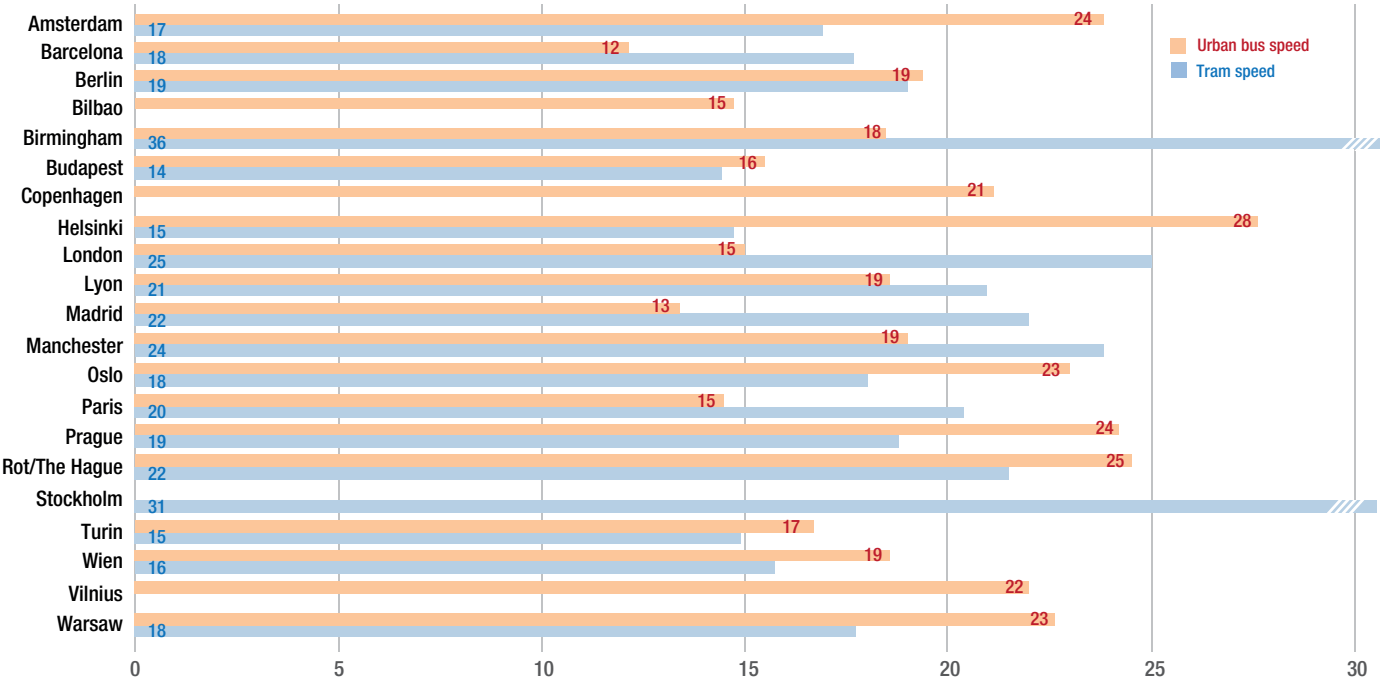
Ratio of metro and train network



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 29 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.

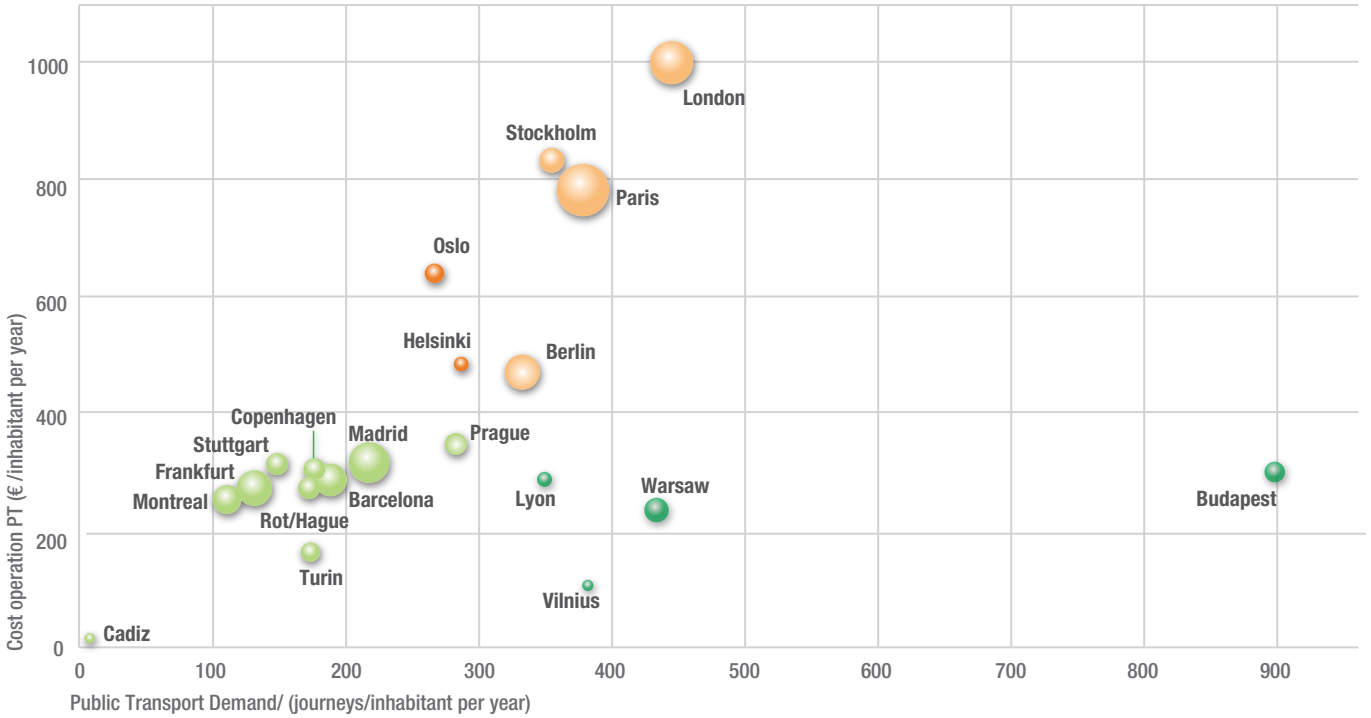
Commercial speed urban bus and tram

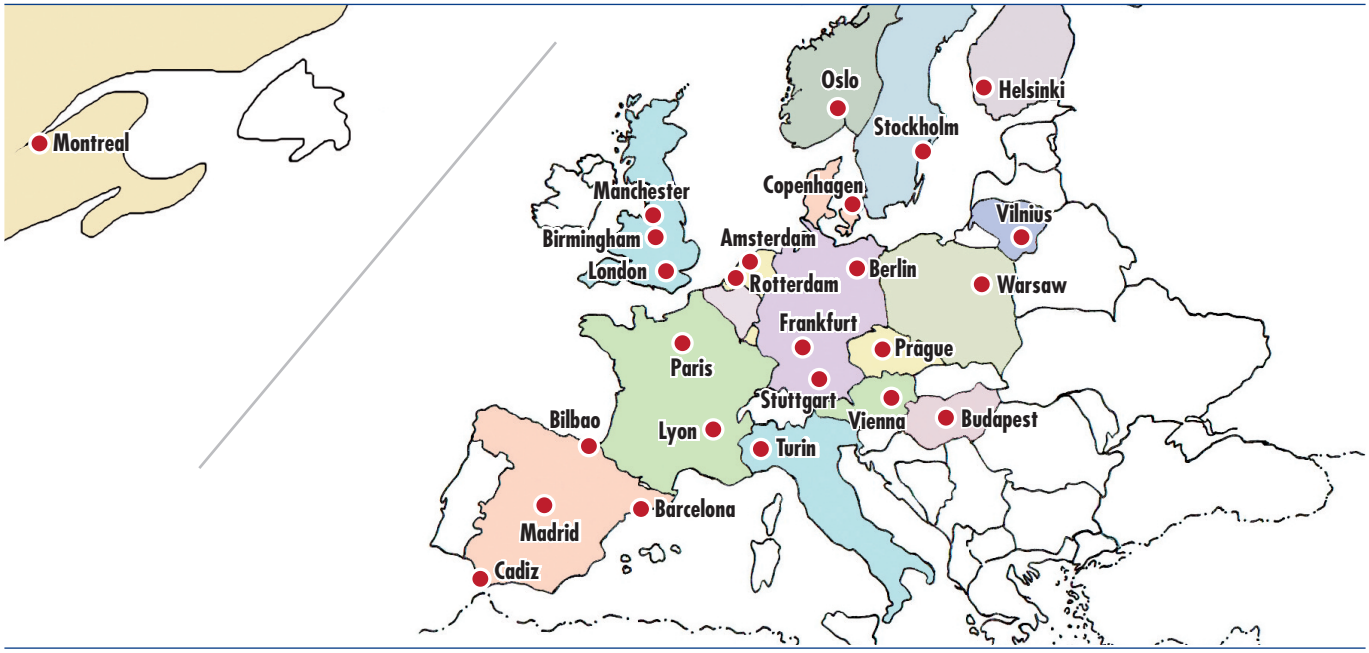


Public transport demand per inhabitant vs cost operation per inhabitant

As we have seen in previous chapters, the EMTA PTAs expenses level for operations oscillates from Bay of Cadiz (14 € per year per inhabitant) to Greater London that needed 998 € per year per head for subsidizing the public transport system but we have to sign that in Greater London 1,184 million journeys (30%) from the total (3,874 million journeys) are done by non-residents users. In the graph below, we can observe a tendency by 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 in the level of demand per individual as well as in terms of the expenses per inhabitants it is in a top position. On the other hand, Vilnius has a low rate of operation cost per inhabitant but a high rate of demand/inhabitant per year. A similar situation as we found in 2014.

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





VERVOERREGIO AMSTERDAM (VA)
Stadsregio Amsterdam
www.stadsregioamsterdam.nl

AUTORITAT DEL TRANSPORT METROPOLITÀ (ATM) BARCELONA
ATM Àrea de Barcelona Autoritat del Transport Metropolità
www.atm.cat

VERKEHRSVERBUND BERLIN-BRANDENBURG (VBB)
VBB Verkehrsverbund Berlin-Brandenburg Alles ist erreichbar.
www.vbb.de

CONSORCIO DE TRANSPORTES DE BIZKAIA (CTB) BILBAO
ctb bizkaiko garraio partzuergoa consorcio de transportes de bizkaia
www.cotrabi.com

WEST MIDLANDS INTEGRATED TRANSPORT AUTHORITY (WMITA) BIRMINGHAM
centro transforming public transport
www.wmita.org.uk

BUDAPESTI KÖZLEKEDÉSI KÖZPONT (BKK)
BKK
www.bkk.hu

CONSORCIO METROPOLITANO DE TRANSPORTES DE LA BAHÍA DE CÁDIZ
Consorcio de Transportes Bahía de Cádiz
www.cmtbc.es

TRAFIKSELSKABET MOVIA COPENHAGEN
movia
www.moviatrafik.dk

RHEIN-MAIN VERKEHRSVERBUND FRANKFURT
RMV RHEIN-MAIN-VERKEHRSVERBUND
www.rmv.de

HELSINGIN SEUDUN LIIKENNE
HSL HRT
www.hsl.fi

TRANSPORT FOR LONDON
TRANSPORT FOR LONDON EVERY JOURNEY MATTERS
www.tfl.gov.uk

SYNDICAT MIXTE DES TRANSPORTS POUR LE RHÔNE ET L'AGGLOMÉRATION LYONNAISE
SYTRAL
www.sytral.fr

CONSORCIO REGIONAL DE TRANSPORTES DE MADRID (CRTM)
CONSORCIO TRANSPORTES MADRID
www.crtm.es

TRANSPORT FOR GREATER MANCHESTER (TFGM)
Transport for Greater Manchester
www.tfgm.com

AGENCE MÉTROPOLITAINE DE TRANSPORT DE MONTREAL (AMT)
AMT
www.amt.qc.ca

RUTER OSLO
Ruter#
www.ruter.no

SYNDICAT DES TRANSPORTS D'ÎLE-DE-FRANCE, PARIS (STIF)
stif
www.stif.info

REGIONAL ORGANIZER OF PRAGUE INTEGRATED TRANSPORT (ROPID)
Ropid
www.ropid.cz

METROPOOLREGIO ROTTERDAM DEN HAAG (MRDH)
MRDH METROPOOLREGIO ROTTERDAM DEN HAAG
www.mrdh.nl

STOCKHOLMS LOKALTRAFIK AB STOCKHOLM (SL)
SL
www.sl.se

VERBAND REGION STUTTGART (VRS)
Region Stuttgart
www.region-stuttgart.de

AGENZIA MOBILITÀ METROPOLITANA DI TORINO (AMMT)
AMM TORINO REGIONE PIEMONTE
www.mtm.torino.it

VERKEHRSVERBUND OST-REGION WIEN (VOR)
VOR VERKEHRSVERBUND OST-REGION
www.vor.at

SUSISIEKIMO PASLAUGOS VILNIUS (MESP)
SUSISIEKIMO PASLAUGOS
www.vilniustransport.lt

ZARZAD TRANSPORTU MIEJKIEGO WARSZAWIE (ZTM)
PUBLIC TRANSPORT AUTHORITY OF WARSAW
www.ztm.waw.pl

EMTA
European Metropolitan Transport Authorities

41, rue de Châteaudun • F-75009 Paris
Tél. + 33 (0) 1 53 59 21 00
contact@emta.com • www.emta.com