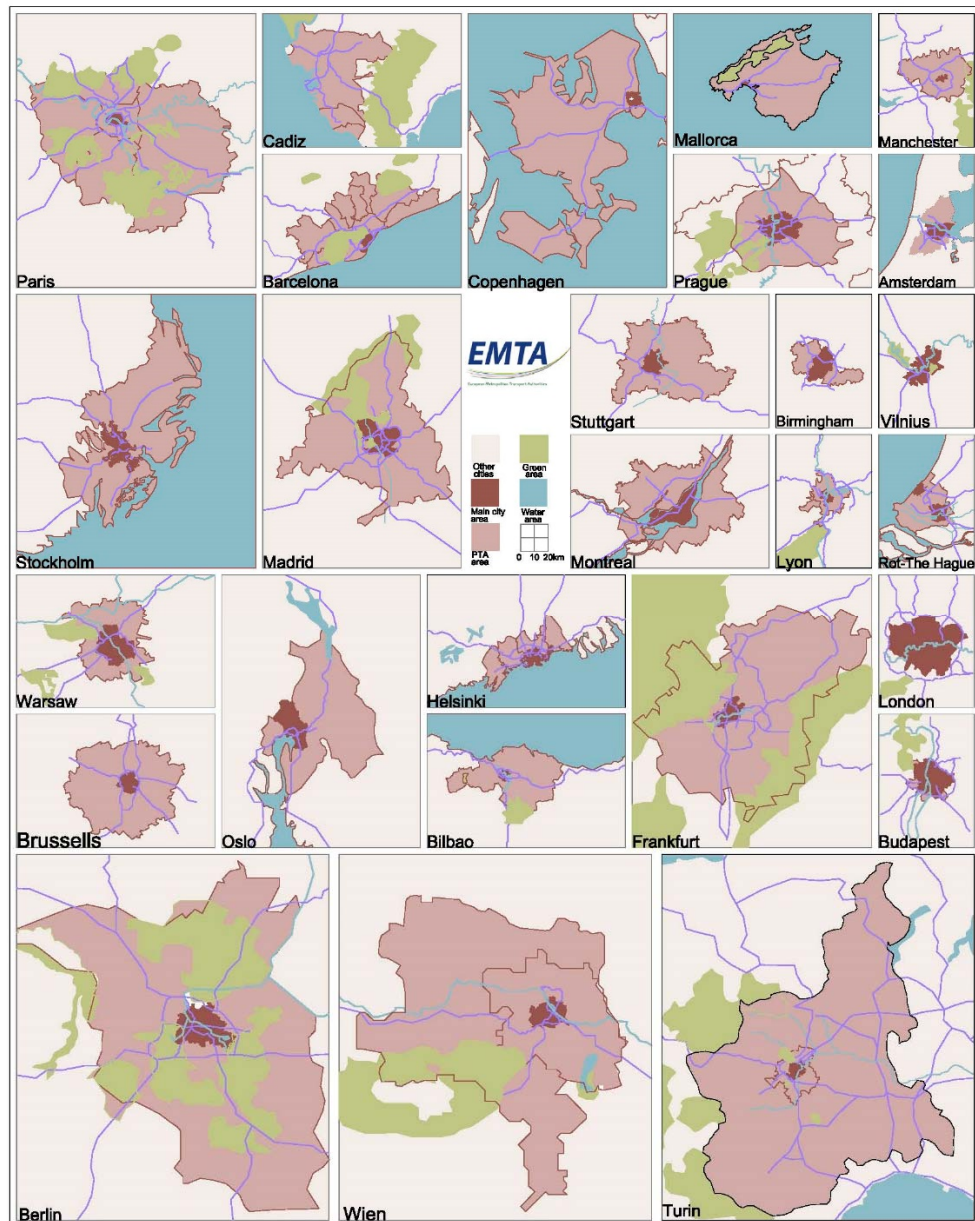


2016 Barometer

12th edition



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FOREWORD



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 and is unparalleled as public transport comparator. Nevertheless, our ambition has to be to continue improving the quality of data input.

Ruud van der Ploeg. EMTA Secretary general

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GENERAL INFORMATION

1. Public transport authorities' partners



Vervoerregio
Amsterdam

Vervoerregio Amsterdam
Amsterdam

www.vervoerregio.nl



© Wiebke Wilting; VA

Vervoerregio Amsterdam is the name of the Transport Authority Amsterdam. As a partnership of 15 municipalities it is the legal entity responsible for commissioning public transport (bus, tram and metro) in the entire Amsterdam area. The organisation continues to work on improving connectivity and multimodal accessibility of the Amsterdam metropolitan region and its inhabitants, to enable quality of life, housing, leisure and employability. Strong focus is put on regional transport and traffic including planning and financing of public infrastructure for all modes on road safety and on smart mobility. Collaboration and co-creation with private and public stakeholders, improving sustainability as well as customer-centric working are key.



© ATM

Autoritat del Transport Metropolità (ATM)

Barcelona

www.atm.cat

The Metropolitan Transport Authority (Autoritat del Transport Metropolità) – ATM – is the territorial mobility authority for the metropolitan area of Barcelona. Its mission is to offer citizens an accessible, sustainable and safe mobility system, through co-operation among the administrations that belong to the consortium. Its principal functions are Financing of the system, Planning (Infrastructure planning, Mobility Master Plan) and the Integrated Fare System in 346 municipalities (Management and common technology) among others. 2016 data: 955,2 million trips per year in public transport services in a network-length of more than 16,000 km.



© VBB

Verkehrsverbund Berlin-Brandenburg (VBB)

Berlin

www.vbb.de

The Verkehrsverbund Berlin-Brandenburg is the public transport authority covering the federal states of Berlin and Brandenburg – the capital area of Germany. The VBB can trace back its roots as far as to the German Unification Contract in 1990. Feeling the necessity to reconnect Berlin to the surrounding Brandenburg and to create a high-quality public transport were the reasons for introducing the VBB as a common public transport authority. The main tasks of VBB are the co-ordination of the services of around 40 public transport companies and their better connections, the introduction and development of a common fare system and the improvement and quality control of public transport services. Also, the VBB assists the

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authorities in charge of public transport in planning, tendering and management of regional railway services.



Consorcio de Transportes de Bizkaia (CTB)
Bilbao
www.cotrabi.eus

It was founded in 1975 as a local entity with its own legal identity and independent of the entities within the consortium. It is made up by the Basque Government, the Biscay Provincial Government, the Bilbao City Council, and other city councils that control areas through which the Bilbao Metropolitan Railway runs. It is financed by the Basque Government and the Biscay Provincial Government. Its work was initially begun with the fundamental objective of building the Bilbao underground or Metro and to manage public transport in Biscay after starting up the underground rail service.



West Midlands Integrated Transport Authority (WMITA)
Birmingham
www.wmita.org.uk



© TfWM

Transport is a key area the Mayor of the West Midlands, Andy Street, has powers and is a lead influence over on behalf of the West Midlands Combined Authority (WMCA). As a result Transport for West Midlands (TfWM) has been set up as part of the WMCA to co-ordinate investment to improve the region's transport infrastructure and create a fully integrated, safe and secure network. It is also responsible for assessing and planning the region's future transport needs so the network can meet the demands of businesses and a growing population. Working in partnership with bus and train operators, TfWM develops integrated and smart ticketing while providing free fares for the elderly and disabled and half price travel for children. Funding is also used to support the Ring and Ride service and provide socially necessary bus services on those routes or at those times that are not commercially viable for the private bus companies.



Budapesti Közlekedési Központ (BKK)
Budapest
www.bkk.hu

Budapesti Közlekedési Központ (Centre for Budapest Transport) was established by a ruling of the General Assembly of the Municipality of Budapest on the 27th of October, 2010. The main objectives are: prepares and implements the Budapest transport strategy, incorporates sustainability and equality considerations in the operation and development of transport in Budapest; integrates the management and supervision of the Budapest transport sectors, particularly in public and road transport; orders and finances the public services of public and road transport; improves urban transport; supports, enables and assists the proliferation of pedestrian and bicycle transport; creates a balance between the development and operation of the transport system; operates a standard financing scheme; supervises the public and road transport service companies owned by the capital; co-ordinates all investments which involve public and road transport, including those undertaken by local governments or public utilities; and plays an active role in regional transport cooperation.



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Consorcio Metropolitano de Transportes de la Bahía de Cádiz (CMTBC)
Bahía de Cádiz
www.cmtbc.es



©CMTBC

The Consorcio Metropolitano de Transportes de la Bahía de Cádiz is established in order to coordinate the economic, technical and administrative cooperation between the associated administrations to exercise together and coordinated the powers of them in the creation and management of infrastructure and transport services inside the limits of the municipalities added. The main objectives are: promote the sustainability of the transport network of the Bay; promote the use of public transport; promote non-polluting modes of transport, and not subject to congestion; and increase the level of integration of the metropolitan area.



Trafikselskabet Movia
Copenhagen
www.moviatrafik.dk

Trafikselskabet Movia is the public transport agency that is responsible for buses and certain local railways in Copenhagen and part of Denmark east of the Great Belt, covering the regions Sjælland and Hovedstaden, except for Bornholm. It does not own any buses and trains itself, but pays subcontractors to run them. It has an integrated fare system in collaboration with the Copenhagen metro and DSB, such that the same tickets are valid on all buses and trains. Cooperation with municipalities and regions are the cornerstone of Movia work to ensure an attractive public transport. Movia has a wide range of skills to ensure the best possible advice to municipalities and regions in all aspects of public transport related analysis, mobility, accessibility and promotion of public transport.



Rhein-Main Verkehrsverbund
Frankfurt
www.rmv.de



©RMV/Helmut Vogler

Rhein-Main-Verkehrsverbund (RMV or Rhine/Main Regional Transport Association) is one of the biggest transport associations in Germany. It coordinates and organizes regional bus and rail transport services across an area of around 14,000 square kilometers. That's around two-thirds of the area of the Federal State of Hesse. With around 2,5 Million passenger per day (around 747 Million per year), RMV is a key contributor to the development of the Rhine/Main area as a pulsating metropolitan region. In RMV applies: one ticket, one tariff, one timetable. In 1995 a uniform tariff system was created from over 100 different tariffs. Transfers between means of transport are possible with one single ticket and because travel times are matched as optimally as possible.



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*Helsingin Seudun Liikenne
Helsinki
www.hsl.fi*



© HSL-Lauri Eriksson

Helsinki Regional Transport (HSL) is a joint local authority with 7 member municipalities and 1.2 million population. HSL is responsible for the planning and organizing of the public transport in the metropolitan area, and it procures bus, tram, metro, ferry, and commuter train services. HSL also plays a key role in regional transport system planning.



*Transport for London
London
www.tfl.gov.uk*



© TfL-Ian Bell

Transport for London (TfL) is the integrated statutory body responsible for London's transport system. It manages London's buses, trams, Underground services, the Docklands Light Railway, London Overground suburban train services, river services, London's taxis, a public cycle scheme known as Santander Cycles, the Emirates Air Line cable car and promotes walking and cycling initiatives. It is also responsible for London's major highways, all of its traffic signals, the Congestion Charge, and the Low Emission Zone. In 2019 a new east-west railway, the Elizabeth line, will be fully open adding 10 per cent to London's rail-based transport capacity. TfL's overall objective is to keep London working and growing and to make life in London better.



*Syndicat Mixte des Transports pour le Rhône et l'Agglomération Lyonnaise
Lyon
www.sytral.fr*

The major objective of the SYTRAL is to provide the best offer transportation for the inhabitants of the department developing the TCL network, cars of the Rhone and Dragonfly and the Optibus Rhôn Express and services. His political development of urban and interurban transport is based on the mesh of the territory and the link between different clusters. The main objectives are: explore the possibilities of implementation, identify new equipment requirements and create new lines represent the major activities of SYTRAL and its teams. In time client, projects undertaken by the SYTRAL have a threefold purpose: rebalance modes of travel within the PTU; develop efficient public transportation and clean energy; and develop the space for social cohesion and socio-economic development.



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Consorcio Regional de Transportes de Madrid (CRTM)
 Madrid
www.crtm.es



©CRTM

The Consorcio Regional de Transportes de Madrid (CRTM) is the Public Transport Authority of the Region of Madrid. Created under Law 5/1985 of the 16th of May, passed by the Madrid Assembly, the CRTM is an Independent Agency of the Madrid Regional Government. It is responsible for providing and managing all public passenger transport services attached to the Madrid Regional Government and to all the municipal councils in the region. Within the scope of the law by which it was created, its principal functions and objectives are as follows: Planning public transport infrastructures, with a particular emphasis on the migration to modal integration; creating an integrated fare system for all transport modes; establishing a stable financing framework; planning services and coordinating the operating programs of all transport modes; controlling and monitoring the financial management of the different operators; and creating a global image for the public transport system by creating a closer relationship with the users.



Consorcio Transportes de Mallorca (CTM-TIB)
 Mallorca
www.tib.org



© CTM-tib

CTM (Mallorca Transport Consortium) is Majorca's regional public transport authority, which coordinates the economic, technical and administrative aspects of the service. The main objectives are: planning, setting up and maintaining a common transport system in Majorca by coordinating and interconnecting the different transport operators and services; boosting the use of public transport; setting up an integrated fare system; increasing transport efficiency. Tib is the trademark of the public transport network for all interurban public transport in the Balearic Islands (buses, trains and metro).



Transport for Greater Manchester (TFGM)
 Manchester
www.tfgm.com



© TFGM

Transport for Greater Manchester is the new name for the organization responsible for implementing local transport policies that affect the ten districts of Greater Manchester. Transport for Greater Manchester is responsible for investments in improving transport services and facilities. It is the executive arm of the Transport for Greater Manchester Committee (the Greater Manchester Passenger Transport Authority between 1974 and 2011) which funds and makes policies for TfGM. The authority is made up of 33 councilors appointed from the ten Greater Manchester districts.



The EMTA Barometer 2016 is produced by





*Agence regionale de transport métropolitaine de Montreal (ARTM)
Montreal
www.amt.qc.ca*

AMT since 1996 plans, operates and promotes public transport in the metropolitan area of Montreal. The main objectives are: plan, coordinate, integrate and promote the public transit services in close cooperation with their partners; manage the commuter rail and the metropolitan transport bus network; contribute to improving the efficiency of roads that have a metropolitan vocation; plan and build any extension of the subway system; finance the operation of services of 14 transit agencies in the region; support, develop, coordinate and promote the special transportation services for disabled people; and offering to the partners the expertise and tools that meet the diverse needs of finance and travel management. (AMT is a EMTA valued partner).



©RUTER

*RUTER
Oslo
www.ruter.no*

Ruter as is the public transport authority for Oslo and Akershus, Norway. The company, organized as a limited company is responsible for managing, but not operating, public transport in the two counties, including bus, the Oslo Metro, the Oslo Tramway and ferries. It also holds agreements with the Norwegian State Railways for price regulation on commuter trains operating within these two counties. Ruter is responsible for administrating, funding and marketing public transport in Oslo and Akershus. It is owned by the City of Oslo (60%) and Akershus County Municipality (40%), and organized as a limited company.



©Iledefrance

*Ile-de-France Mobilités
Paris & Ile-de-France
www.iledefrance-mobilites.fr*

Ile-de-France Mobilités designs, organises and finances the public transport used by residents all across the Greater Paris Region. Ile-de-France Mobilités brings together stakeholders from all over the Greater Paris Region transport system (passengers, elected representatives, manufacturers, transport operators, infrastructure managers, etc.) in order to improve the service provided to passengers. Ile-de-France Mobilités defines and drives development and modernisation projects for all modes of transport and outsource operations to transport operators. Ile-de-France Mobilités which encompasses the Greater Paris Region, and the eight departments in the Île-de-France region, thus makes the vision for all public transport in the Greater Paris Region (suburban-national rail, subway, tramway, bus, etc.) reality. Ile-de-France Mobilités jointly funds infrastructure upgrades to roads and rail, as well as the renovation and purchase of rolling stock (suburban-national rail, subway, tramway, bus, etc.). Ile-de-France Mobilités is responsible for the keeping the overall transport costs in the Greater Paris Region in balance and manages an operating budget of some 10 billion euros. Finally, Ile-de-France Mobilités creates and determines price passenger tickets.



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©ROPID

Regional Organizer of Prague Integrated Transport (ROPID)
Prague
www.ropid.cz

Pražská Integrovaná Doprava (Prague Integrated Transport), PID, is a transport system including metro, trams, railways, city and suburban bus lines, funicular and ferry. This system is gradually integrated by common transport and tariff conditions and by a unified transport solution including coordination of schedules. It is built with the objective to ensure good quality servicing of the territory supporting competitiveness of public transport against individual transport. PID is being coordinated by ROPID (Regional Organizer of Prague Integrated Transport) a specialized organization, responsible for the operation of Prague Integrated Transport, was uncharged by creation and development of the system of Prague Integrated Transport. Its task is organizational and checking. It is responsible for its work towards bodies of the municipality and state authorities, that uncharged it by organization of the transport.



© MRDH

Metropoolregio Rotterdam Den Haag (MRDH)
Rotterdam-The Hague
www.mrdh.nl

In the southern Randstad (the urban agglomeration of Western Holland) 23 local authorities bundle their forces in the Metropolitan region Rotterdam The Hague (MRDH). The local authorities work together to improve accessibility and strengthen the economic business climate. The MRDH has an approved policy framework for European cooperation and is working on a Roadmap for the implementation of the set-up goals. MRDH has internal working group for preparing policy documents and screening opportunities, and a regional knowledge exchange platform with the 23 municipalities for sharing experience and coordinated actions.



©Hans Geijer/Johnér

Stockholms Lokaltrafik AB (SL)
Stockholm
www.sl.se

The Stockholm County Public Transport Administration is the organisation behind Stockholm Public Transport (SL), Waxholmsbolaget and special transport service brands in Stockholm County. SL is the umbrella brand for all our public transport services in the Greater Stockholm area. Our transport contractors operate the services by commission. A specific element of our public transport mission is the special transport service. Special transport services are a supplement for people who are unable to travel on regular public transport. In order for residents and visitors to travel easily between the many archipelago islands and the mainland, Waxholmsbolaget operates public water transport services as well as commuter ferries for shorter routes. We work to build, develop and manage sustainable, modern and accessible public transportation for nearly 2.3 million inhabitants on land and on water. Public transport in Stockholm County should be easily accessible, reliable and environmentally friendly. We collaborate with our transport contractors to make public transportation the obvious choice for the residents of Stockholm County.



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Verband Region Stuttgart (VRS)
 Stuttgart
www.region-stuttgart.de

The Verband Region Stuttgart provides a framework for regional co-operation between the capital of the federal state of Baden-Württemberg, the city of Stuttgart, and the surrounding administrative districts of Böblingen, Esslingen, Göppingen, Ludwigsburg, and Rems-Murr-Kreis. Founded in 1994, the Verband Region Stuttgart is the political entity for the Stuttgart Region with its own parliament. The aim is to promote diversity, a high standard of living, mobility, and economic strength. Important responsibilities of the organization are spatial planning, economic development, and public transportation. In this sector, the Verband Region Stuttgart is responsible for the suburban railway system, the new express bus services, as well as the Park & Ride system and regional traffic management. All means of public transport can be used by. The new “polygo” travel card has extended these services by including car sharing, e-mobility, and bike rentals.



Agenzia della mobilità piemontese (AMP)
 Torino
www.mtm.torino.it



© AMP

The AMMT is the public authority in charge of public transport in the Turin metropolitan area that aims to improve sustainable mobility by optimizing public transportation service by means of targeted projects aimed at specific passenger needs: planning mobility strategies; improvements in public transportation (infrastructure, rolling stock and fleet monitoring technologies quantity and quality of service, funding for operations, both new and existing and targeted investment); administration of the tariff system; funding mechanisms from the Consortium members; service contracts with the transport operators; publicity; and information to citizens. On November 12th 2015, AMMT changed its name to AMP (Agenzia della mobilità piemontese) and the PTA area was enlarged to the entire Piedmont Region. The new PTA area includes 1,206 municipalities and a population of more than 4 million inhabitants.



Verkehrsverbund Ost-Region (VOR)
 Wien
www.vor.at



© Theo Kust

The Public Transport Authority Eastern Region (Verkehrsverbund Ost-Region VOR) is the largest transport association in Austria. With more than 40 rail and bus transport partners, it has provided comprehensive mobility services for passengers in Vienna, Lower Austria and Burgenland (in short: Eastern Region) since 1984. The modern mobility agency VOR is responsible for the crossborder planning, financing and coordination of all public transport services in that region. Across an area of 23,563 km², about 900 lines servicing about 11,500 stops in Vienna, Lower Austria and Burgenland operate as part of the VOR network.



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©MESP

Susisiekimo Paslaugos (MESP)

Vilnius

www.vilniustransport.lt

Savivaldybės įmonė “Susisiekimo Paslaugos” (Municipal Enterprise Connection Services), commonly referred to as SISP, was founded on July 15, 1998, by the decision of Vilnius City Council. It is a local public transport authority responsible for organizing overall public transport in the city and provision of numerous services: maintenance of route network, scheduling, issuing and selling of public transport tickets, ticket inspection, provision of information for passengers, gathering and analysing relevant data, management of parking system, operating a centralized traffic management centre, etc.

The enterprise has been closely working with Vilnius City Administration, and has recently established for itself several pretty ambitious, such as: becoming a regional transport agency, promoting non-polluting modes of transport, increasing usage of public transport as well as creating favourable services for car sharing, cycling, and e-mobility.



PUBLIC TRANSPORT AUTHORITY OF WARSAW

Zarząd Transportu Miejskiego w Warszawie (ZTM)

Warsaw

www.ztm.waw.pl



©ZTM

Public Transport Authority came into being on the 1st of January 1992 by virtue of resolution of the Council of the Capital City of Warsaw. Its main goals are stated in charter and include organization, management and supervising of Public Transport in the urban complex of Warsaw. 25 years of experience with public transport organization as well as cooperation with executive organs related to local transport in major European metropolis resulted in creating an offer which is still expanding and fully meets the passengers' needs.



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2. Description of the PTA ⁽¹⁾ area surveyed

	Authority responsible	Main city population	PTA area population	PTA surface (km ²)	PTA urbanised surface (km ²)	PTA urban density (inhabitants /km ²)	Annual PTA GDP per capita (€)
VA	Amsterdam	844.952	1.514.163	1.004	805	1.880	34.700 €
ATM	Barcelona	1.608.746	4.993.419	3.242	1.073	4.654	28.590 €
VBB	Berlin	3.556.056	6.046.015	30.546	3.438	1.759	32.743 €
CTB	Bilbao	1.138.852	1.138.852	2.215	235	4.846	29.432 €
WMITA	Birmingham	1.124.569	2.864.925	902	498	5.753	-
BKK	Budapest	1.752.704	1.752.704	525	358	4.896	19.754 €
CMTBC	Cadiz	331.749	820.906	3.191	-	-	-
MOVIA	Copenhagen	707.518	2.600.184	9.195	1.713	1.518	53.415 €
RMV	Frankfurt	731.009	5.364.322	23.982	3.584	1.497	43.609 €
HSL-HRT	Helsinki	635.181	1.232.968	1.507	411	3.002	56.600 €
TfL	London	8.910.868	8.910.868	1.572	1.042	8.552	47.705 €
SYTRAL	Lyon	655.158	1.354.476	746	360	3.762	57.384 €
CRTM	Madrid	3.165.541	6.466.996	8.028	1.043	6.200	32.723 €
CTM-TIB	Mallorca	402.949	861.430	3.636	116	7.439	24.870 €
TfGM	Manchester	536.000	2.770.000	1.272	959	2.888	30.925 €
ARTM	Montreal	2.014.221	4.044.218	3.980	1.624	2.490	32.194 €
RUTER	Oslo	666.759	1.271.127	5.005	324	3.923	64.729 €
STIF	Paris	2.243.739	12.142.802	12.000	2.728	4.451	53.921 €
ROPID	Prague	1.281.000	1.979.000	3.839	714	2.772	23.724 €
MRDH	Rotterdam/The Hague	634.264	2.200.000	990	440	5.000	34.500 €
SL	Stockholm	935.619	2.269.060	6.524	880	2.579	63.125 €
VRS	Stuttgart	626.144	2.495.655	3.012	728	3.428	50.234 €
AMP	Torino	886.837	4.392.526	25.387	1.755	2.503	21.135 €
VOR	Wien	1.867.582	3.825.277	23.559	14.421	265	36.567 €
MESP	Vilnius	543.229	543.229	401	149	3.653	15.082 €
ZTM	Warsaw	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

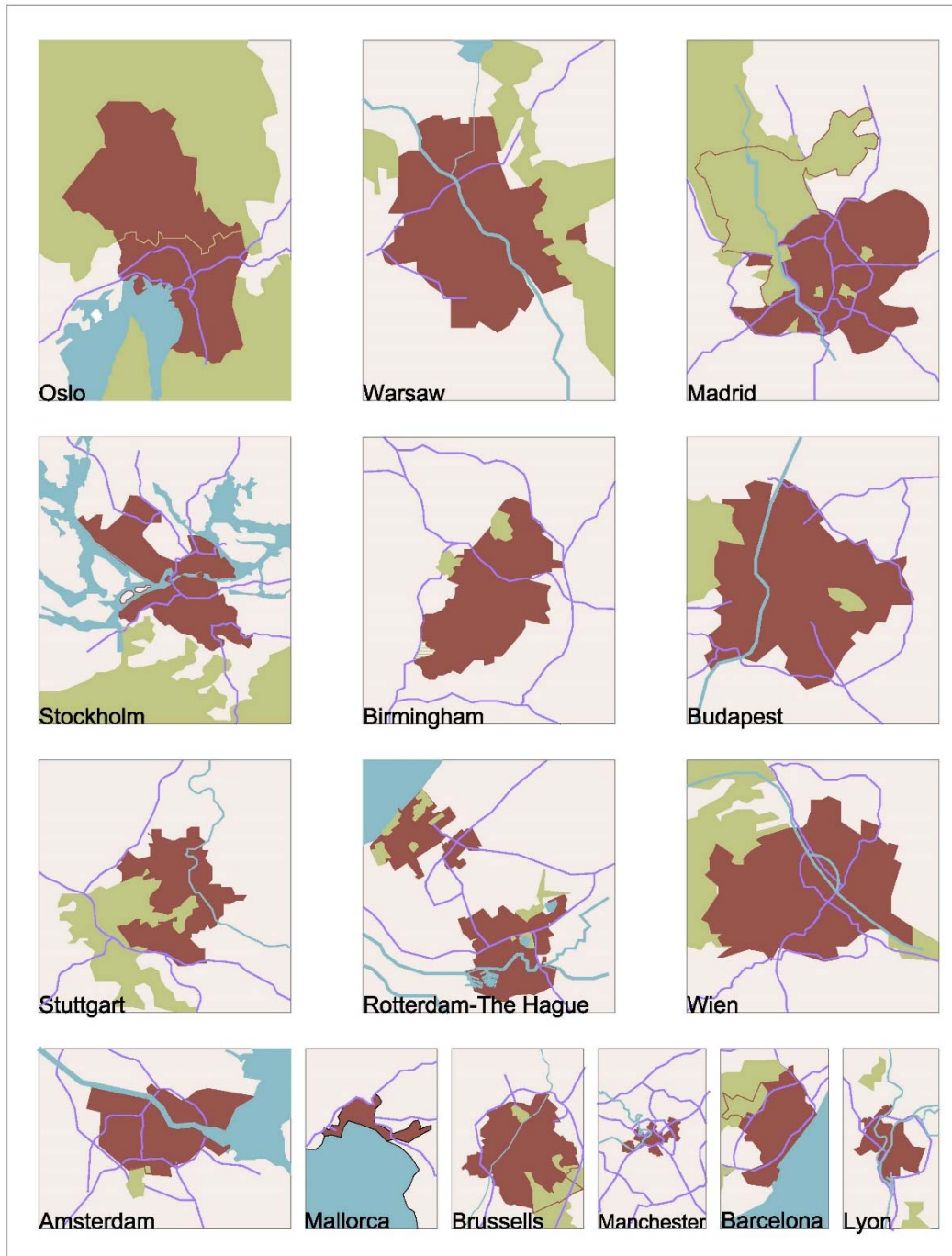
T1. PTA urban description

The EMTA Barometer periodically allows a comparison of the public transport systems of 26 different metropolitan areas. From the results of this survey, various geographical, demographical, spatial and socio-economic ratios can be drawn that allow us to frame what features of the area might have impacted the characteristics of mobility patterns in an urban territory. A quick look to authorities as diverse as VBB (Berlin) with 30,546 km² of total PTA surface and MESP (Vilnius) with only 401 km², showcase the extremes of the smallest and largest of cities and PTA features, without any assessment as to the significance of each urban transport network.

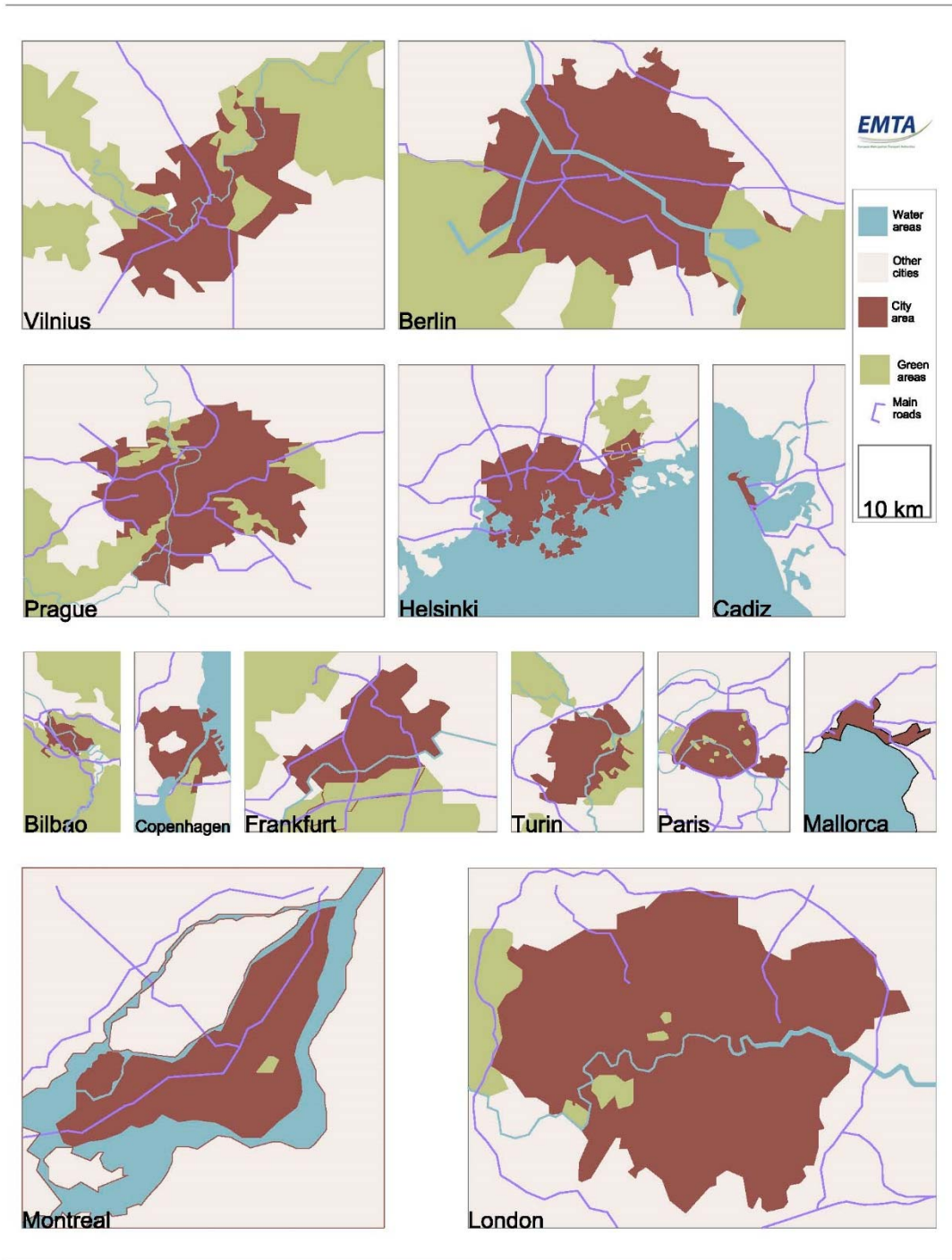
	PTA area (km ²)	Population	Demand/year (million)	Annual operation cost/inhabitant (€)
<i>Berlin</i>	30,546	6,046,015	1,833.38	480
<i>Vilnius</i>	401	543,229	192,7	102
<i>Barometer average</i>	6,868	3,324,679	887	341

3. City limits and surroundings

The following maps represents main cities limits and the total administrative area of each PTA to be able to locate and understand the values expressed in the current 2016 Barometer. In the case of Turin, they have extended their total PTA surface from 838 to 25,387 in 2016.

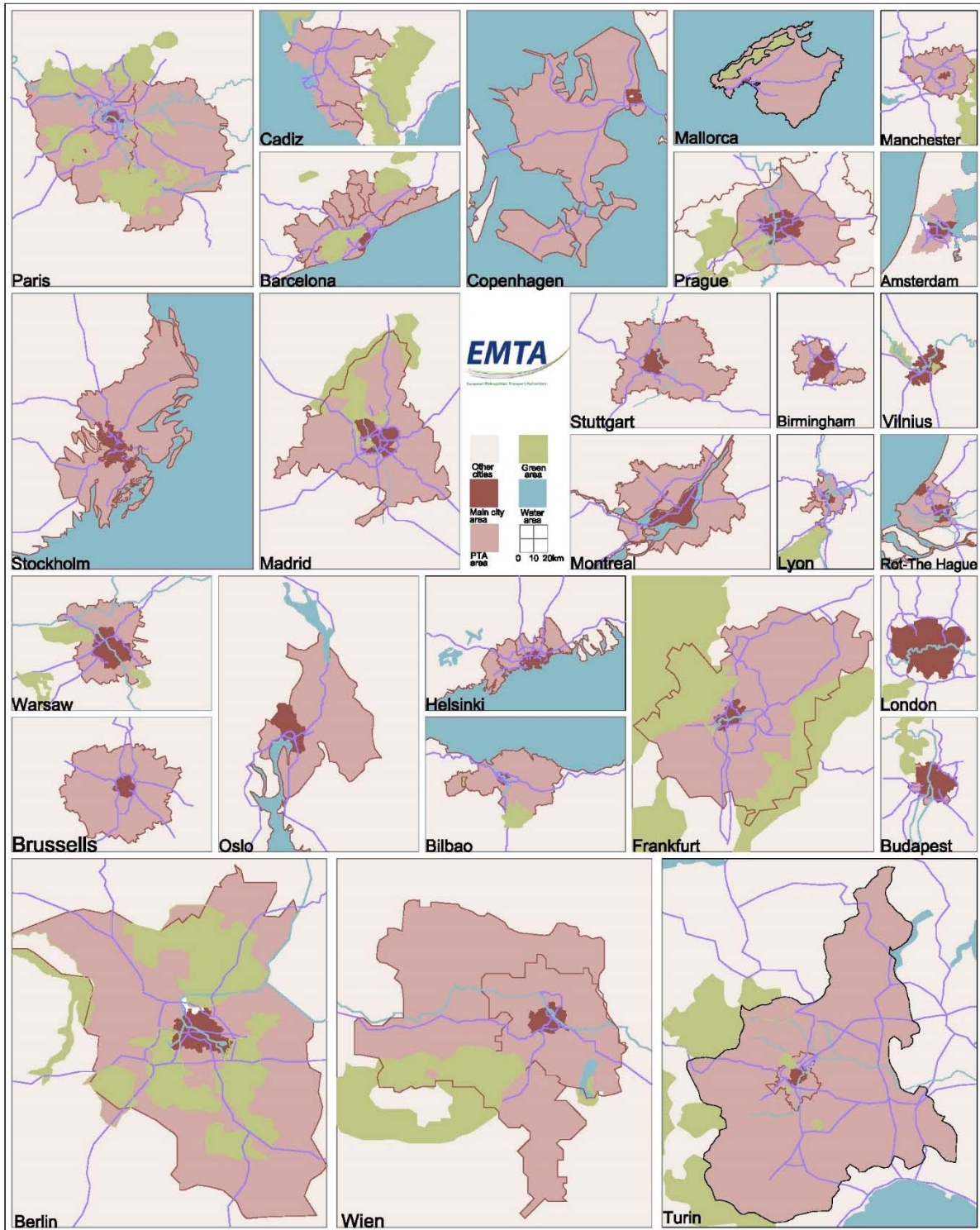


T2. City limits and surroundings 1



T3. City limits and surroundings 2

4. PTA limits and main city shape

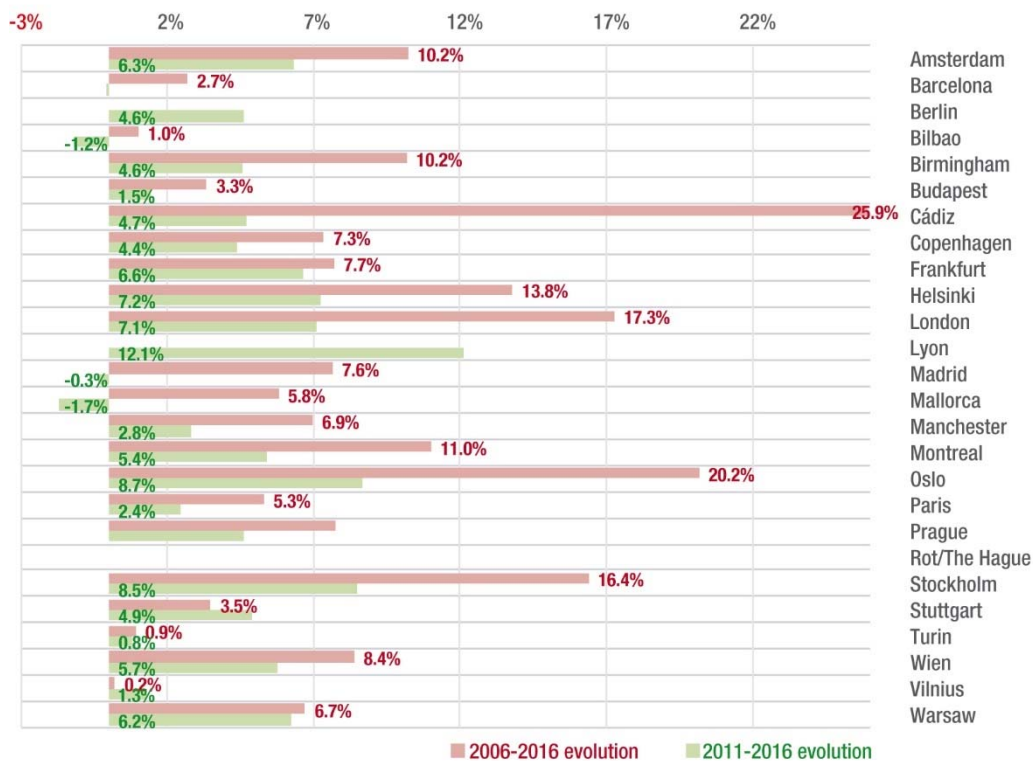


T4. PTA limits and main city shapes

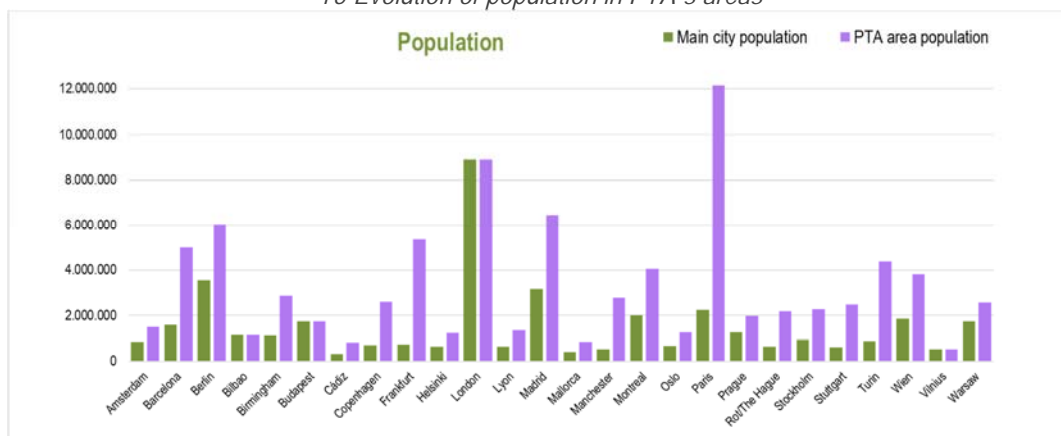
5. Evolution of population in PTA´s areas

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.

Evolution of population



T5 Evolution of population in PTA´s areas



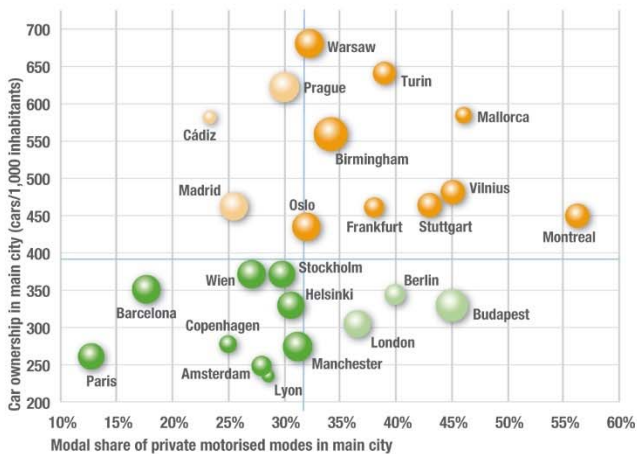
T6 Population in main cities and PTA´s areas

6. 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).

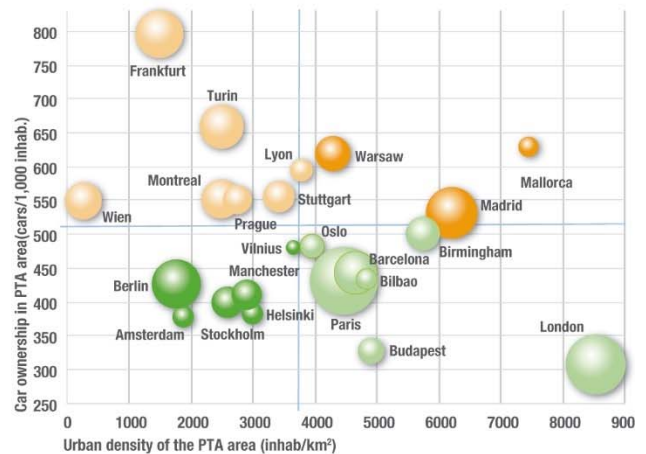
The second image represents the relation between car ownership in the PTA area, expressed as cars per 1,000 inhabitants and urbanized PTA area density. The size of the balls represents the population in the PTA area. The average density of cities is 7,948 inhabitants/km² and 3,760 inhabitants/km² in 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 modal share in main city



T5. Car ownership versus urban density in PTA area

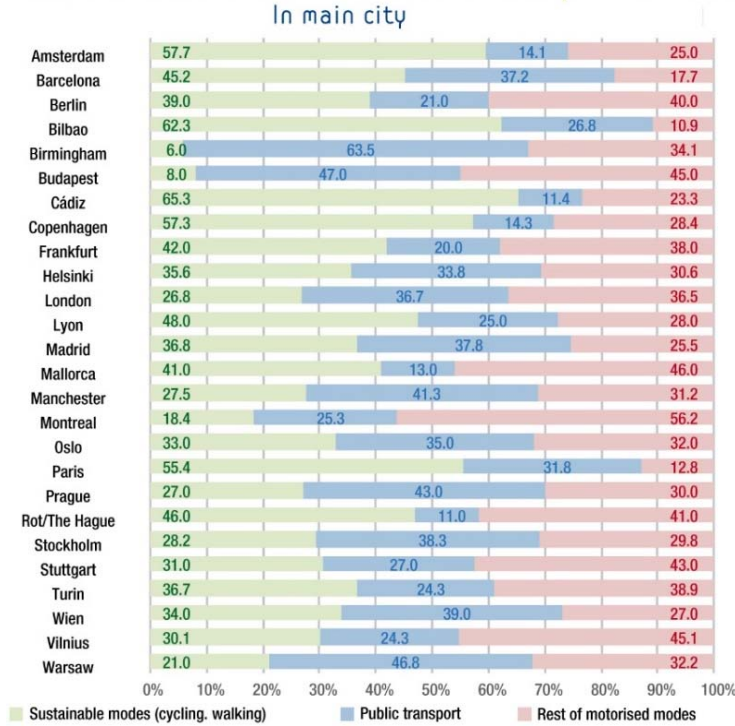
Car ownership rate versus urban density PTA area with PTA area population



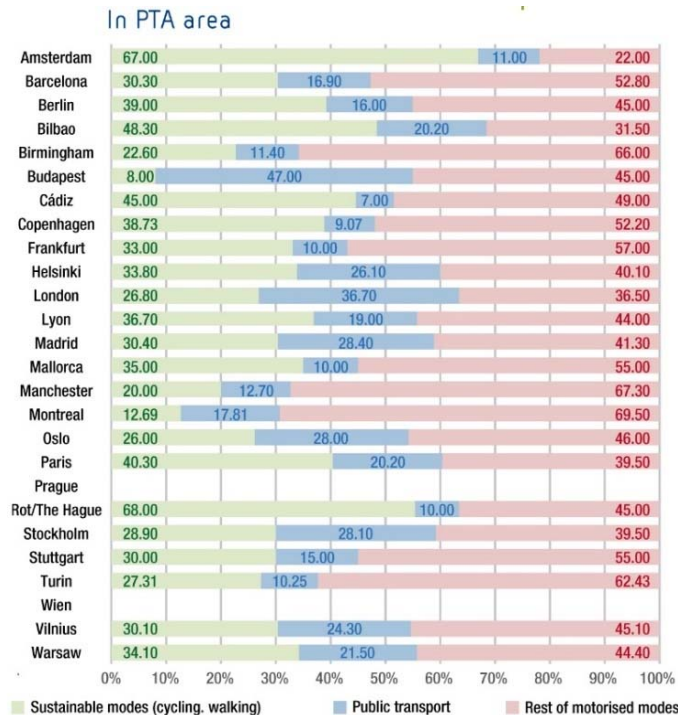
T6. Car ownership versus modal share in private motorized in main city

7. Modal share in main cities & metropolitan areas

Modal share in main cities & metropolitan areas



T7. Modal share of trips in main city



T8. Modal share of trips in PTA area

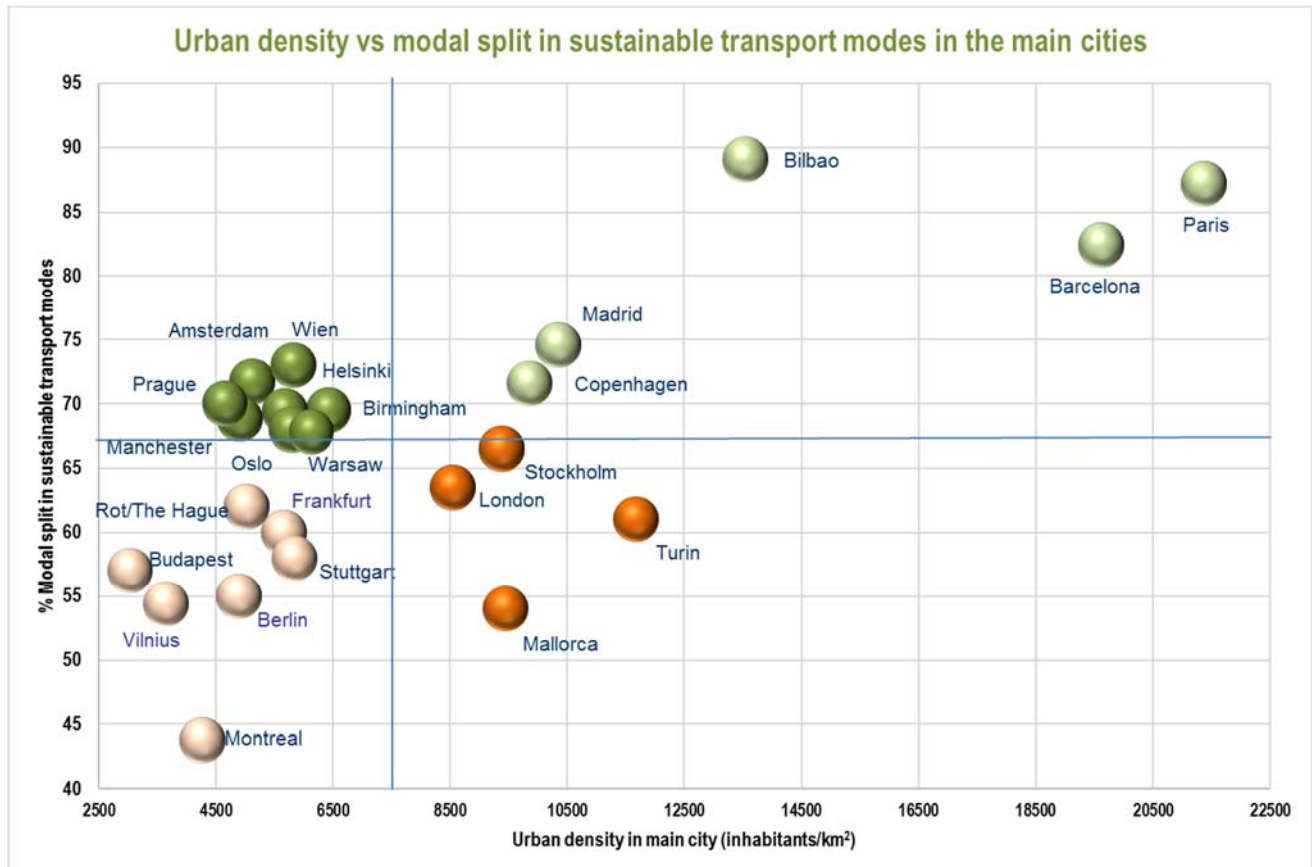
On average per capita per day in selected main cities and in the metropolitan areas 2.8 and 2.9 trips respectively were made (similar to 2015). Of the latter, in the PTA areas, 33% is made by sustainable modes (cycling, walking), 19% by public transport and 48% by private transport. However, in the main cities, 37% of trips are made by sustainable modes, public transport raises the average to 30% over other motorized modes that maintained its average share to 33%.

The share 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, compared to the rest of the PTA areas, the share of sustainable transport modes (walking, cycling and public transport) raises up to 67% on average compared to 52% in the PTA areas. Main cities like Barcelona (82%), Bilbao (89%) and Paris (87%) have the highest for sustainable transport modes, as well as Bilbao (68%) and Rotterdam/The Hague (78%) have for their PTA areas.

8. Urban density and modal split in sustainable transport modes in the main cities

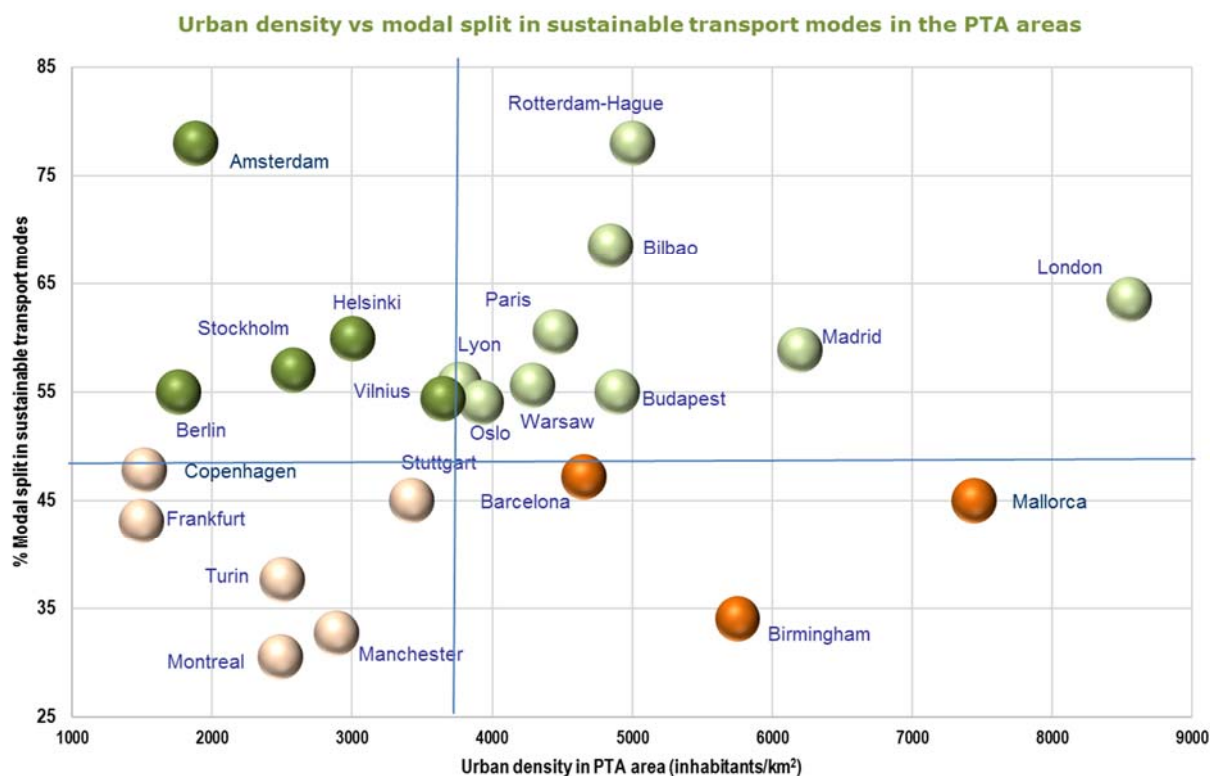
The following graphic displays the share of total daily trips by sustainable modes –walking, cycling and public transport– explained by urban population density in the main city. As we have seen previously, the average of the modal share of sustainable transport modes in main cities is 67.2% (67% in 2015) and the average of urban density (inhabitants/square kilometer) in main cities is 7,948 (7,626 in 2015) inhabitants/km² of urbanized area. London with a value of 64% and 8,551, respectively, represents again the median city for this concept. Nine cities have an upper limits density higher than average. Paris and Barcelona are in the upper part of the urban density score with 21,369 and 19,619 inhabitants/km² respectively. On the other hand, Montreal represents the lower limit in modal split of sustainable transport modes with a 44%. The majority of the remaining PTA's vary between 55% and 75% of sustainable transport modes share and Bilbao has the highest limit with 89% of sustainable transport modes.



T9. Urban density vs modal split in sustainable modes in the main cities

9. Urban density vs modal split in sustainable transport modes in the PTA areas

Remarkably, if we analyze the whole metropolitan areas for the same concept, the outcome is extremely different. Urban density (inhabitants/square kilometers) in PTA areas is understandably much lower than the main cities and consequently the use of motorized modes is common and more necessary to the detriment of the use of sustainable modes. In this sense the average of urban density in the PTA areas is 3,722 inhabitants/km² (47% of the ratio in the main cities) and the share of use of sustainable transport modes (walking, cycling and public transport) is 48.5% (50% in 2014). London have highest urban PTA area density (population/urbanized PTA area), and Rotterdam-The Hague a high rate of sustainable modes. A particularly significant case is displayed in Montreal, where we see a 30% use of sustainable modes with a very low urban density (2,490).



T10. *Urban density vs modal split in sustainable transport modes in the PTA areas*

The colors of the balls used in this graphic represent the cities that are below or above both averages (3,722 inhabitants/km² of urbanized area and 48,5% of sustainable transport modes). In this sense, is remarkable the PTA areas that have low urban density values with high shares in sustainable transport modes.



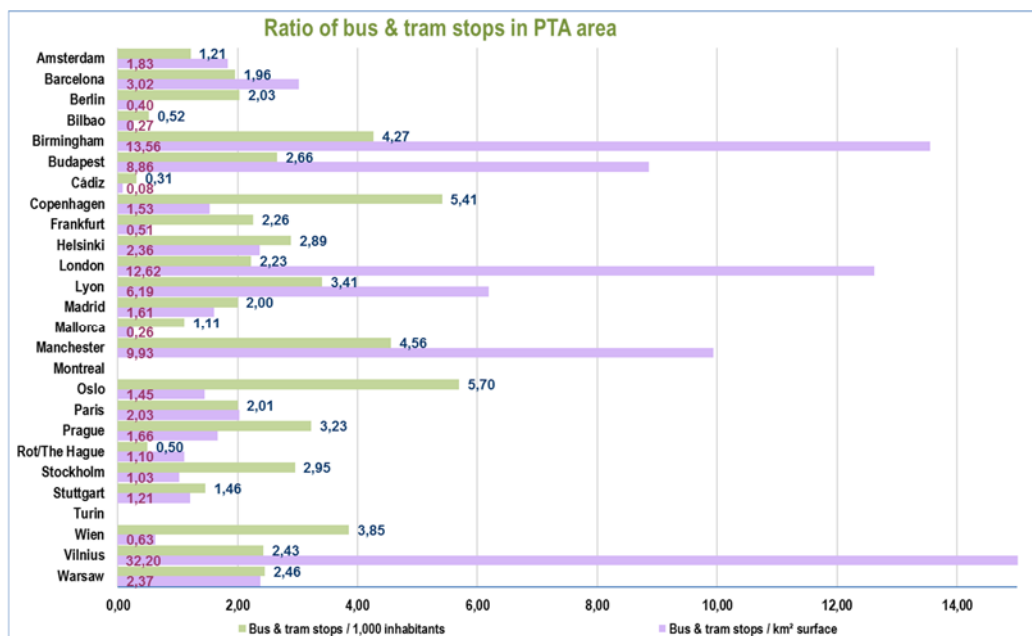
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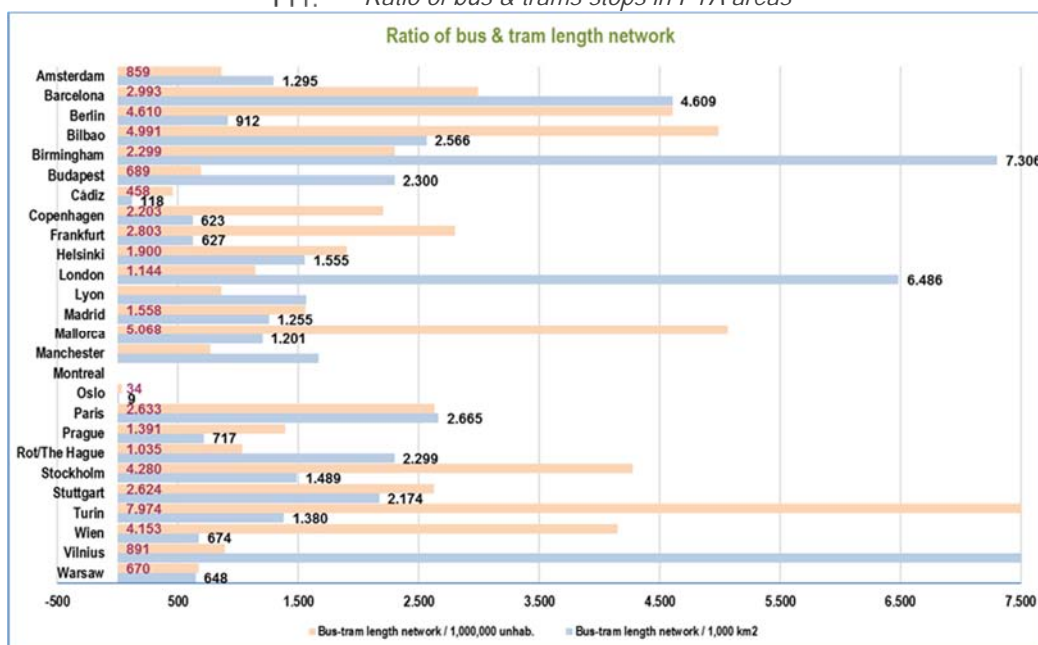
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10. Ratio of bus and tram stops and length network

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.



T11. Ratio of bus & trams stops in PTA areas

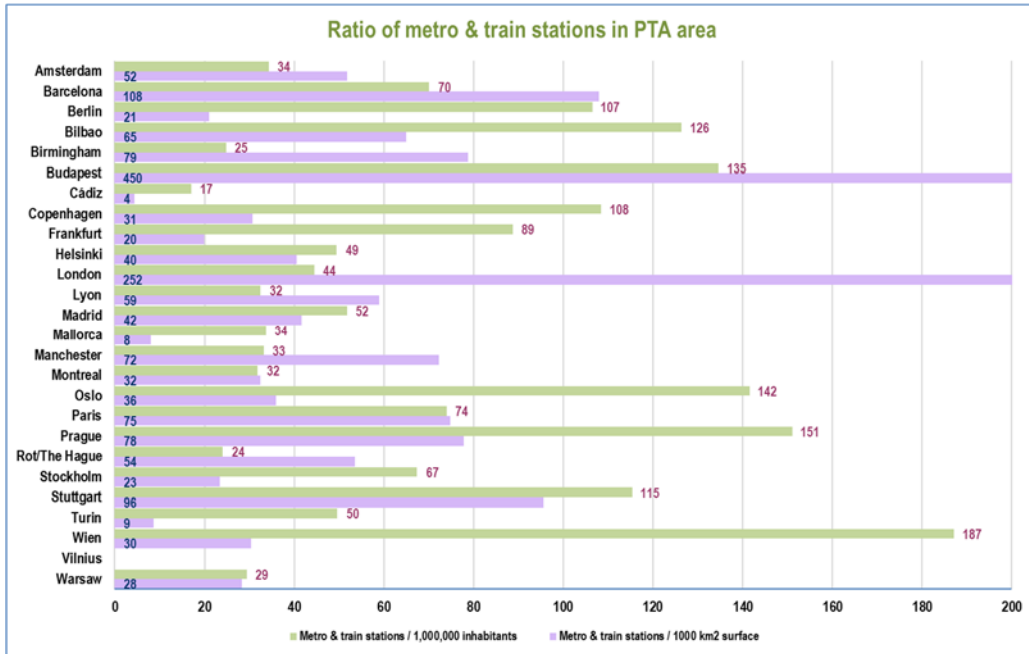


T12. Ratio of bus & tram length network

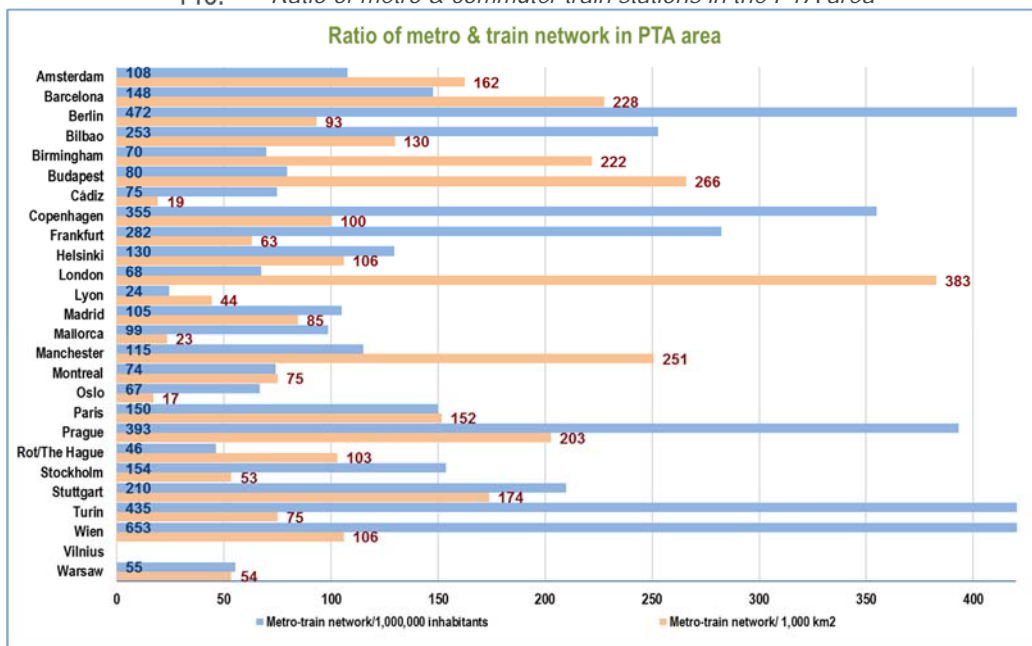
Oslo is lacking bus network. That explains their extremely low level.

11. 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.



T13. Ratio of metro & commuter train stations in the PTA area

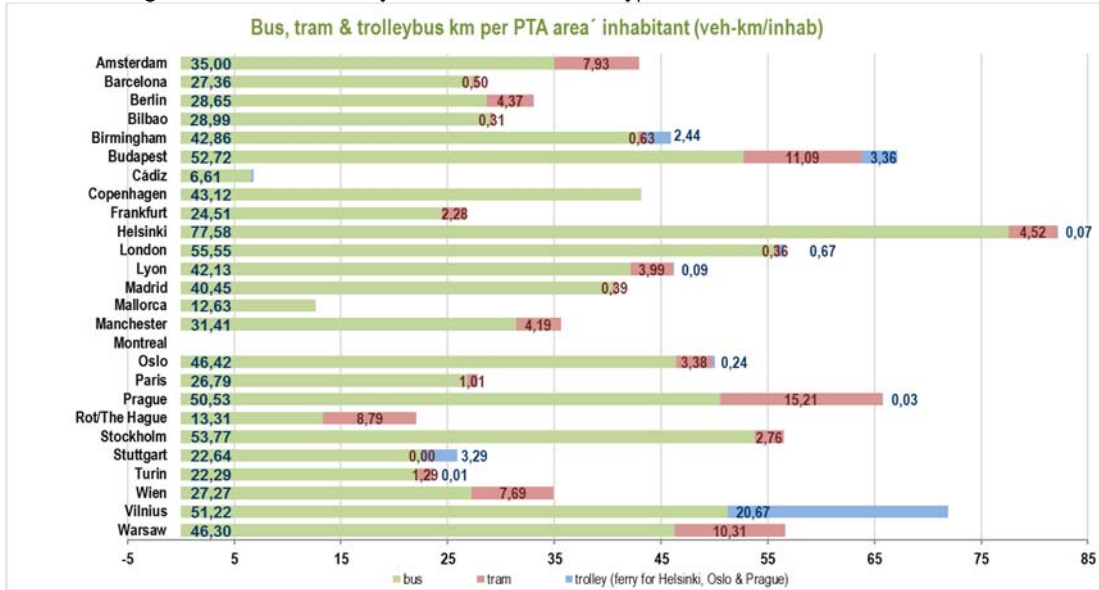


T14. Ratio of metro & commuter train network length in the PTA area

Oslo is lacking train network. That explains their extremely low level.

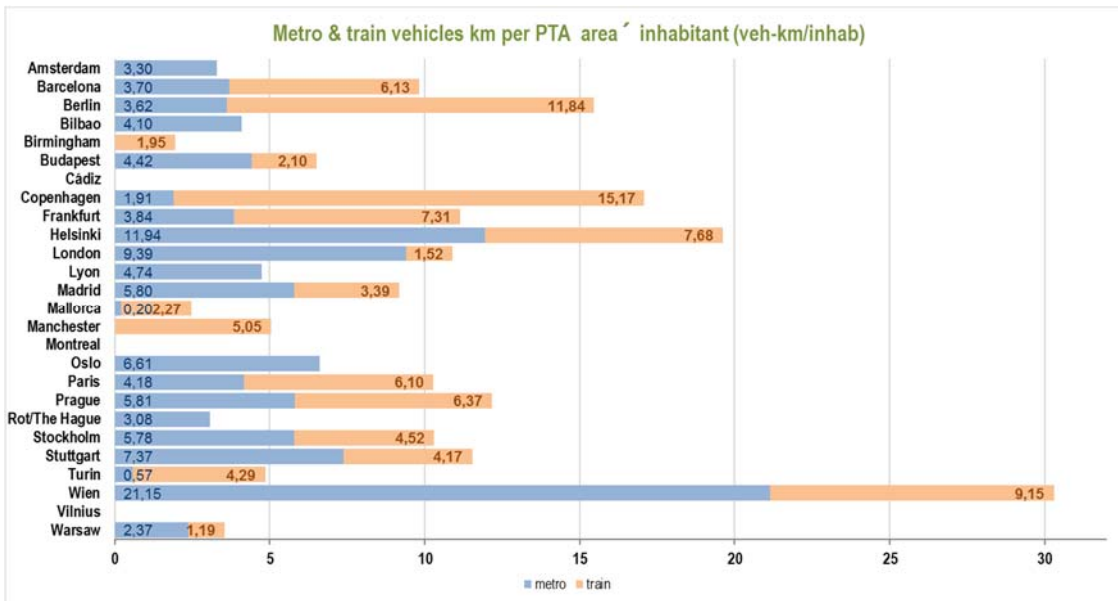
12. Vehicles-km per inhabitant and PTA area

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).



T15. Bus, tram & trolleybus km per PTA area per inhabitant

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, Budapest and Copenhagen have.



T16. Metro and commuter train vehicles km per PTA area per inhabitant



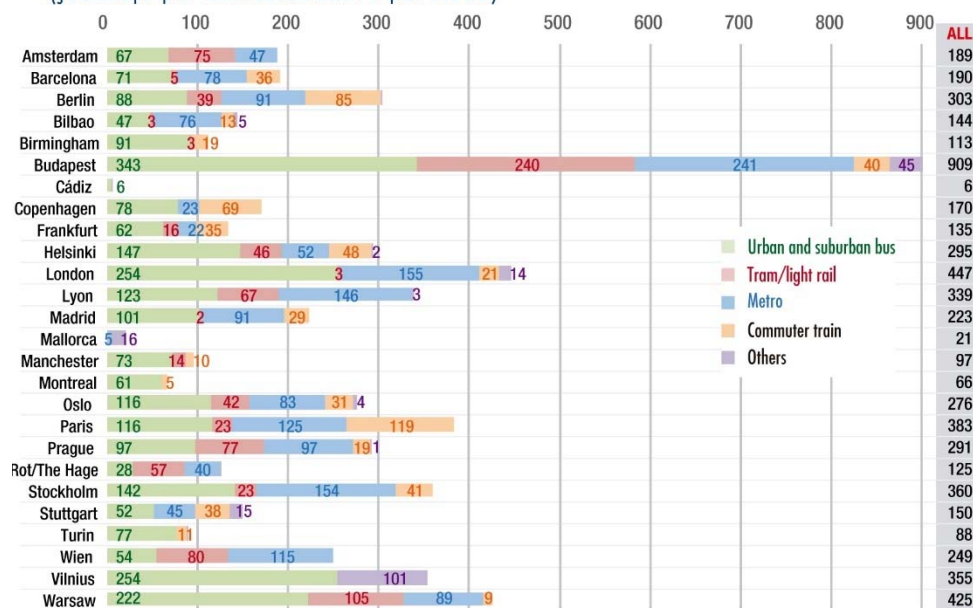
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13. Public transport demand per inhabitant in PTA areas

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 only PT services within the city borders of Budapest whilst boardings in this figure include both local journeys from citizens on top of commuter trips from outside services into the city. Hence, the city population produces a lower denominator, with an overrating of actual journeys per PTA resident to account for.

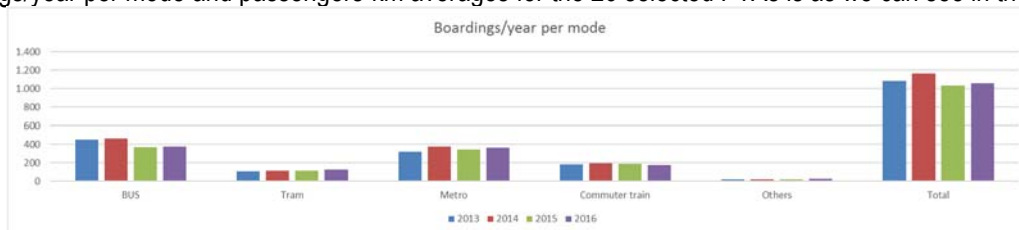
Public transport demand per inhabitant in PTA areas

(journeys per inhabitant in PT per mode)

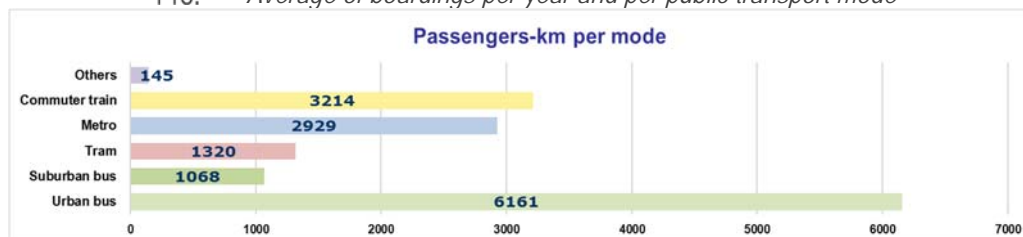


T17. Number of trips in the public transport

The boardings/year per mode and passengers-km averages for the 26 selected PTAs is as we can see in the next figures:



T18. Average of boardings per year and per public transport mode

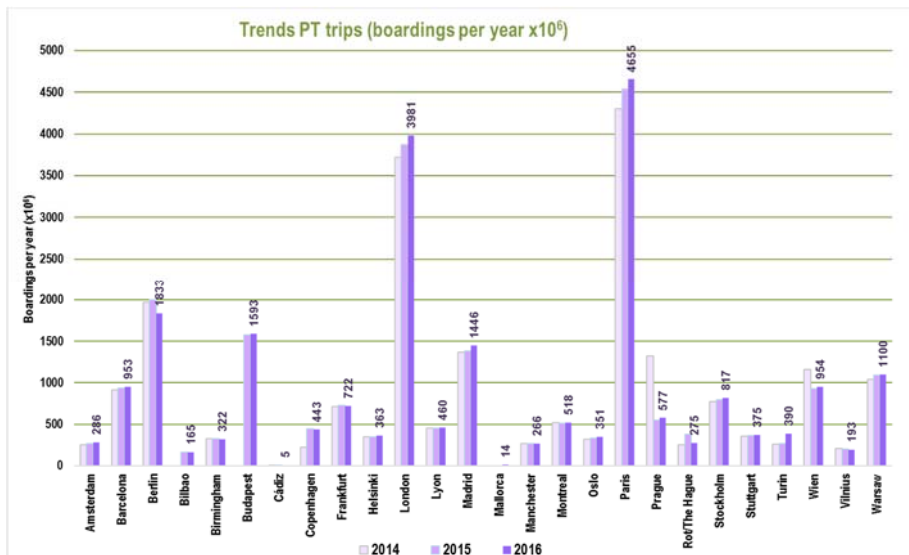


T19. Average of passengers-km per public transport mode

14. Public transport demand trends

Public transport demand trends have evolved differently over the last years. In general, the tendency for the whole PTAs increased the public transport demand. The average of 2014 was 917 million of boardings in public transport, in 2015 the PT system had 914 boardings and in 2016 it has recovered with +1.2%, rising to 925 million. 5 of the 26 PTAs analyzed (Berlin, Budapest, Greater London, Madrid and Paris Île-de-France) represent the 70% of the total public transport demand for the studied PTA areas, whilst they represent only 40% of the total inhabitants in 2016 and a 30% of the total administrative surface.

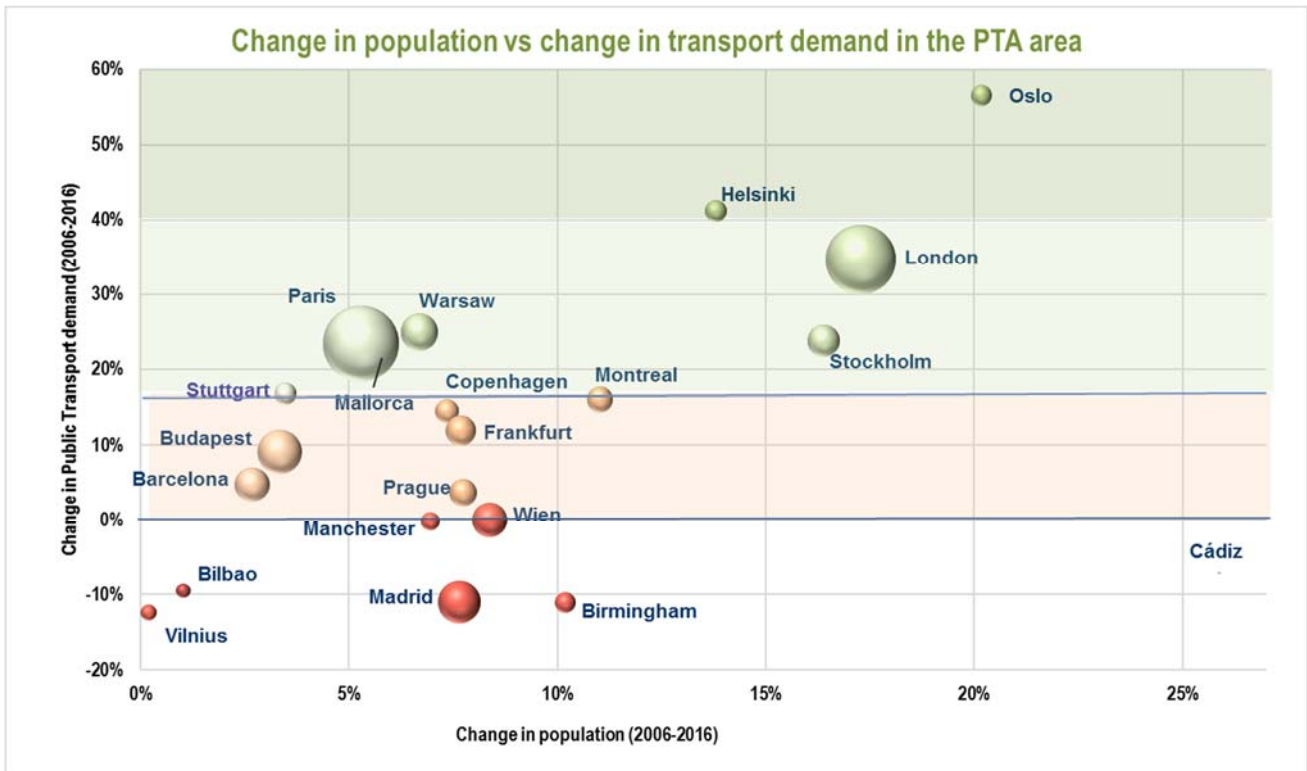
City	2014	2015	2016
Amsterdam	251	271	286
Barcelona	915	939	953
Berlin	1971	2001	1833
Bilbao		166	165
Birmingham	330	326	322
Budapest		1578	1593
Cádiz	5	5	5
Copenhagen	220	443	443
Frankfurt	715	727	722
Helsinki	349	348	363
London	3721	3874	3981
Lyon	452	455	460
Madrid	1370	1382	1446
Mallorca			14
Manchester	267	268	266
Montreal	517	515	518
Oslo	320	334	351
Paris	4299	4541	4655
Prague	1326	548	577
Rot/The Hague	253	379	275
Stockholm	771	794	817
Stuttgart	356	366	375
Turin	264	266	390
Wien	1159	931	954
Vilnius	212	203	193
Warsaw	1041	1096	1100



T20. Trends public transport demand in millions boarding per year

15. Change in population vs transport demand in PTA area

The following graphic represents the change in the number of inhabitants in the PTA areas between 2006 and 2016 with respect to the change in the number of total journeys undertaken by public transport. As we have seen before, the trend continues upward, most of the PTAs have increased the public transport demand in the last 10 years and Oslo and Helsinki has done over a 40%. In this last ten years, the PTA areas studied have increased to an average of 17% in public transport demand with only an average of 8% growth of population. This means that the number of journeys by public transport increased as relative more than the population in PTA areas.

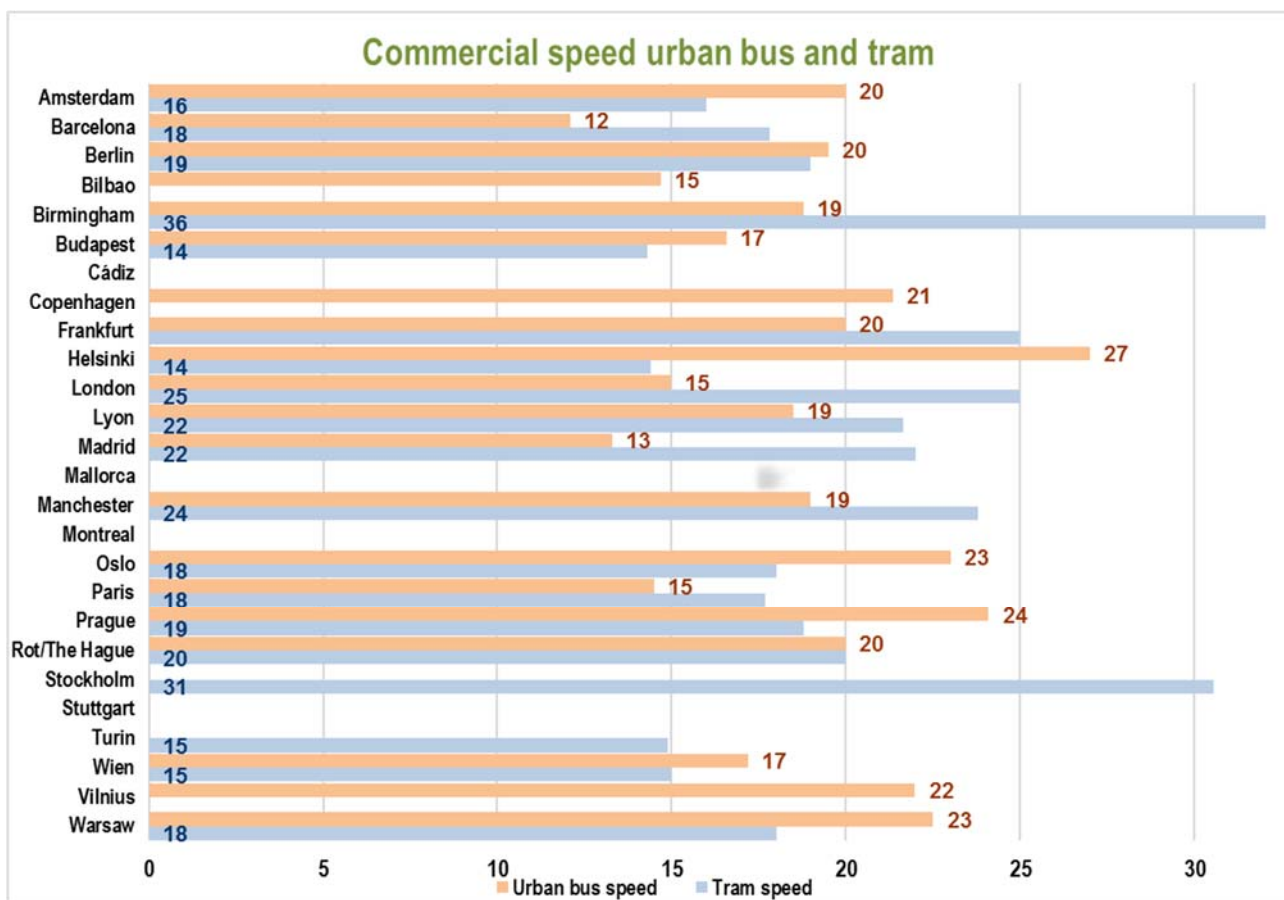


T21. *Change in population vs change in transport demand in the PTA area*

SERVICE QUALITY

16. Commercial speed

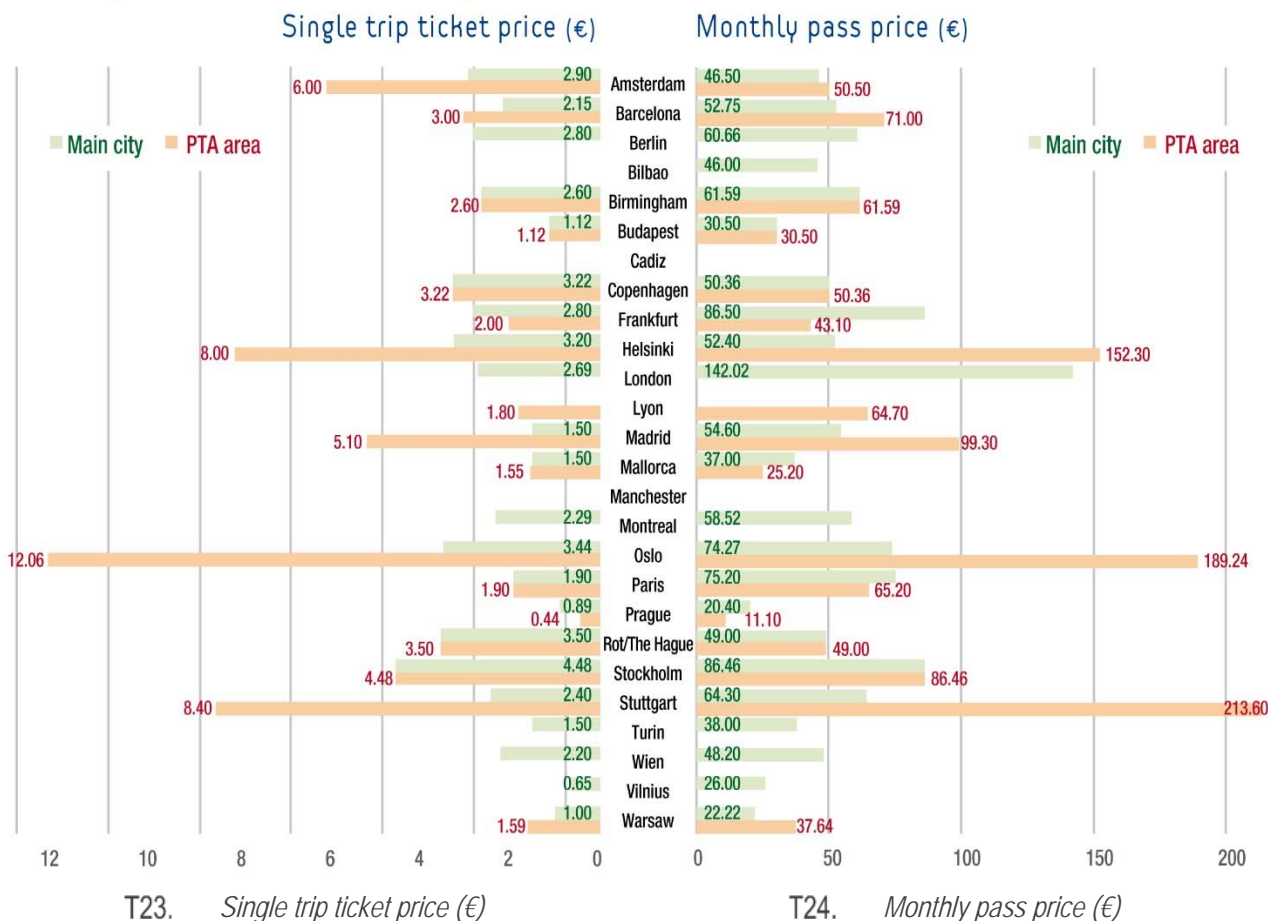
The commercial speed for the public transport is one of the main issues that the planners have to deal with it in the urban areas. The average speed for the urban bus and the tram is about 19 km/h and for the suburban buses the average has risen to 32 km/h. The same happened with the metro and the commuter 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.



T22. Commercial speed for urban bus and tram

17. Ticket price for the main city and PTA area

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.

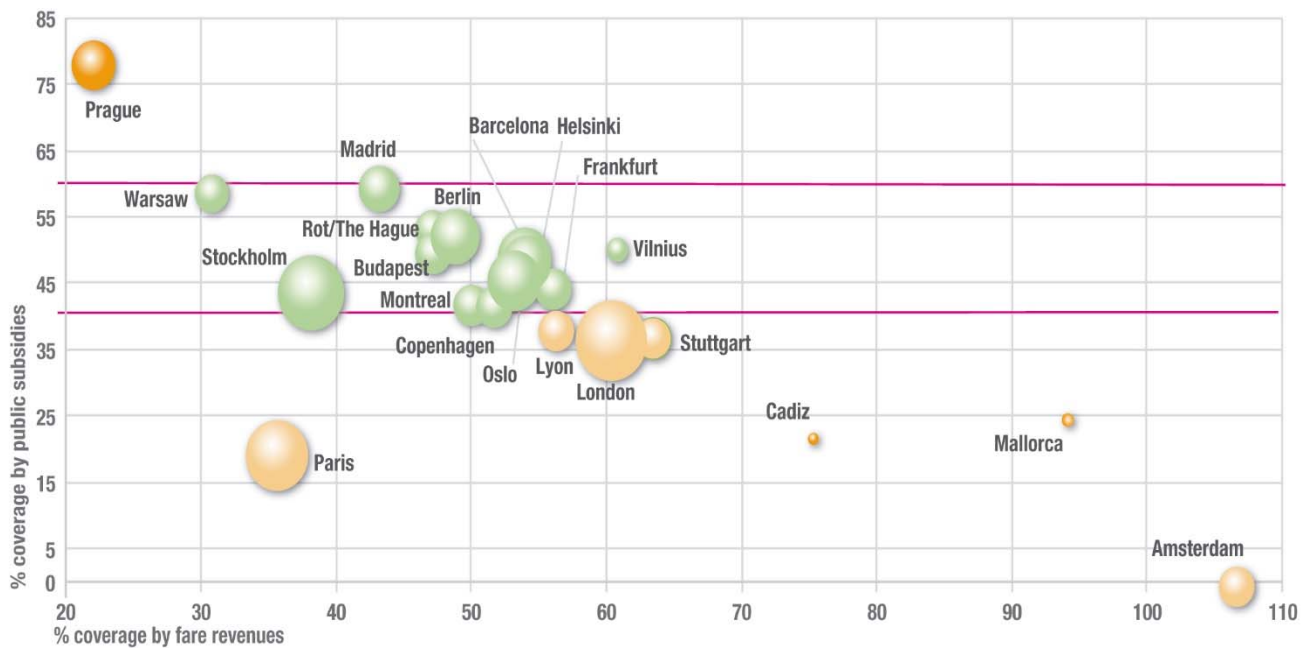
18. Coverage of operational costs

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 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% 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.

Vervoerregio Amsterdam is an special case in which the revenues from ticket sales are higher than the yearly costs of operations.

Coverage of operational costs

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

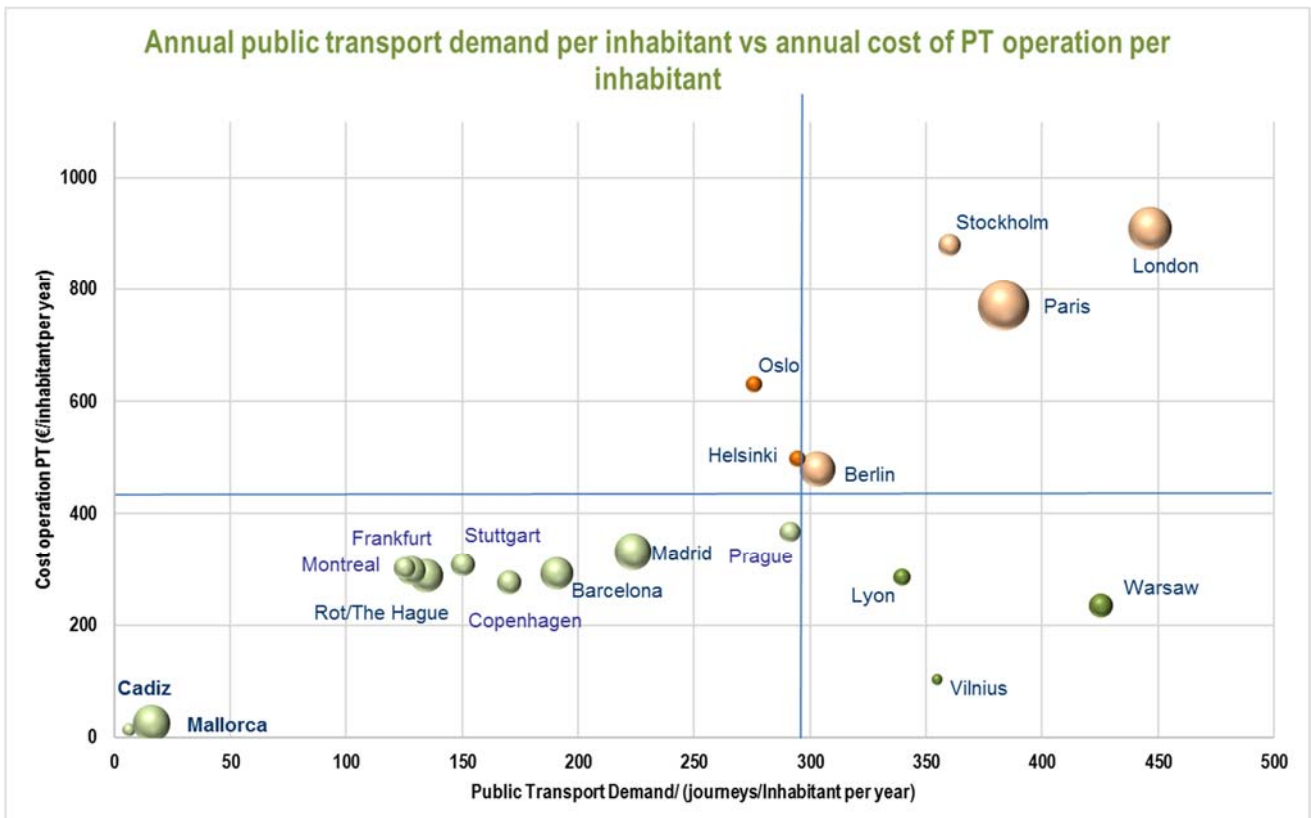


T26. Coverage by public subsidies vs coverage by fare revenues per PTA area inhabitants

19. 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 909 € per year per head for subsidizing the public transport system but we have to sign that in Greater London a 30% from the total number of boardings 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 2015.



T27. Annual public transport demand per inhabitant vs annual cost of PT operation per inhabitant



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GENERAL TENDENCIES AND CONCLUSIONS

The Barometer 2016 provides information on how organizing 25 European public transport authorities plus Montreal perform and how their economic and social development is affected by fares and prices, operational costs and capital investment in the public transport system.

Data gathered and presented in this report shows that overall, public transport demand is on a growing trend, though increasing at a slower pace than the growth of the urban population. This fact alone should be a concern to PTA's to put this trend in urban mobility to the top of the agendas of urban transport politicians.

Analyzing the main tendencies in the last years (2013-2016) we can draw some conclusions on the following parameters:

Population:

- Main cities are losing inhabitants with a tendency of a 6% whilst metropolitan areas as a whole are increasing with a tendency of a 3%.
- In the last 10 years on average the population has continued to grow at a similar pace.
- The average annual GDP per inhabitant has seen a strong increase in 2016 (4%) unlike the decline we suffered in 2015..

Mobility and demand:

- The mean number of trips per inhabitant per day in the PTA area continues to rise at a very shy trend, higher than the increase in inhabitants in such areas.
- Regarding demand, it seems that in 2016 the trend changes and begins to rise in the PTA as a whole.

Supply:

- The bus and tram network length average has risen in the last four years from 1,455 to 2,028 kilometers for urban buses; 5,957 to 9,588 kilometers for suburban buses; and 105 to 115 kilometers for trams.

Service quality:

- No changes in the level of commercial speed is visible but it is significant that all the PTA have invested on covered with SMS or mobile real time information systems the bus stops and train or metro stations in the last years.

Fleet:

- In term of sustainable combustion, the main variation is that transport operators continue betting on a decrease in the use of diesel as the main fuel towards other less polluting modes such as CNG, hybrid or full electric.

Park & Ride:

- The number of park & ride facilities has remained steady in the last years without any significant changes in the number of parking spaces.

Fares:

- The fares for the single trip tickets in the main cities continue to rise moderately, 2.17 € in 2014 to 2.31 € in 2016 however, remarkably in the PTA areas has maintained, 3.9 € (2014 and 2016).
- The average price for the main city monthly pass continues going down from 69.00 € (2013) to 55.8 € (2016).

Financial:

- The different concepts related with financial and operation (costs, coverages, subsidies...) have not suffered any notable changes.

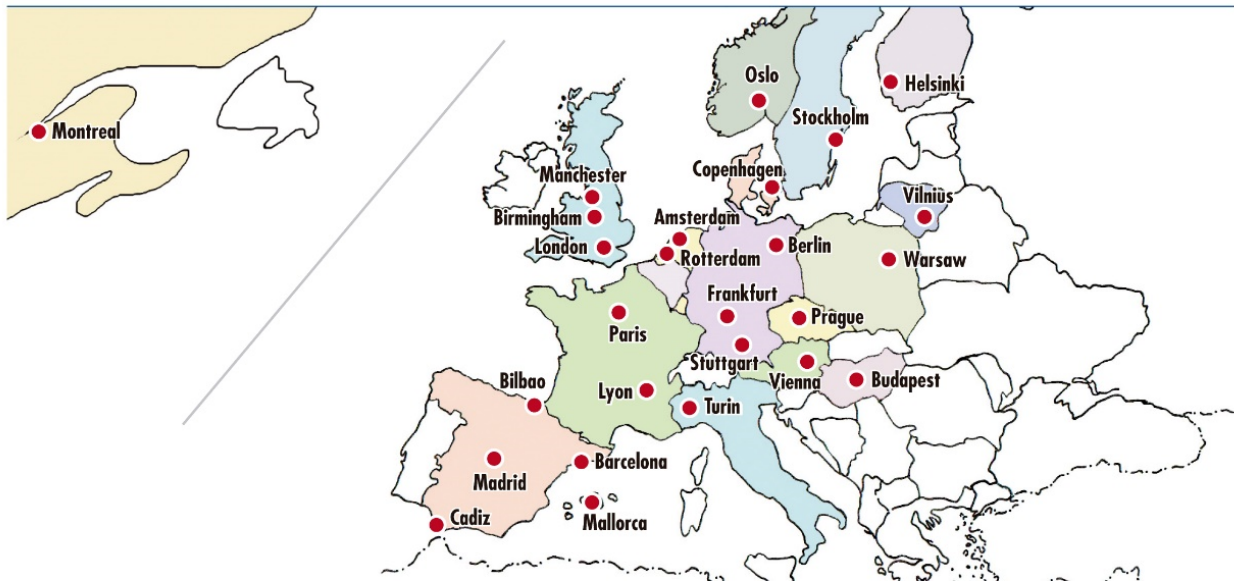
Finally, the 2016 EMTA Barometer collected 200 indicators per each PTA, which allows us to establish a “standard” for a city, or a metropolitan area that mirrors the average PTA associated with EMTA. Seven indicators, out of 200 indicators, have been selected that could be considered the most prevalent and best suited for comparison between all the metropolitan areas. They represent general elements in public transport mobility: urbanization, mobility, demand, fares and financial indicators. Conversely, other values do not allow to deduce a standard value, such as inhabitants, areal size and GDP. In fact, social and geographical conditions in each metropolitan area and the network characteristics remain very different from one to another. What matters most is the collection of homogenous values that all might have relevance to the contribution of a smart and more sustainable mobility pattern and play a vital part in the enhancement of the capacity and quality of metropolitan and urban public transport systems.

The most relevant standardized values obtained from the PTA areas in this 2016 Barometer are similar than in 2015:

Urban density (inhabitants/urbanized PTA area km ²)	4,000 – 4,500
Mean number of trips per person and day	2.8 – 2.9
Modal share of sustainable transport modes	50% - 60%
Boarding/ year per inhabitant	275 – 300
Monthly pass / monthly GDP per capita (main city/PTA)	1.8% / 2.8%
Yearly cost of operations of public transport per inhabitant	350 € - 400 €
Coverage of operational costs by public subsidies	45% - 55%



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<p>VERVOERREGIO AMSTERDAM (VA)</p>  <p>www.stadsregioamsterdam.nl</p>	<p>AUTORITAT DEL TRANSPORT METROPOLITÀ (ATM) BARCELONA</p>  <p>www.atm.cat</p>	<p>VERKEHRSVERBUND BERLIN-BRANDENBURG (VBB)</p>  <p>www.vbb.de</p>	<p>CONSORCIO DE TRANSPORTES DE BIZKAIA (CTB) BILBAO</p>  <p>www.cotrabi.com</p>	<p>WEST MIDLANDS INTEGRATED TRANSPORT AUTHORITY (WMITA) BIRMINGHAM</p>  <p>www.wmita.org.uk</p>	
<p>BUDAPESTI KÖZLEKÉSESI KÖZPONT (BKK)</p>  <p>www.bkk.hu</p>	<p>CONSORCIO METROPOLITANO DE TRANSPORTES DE LA BAHÍA DE CÁDIZ</p>  <p>www.cmtbc.es</p>	<p>TRAFIKSELSKABET MOVIA COPENHAGEN</p>  <p>www.moviatrafik.dk</p>	<p>RHEIN-MAIN VERKEHRSVERBUND FRANKFURT</p>  <p>www.rmv.de</p>	<p>HELSINGIN SEUDUN LIKENNE</p>  <p>www.hsl.fi</p>	
<p>TRANSPORT FOR LONDON</p>  <p>www.tfl.gov.uk</p>	<p>SYNDICAT MIXTE DES TRANSPORTS POUR LE RHÔNE ET L'AGGLOMÉRATION LYONNAISE</p>  <p>www.sytral.fr</p>	<p>CONSORCIO REGIONAL DE TRANSPORTES DE MADRID (CRTM)</p>  <p>www.crtm.es</p>	<p>CONSORCI TRANSPORTS MALLORCA, TRANSPORTS ILLES BALEARS</p>  <p>www.tib.org</p>	<p>TRANSPORT FOR GREATER MANCHESTER (TFGM)</p>  <p>www.tfgm.com</p>	
<p>AGENCE MÉTROPOLITAINE DE TRANSPORT DE MONTREAL (AMT)</p>  <p>www.amt.qc.ca</p>	<p>RUTER OSLO</p>  <p>www.ruter.no</p>	<p>SYNDICAT DES TRANSPORTS D'ÎLE-DE-FRANCE, PARIS (STIF)</p>  <p>www.stif.info</p>	<p>REGIONAL ORGANIZER OF PRAGUE INTEGRATED TRANSPORT (ROPID)</p>  <p>www.ropid.cz</p>	<p>METROPOOLREGIO ROTTERDAM DEN HAAG (MRDH)</p>  <p>www.mrdh.nl</p>	
<p>STOCKHOLMS LOKALTRAFIK AB STOCKHOLM (SL)</p>  <p>www.sl.se</p>	<p>VERBAND REGION STUTTART (VRS)</p>  <p>www.region-stuttgart.de</p>	<p>AGENZIA MOBILITÀ METROPOLITANA DI TORINO (AMMT)</p>  <p>www.mtm.torino.it</p>	<p>VERKEHRSVERBUND OST-REGION WIEN (VOR)</p>  <p>www.vor.at</p>	<p>SUSISIEKIMO PASLAUGOS VILNIUS (MESP)</p>  <p>www.vilniustransport.lt</p>	<p>ZARZAD TRANSPORTU MIEJKIEGO WARSZAWIE (ZTM)</p>  <p>www.ztm.waw.pl</p>