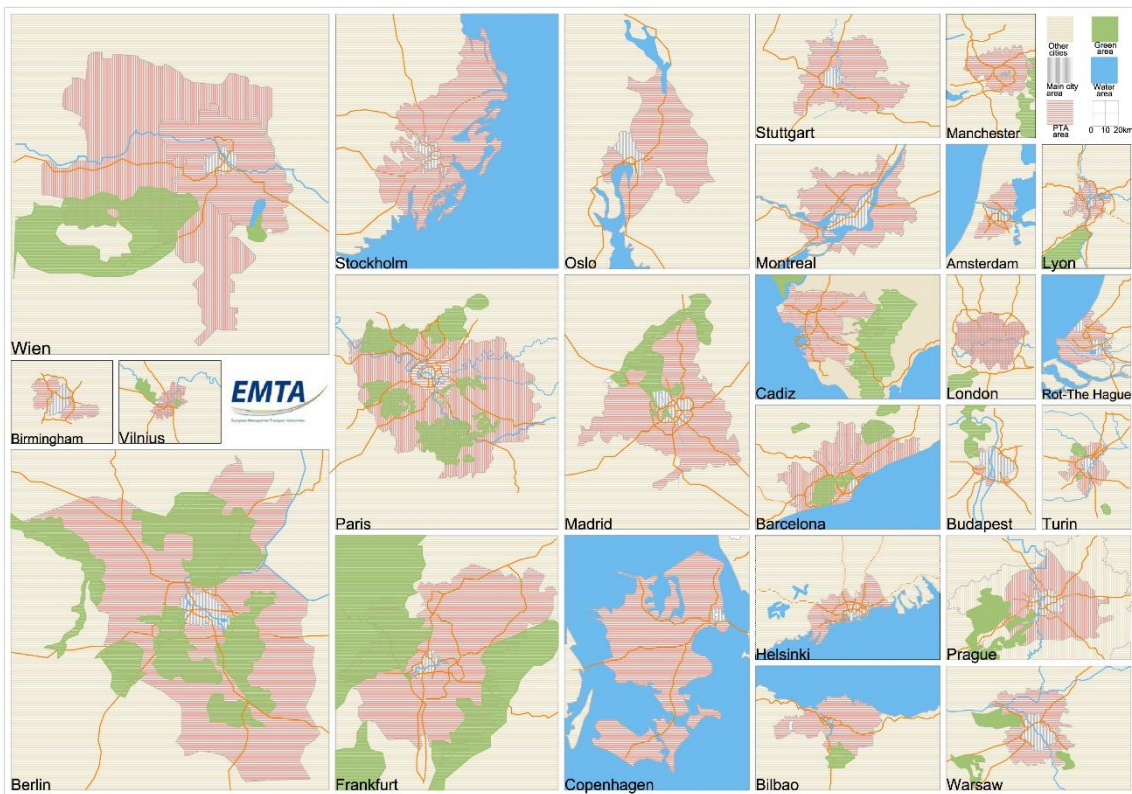


2015 Barometer

11 th edition



The EMTA Barometer is produced by CRTM Madrid



FOREWORD

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.

Ruud van der Ploeg, EMTA Secretary general



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GENERAL INFORMATION

1. Public transport authorities' partners



Vervoerregio Amsterdam is the new name of Metropolitan 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 new 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.



© VA

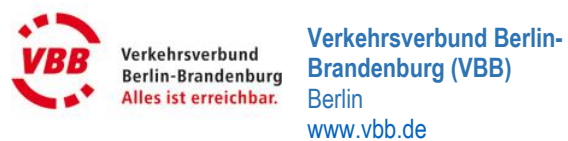


Autoritat del Transport Metropolità (*Metropolitan Transportation Authority*), shortened as ATM, is the organization in charge of the coordination of several public transportation systems in the city of Barcelona, its metropolitan area and other regions under its influence, including the setting of a shared fare, as well as the management, planning and/or construction of infrastructure for the global network. ATM is also in charge of the Mobility Master Plan of the Barcelona Region which establishes the

mobility and environmental targets to be attained at regional and municipal scale.



© ATM



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



© VBB-Carsten Doernbrack





ctb

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

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.



centro
transforming public transport

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

The West Midlands Integrated Transport Authority (ITA) is responsible for formulating the transport strategy and policy for the Metropolitan Area; incorporating strategic highways, freight, rail, bus and rapid transit networks. Centro's role is to deliver the major public transport schemes and ensure improvements to bus, rail and tram services which people use every day. Centro works in partnership with bus operators, train operators and Midland Metro.



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.



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

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

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. It is a key contributor to the development of the Rhine/Main area as a pulsating metropolitan region.





HSL
HRT

Helsingin Seudun
Liikenne
Helsinki
www.hsl.fi

Helsinki Regional Transport Authority (*Helsingin seudun liikenne, HSL*) began its work on January 1, 2010. The work of the new intercommunal authority is based on the new Finnish public transportation law in force since December 3, 2009. HSL is one of the largest intercommunal bodies in Finland, having 1.1 million people in its area of influence. According to the law HSL is responsible for the planning and procuring of the public transportation in Greater Helsinki. The traffic functions of YTV and planning, procuring and tendering functions of HKL were moved into the transport authority.



**TRANSPORT
FOR LONDON**
EVERY JOURNEY MATTERS

Transport for London
London
www.tfl.gov.uk

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.



© TfL-Michael Garnett



**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.



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

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.



Transport for
Greater Manchester

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

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.



Agence métropolitaine de transport de Montreal (AMT)
Montreal
www.amt.gc.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 #
Kollektivtrafikk for Oslo og Akershus
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.



Syndicat des transports d'Île-de-France, Paris (STIF)
Paris
www.stif.info

STIF designs, organizes and finances the public transport for all Île-de-France inhabitants. At the heart of the Île-de-France public transport network, STIF brings together all stakeholders (passengers, elected representatives, manufacturers, transport operators, infrastructure managers ...), invests and innovates in order to improve the service offered to passengers. STIF, which consists of the Île-de-France Region, the City of Paris and the seven other Île-de-France 'départements', is the body that lays out the vision for all transport in Île-de-France (railway, RER, metro, trams, T Zen and buses). It is therefore responsible for

initiating and managing projects aimed at developing and modernising all the transport systems, the operation of which it entrusts to transport operators. STIF is responsible for balancing transport costs in Île-de-France, manages the operating budget (EUR 9.242 billion in 2014) and is involved in funding investments (renovating and ordering new trains, underground trains, buses, RER, trams; road and rail infrastructures...). STIF is responsible for producing the tickets and setting the fares.



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.



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.





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

Storstockholms Lokaltrafik AB, (Greater Stockholm Local Transit Company), commonly referred to as SL, is the organization running all of the land based public transport systems in Stockholm County. SL has its origins in AB Stockholms Spårvägar (SS), a city-owned public transit company which started in 1915 by the City of Stockholm with the aim to deprivatize the two separate private tramway networks into one more efficient company. In 1993 SL began to use independent contractors for the operation and maintenance of the different transport systems. For bus traffic the operators own the buses, but for rail bound traffic the SL own the trains, and the contractors operate them.

includes 1,206 municipalities and a population of more than 4 million inhabitants.



© AMM



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

Founded in 1994, the Verband Region Stuttgart is the political entity for the Stuttgart Region with its own regional parliament which is elected every five years. The Verband works for a sustainable and a future-oriented development of the Stuttgart Region. 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 such things as the suburban railway system, and the new express bus services. Seamless tariffing allows passengers to use one ticket for all buses and trains in the Stuttgart public transport area. The new "polygo" travel card will extend services to include car sharing, e-mobility, and bike rentals.



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

Austria's Eastern Region Travel Association (Verkehrsverbund Ost-Region Gesellschaft m.b.H., VOR) offers a coordinated range of public transport options in Austria's eastern region (Vienna, Lower Austria and Burgenland). At the intersection between passengers, transport companies, regional authorities and political bodies, VOR ensures that all current mobility requirements, both in urban and rural areas, are met systematically and with a high standard of quality. As Austria's oldest and largest transport association, VOR has been uniting rail transport operators and bus companies into a transport association for about 3.7 million inhabitants since 1984. The VOR network comprises about 900 lines with roughly 11,500 stops in Vienna, Lower Austria and Burgenland. In 2014, more than 1 billion passengers used the public transport services in Austria's eastern region. At the intersection between passengers, transport companies, regional authorities and political bodies, VOR pursues the advancement of the region's mobility services, well beyond the mere organization of public transport. Comprehensive and intermodal mobility as well as efficient and sustainable planning of public transport are among VOR's principal concerns and pursuits. To ensure a wide range of public transport services within the region, VOR orders and appoints, within the scope of public tenders, the necessary bus connections. VOR thereby acts as the principal client of most public transport companies in Vienna, Lower Austria and Burgenland and as the clearing house for the revenue breakdown between VOR partners.



Agenzia per la Mobilità Metropolitana di Torino (AMMT)
 Torino
www.mtm.torino.it

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





**Susisiekimo Paslaugos
(MESP)**
Vilnius
www.vilniustransport.lt

Municipal Enterprise 'Susisiekimo paslaugos' was founded on August 15, 1998, by Municipal Council. It is a local public transport authority responsible for the organization of the public transport in Vilnius city, maintenance of routes' network, scheduling, issuing and selling of public transport tickets, ticket inspection of the passengers, maintenance of information system for passengers, gathering and analyzing data on passenger carriage within the city, management of parking system and traffic management centre.



PUBLIC TRANSPORT AUTHORITY
OF WARSAW

**Zarząd Transportu
Miejskiego w Warszawie
(ZTM)**
Warsaw
www.ztm.waw.pl

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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11 th edition EMTA Barometer 2015

Produced by



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	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	1,215,442	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	2,231,439	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 €

T1. PTA urban description

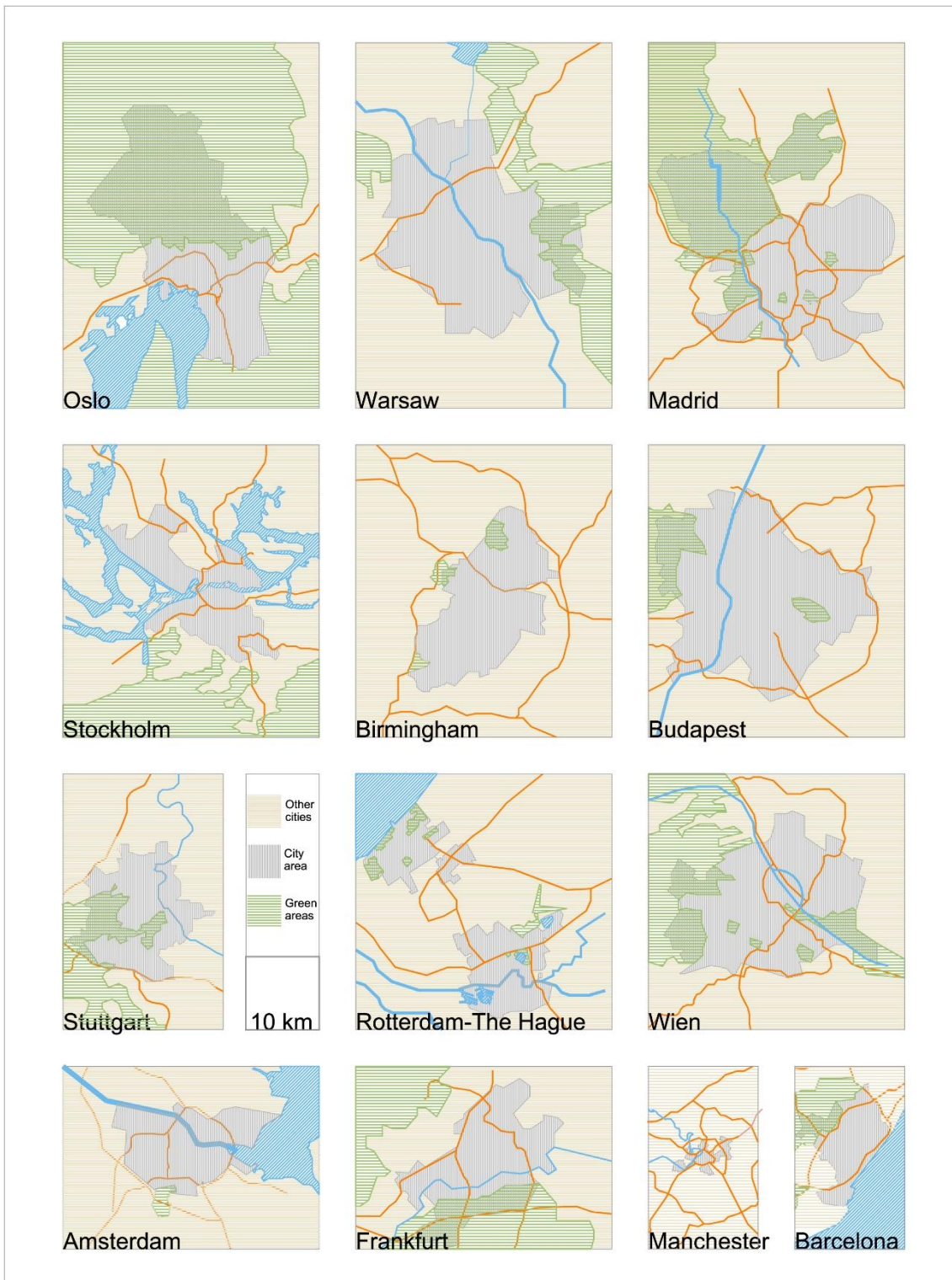
(1) PTA: Public transport authority (2) GDP: Gross domestic product

The EMTA Barometer periodically allows a comparison of the public transport system between 25 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 mobility in an urban territory. A quick look to authorities as diverse as STIF (Paris) and CMTBC (Cadiz Bay), showcase the extremes of the smallest and largest of cities features, without any assessment as to the significance of each urban transport network.

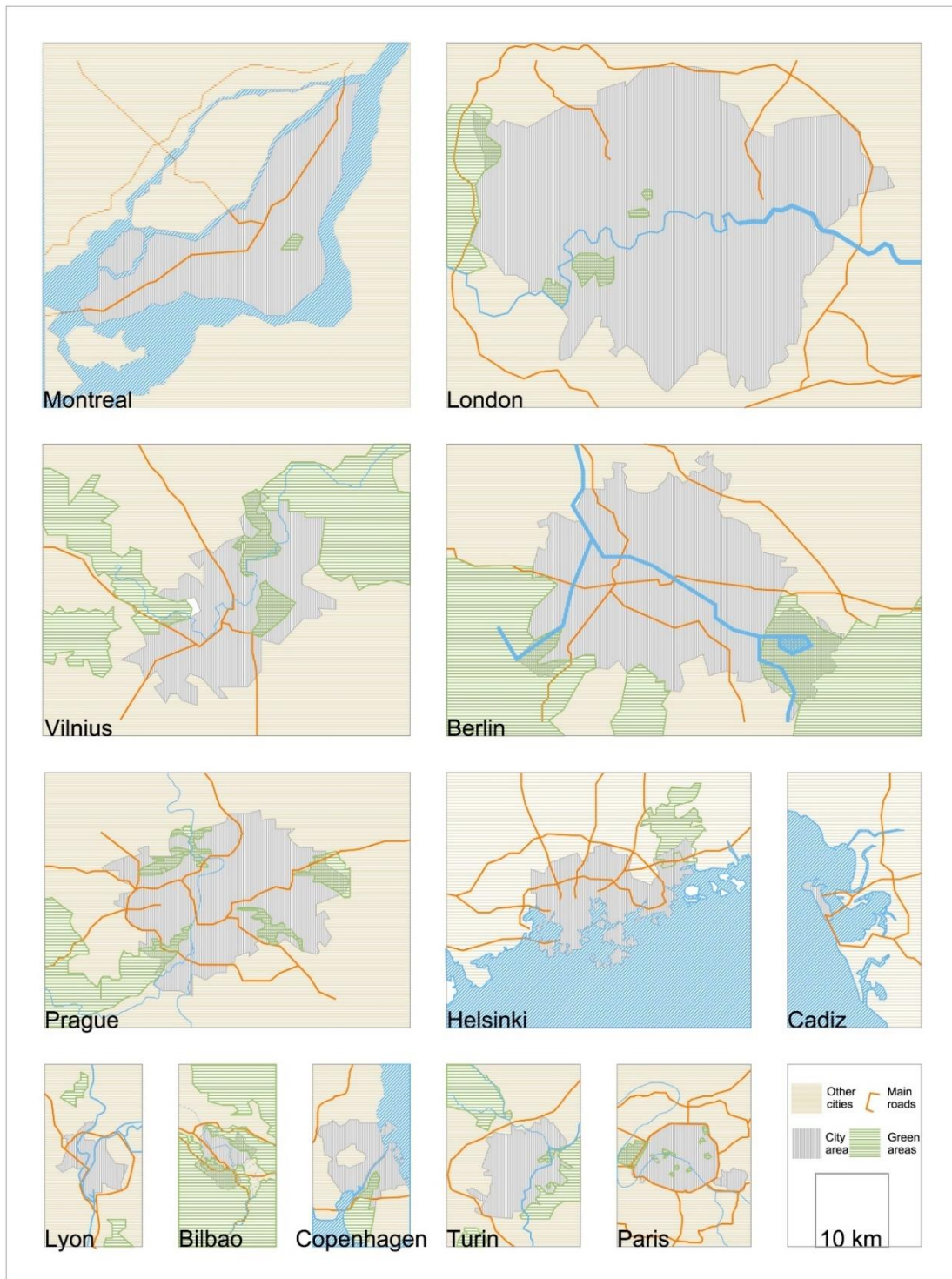
PTA	PTA area (km ²)	Population	Demand/year (million)	Annual operation cost/inhabitant (€)
Grand Paris- Ile de France	12,000	12,073,914	4,541	779
Cadiz Bay	3,191	820,906	5.17	14
Barometer average	5,649	3,315,924	1,035	378

The following maps represent main cities limits and the total administrative area of each PTA, in order to be able to locate and understand the values expressed in the current 2015 Barometer.

3. City limits and surroundings

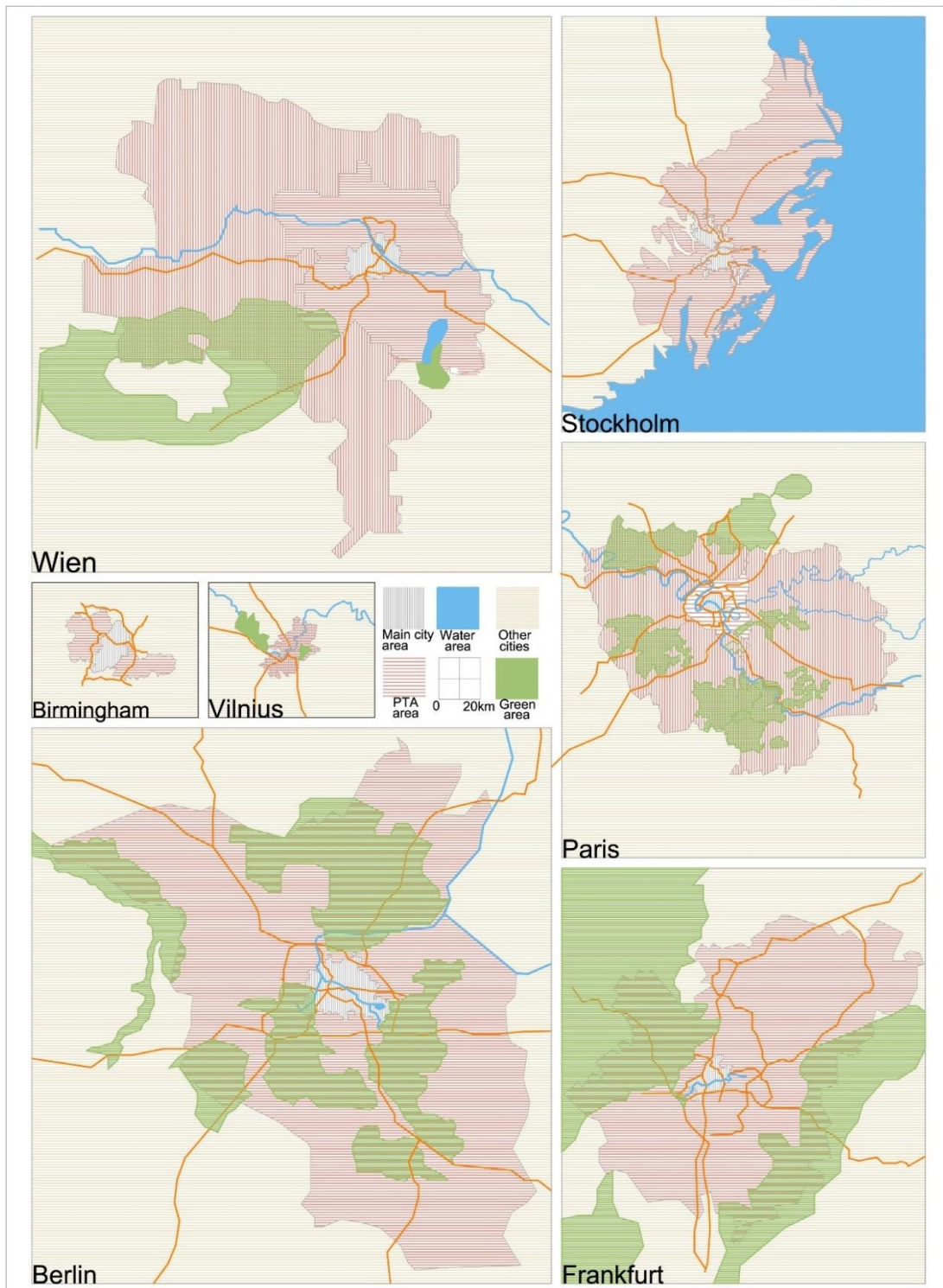


T2. Cities limits and surroundings 1

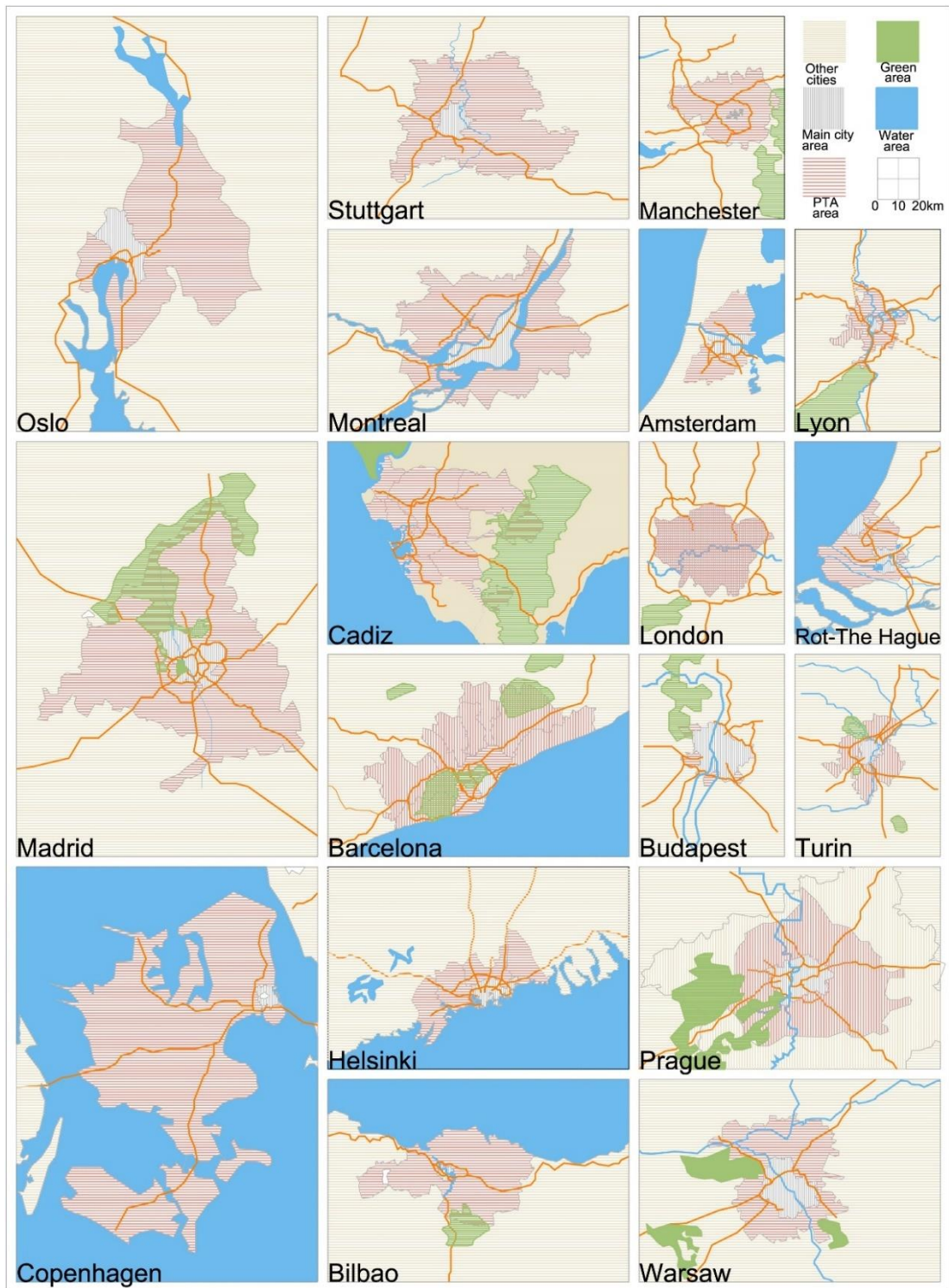


T3. Cities limits and surroundings 2

4. PTA limits and main city shape



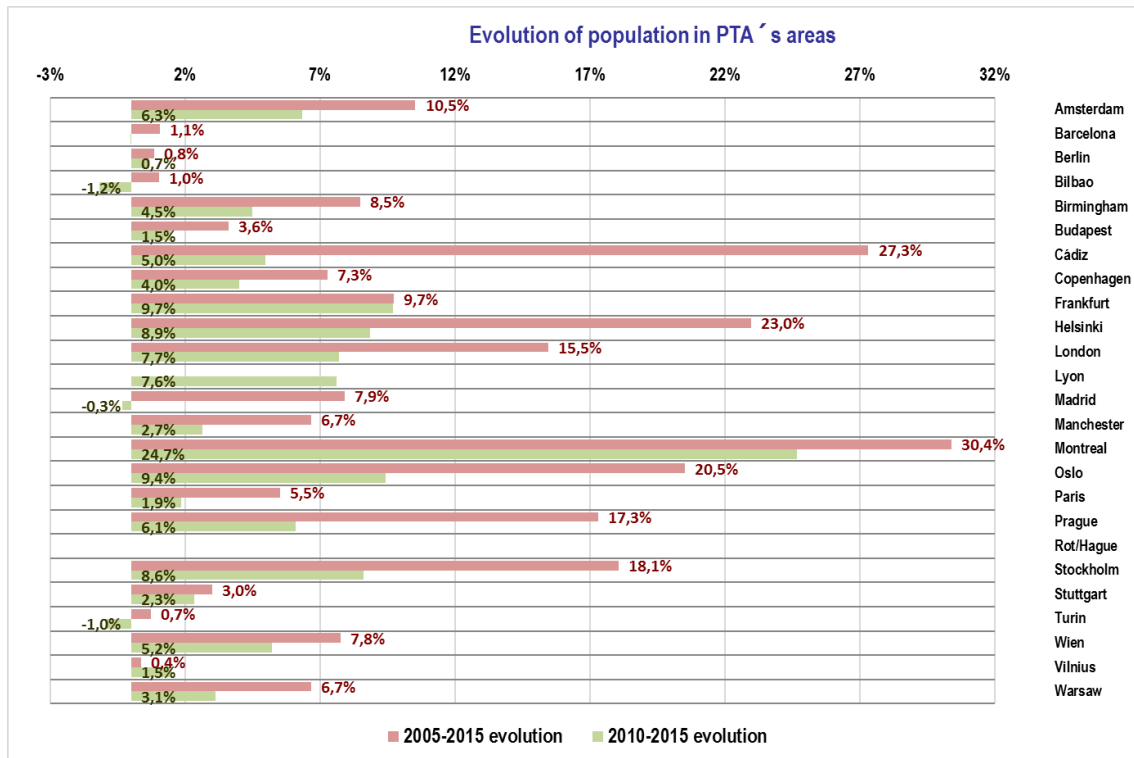
T4. PTA limits and main city shapes 1



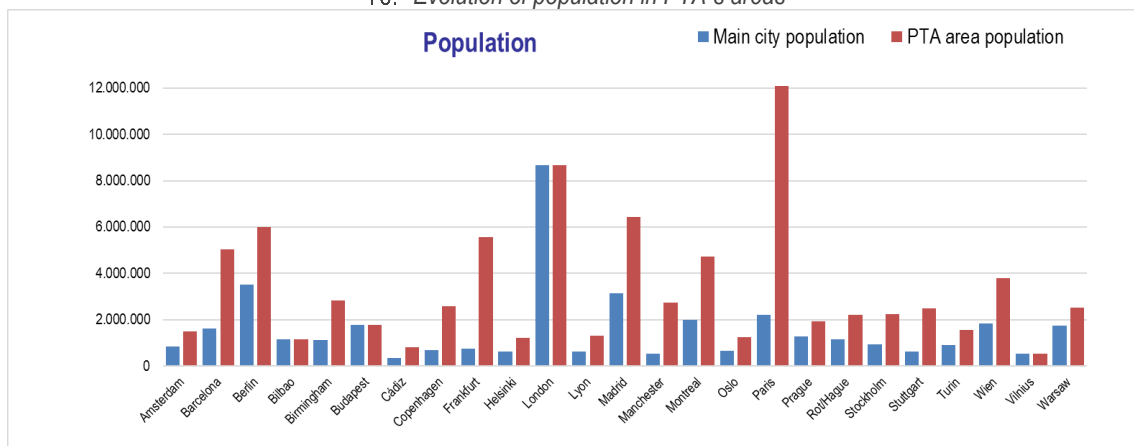
T5. PTA limits and main city shapes 2

5. Evolution of population in PTA's areas

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.



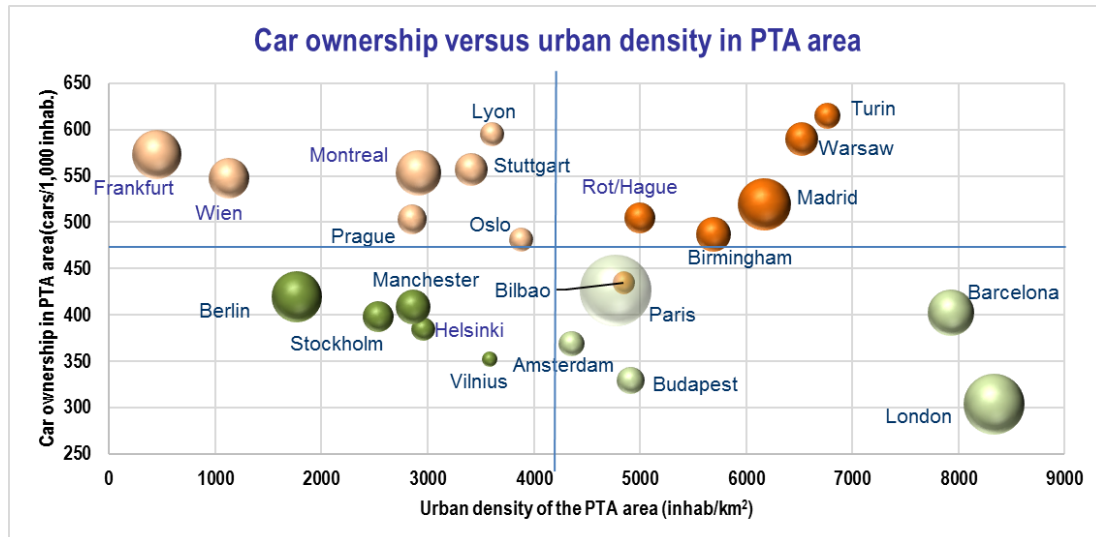
T6. Evolution of population in PTA's areas



T7. Population in main cities and PTA's areas

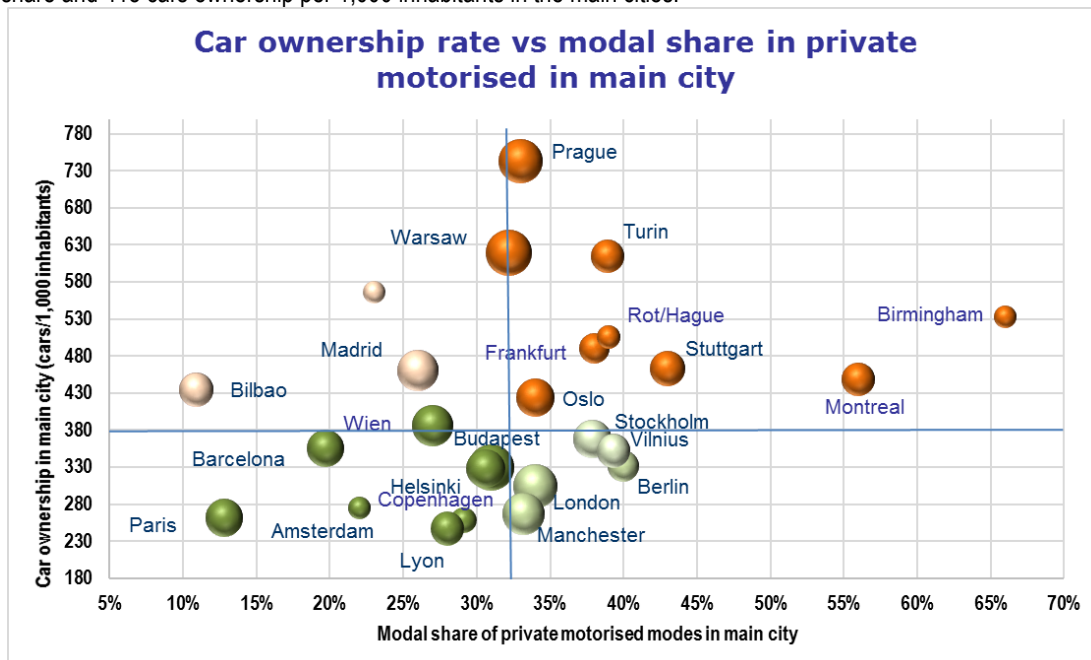
6. Car ownership rate

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/km². Two PTA areas (Barcelona and London) cover close to 8,000 inhabitants/km² (urbanized area/population), having double the density of an average PTA (4,261 inhabitants/km²). 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.



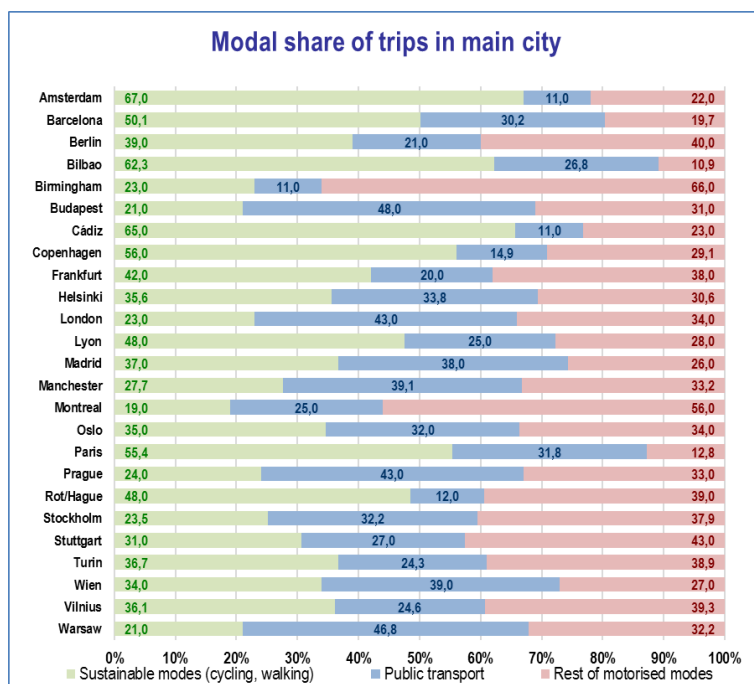
T8. Car ownership versus urban density in PTA area

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.

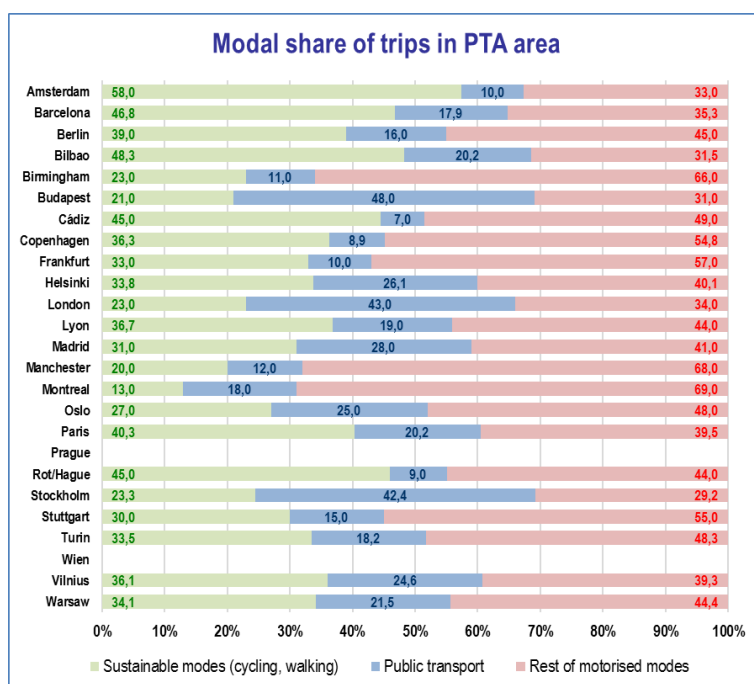


T9. Car ownership versus modal share in private motorized in main city

7. Modal share in main cities & metropolitan areas



T10. Modal share of trips in main city



T11. 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 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%.

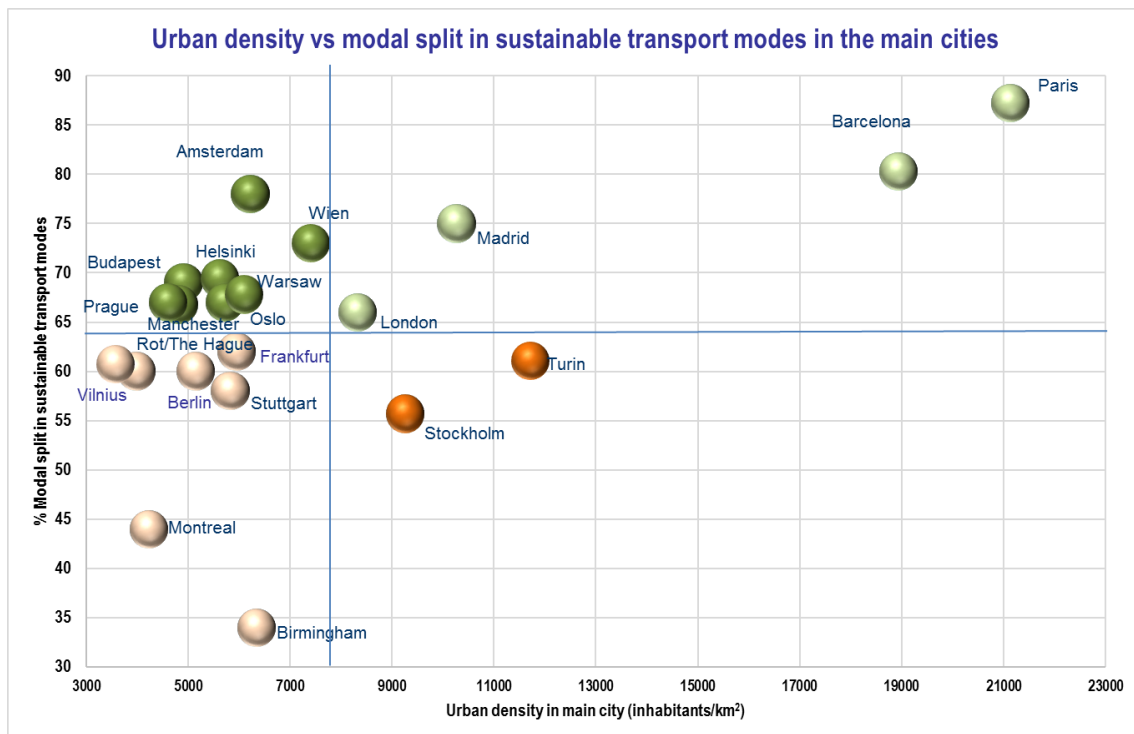
It is also remarkable the use of walking in cities like Barcelona, Bilbao, Copenhagen, Frankfurt, Lyon and Paris where they have more than a 40% of the total modal share. The median in the main cities is 31% and in the PTA areas 28%.

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.

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

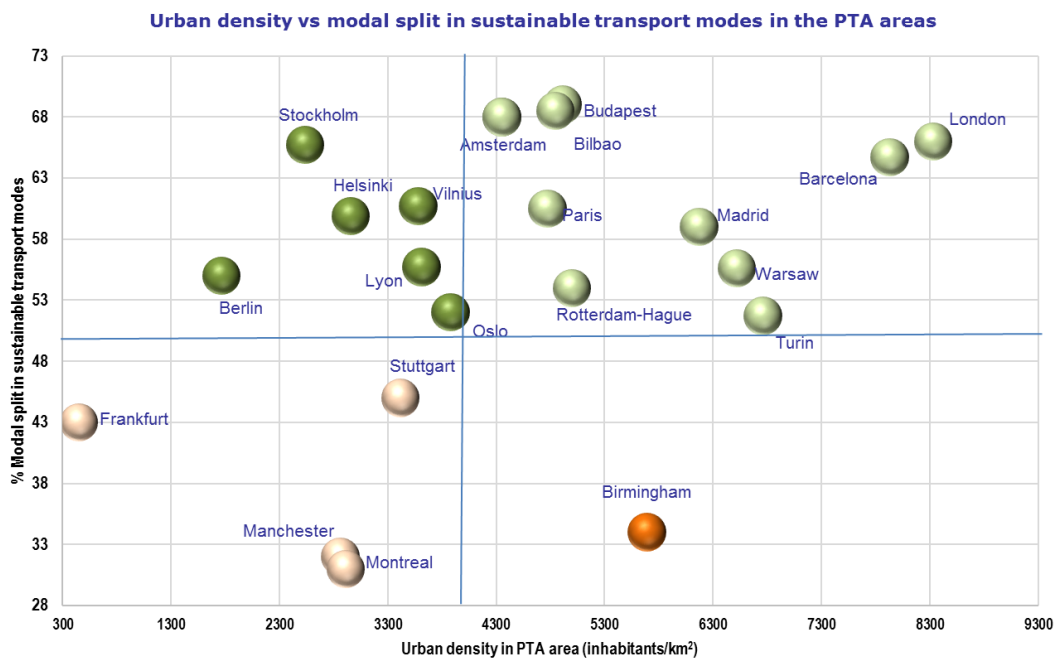
The following graphic displays the share of total daily trips by sustainable modes –walking, cycling and public transport– explained by urban population density in the main city. As we have seen previously, the average of the modal share of sustainable transport modes in main cities is 66.8% (68% in 2014) and the average of urban density (inhabitants/square kilometer) in main cities is 7,626 (8,012 in 2014) inhabitants/km² of urbanized area. London with a value of 66.00% and 8,331, respectively, represents again the median city for this concept. Only five cities have an upper limits density higher than average, i.e. Stockholm, Madrid, Turin, Barcelona and Paris. This last one and Barcelona are in the upper urban density score with 21,128 and 18,936 inhabitants/km² respectively. On the other hand, Birmingham represents the lower limit in modal split of sustainable transport modes with a 34%. The majority of the remaining PTA's vary between 55% and 70% of sustainable transport modes share.



T12. 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 kilometer) 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 4,129 inhabitants/km² (54% of the ratio in the main cities) and the share of use of sustainable transport modes (walking, cycling and public transport) is 49.9% (52.7% in 2014). Barcelona and London have highest urban PTA area density (population/urbanized PTA area), and a high rate of sustainable modes. A particularly significant case is displayed in Frankfurt, where we see a 43% use of sustainable modes with a very low urban density (449,7), whilst Frankfurt, Greater Manchester, Montreal, Stuttgart and Birmingham account for a low rate of sustainable transport modes compared to the average (50% and 4,129).

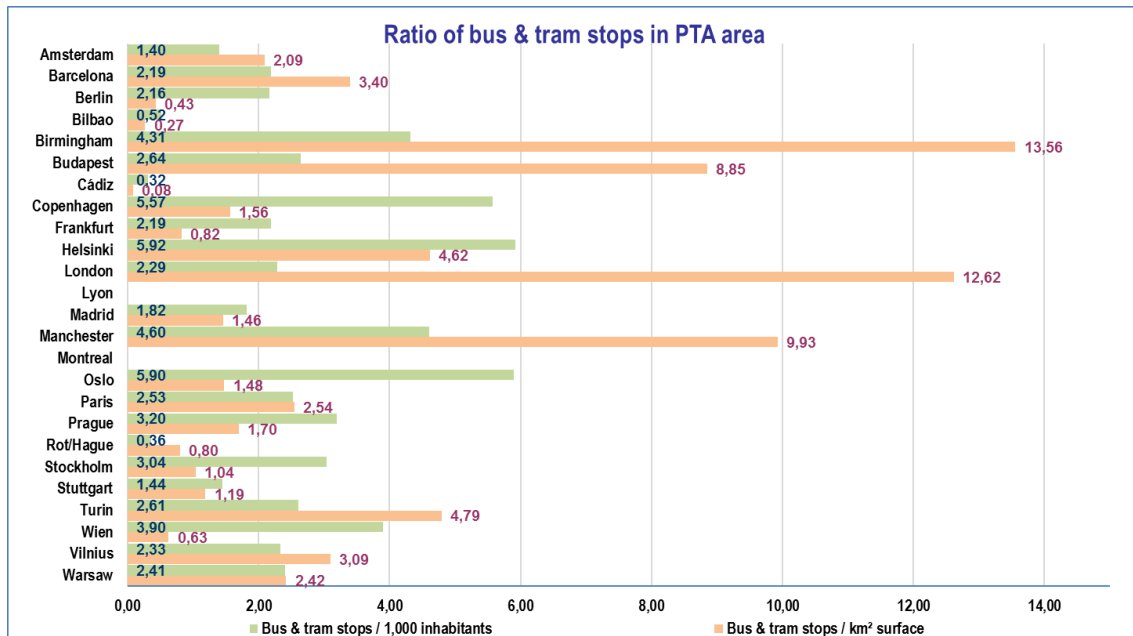


T13. Urban density vs modal split in sustainable transport modes in the PTA areas

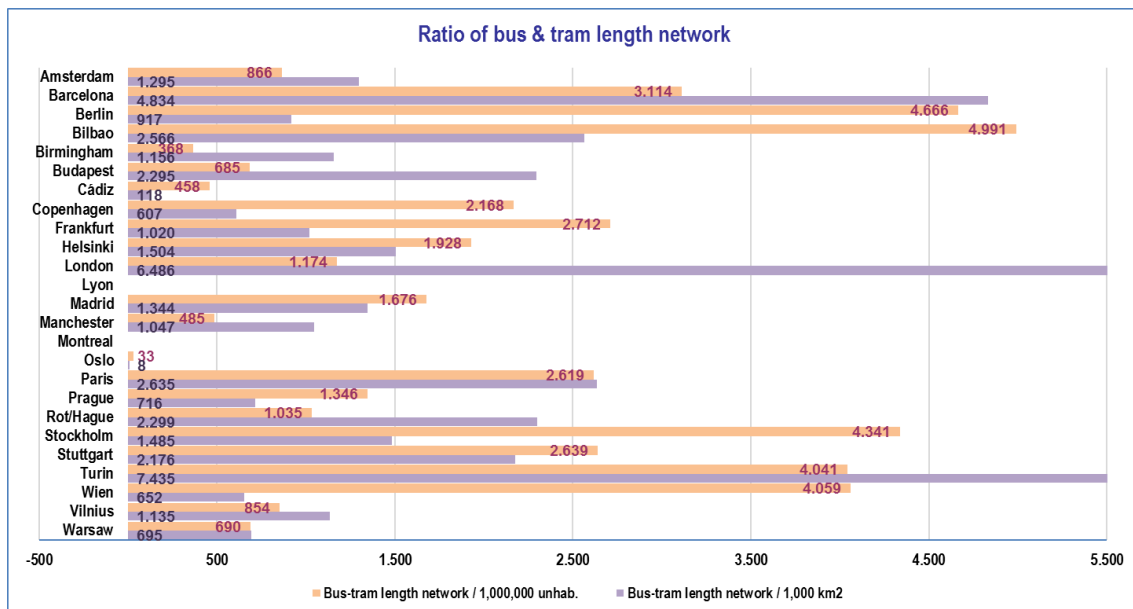
The colors of the balls used in this graphic represent the cities that are below or above both averages (4,129 inhabitants/km² of urbanized area and 49.9% of sustainable transport modes). In this sense, is remarkable the PTA areas that have low urban density values with high shares in sustainable transport modes.

10. 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).



T14. Ratio of bus & trams stops in PTA areas

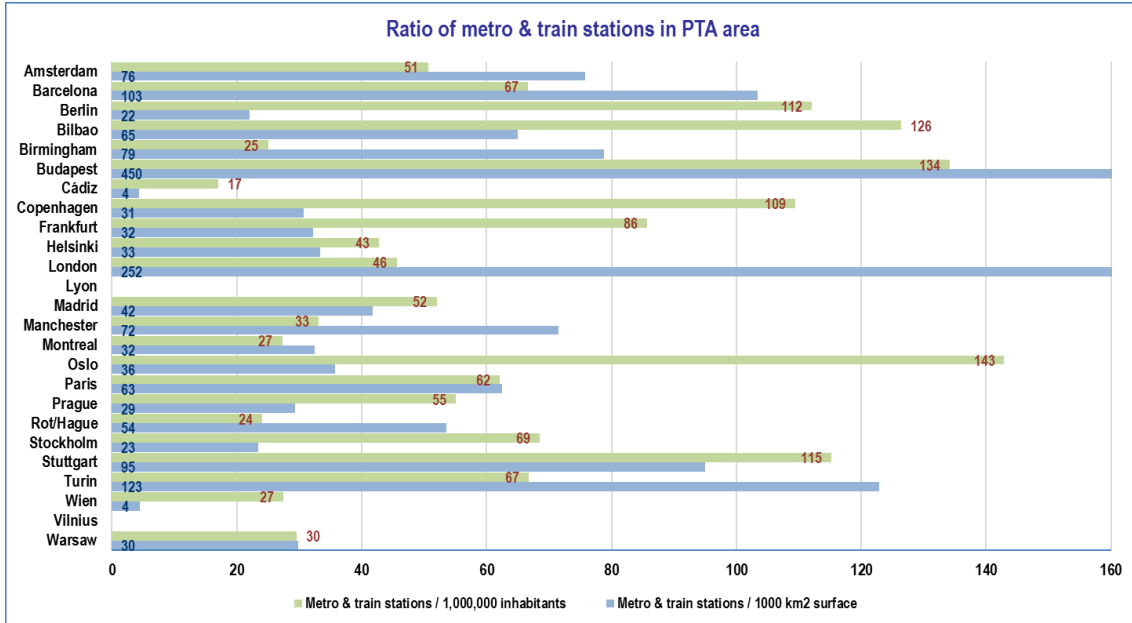


T15. Ratio of bus & tram length network

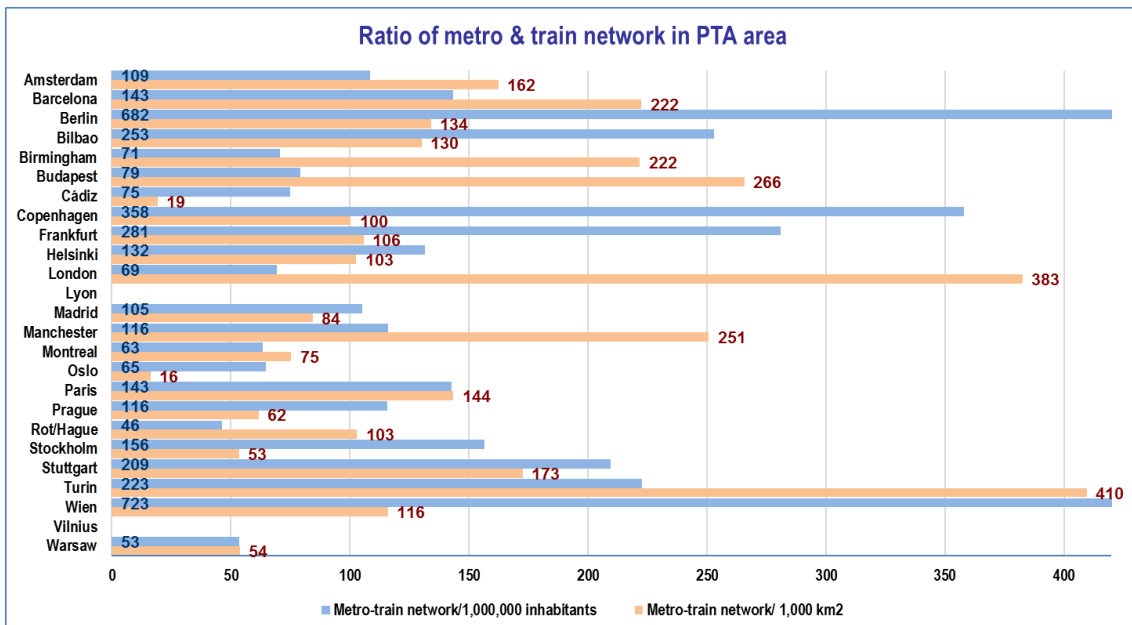
Oslo is lacking bus network. That explains their extremely low level.

11. Ratio of metro and train stations and length network

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).



T16. Ratio of metro & commuter train stations in the PTA area

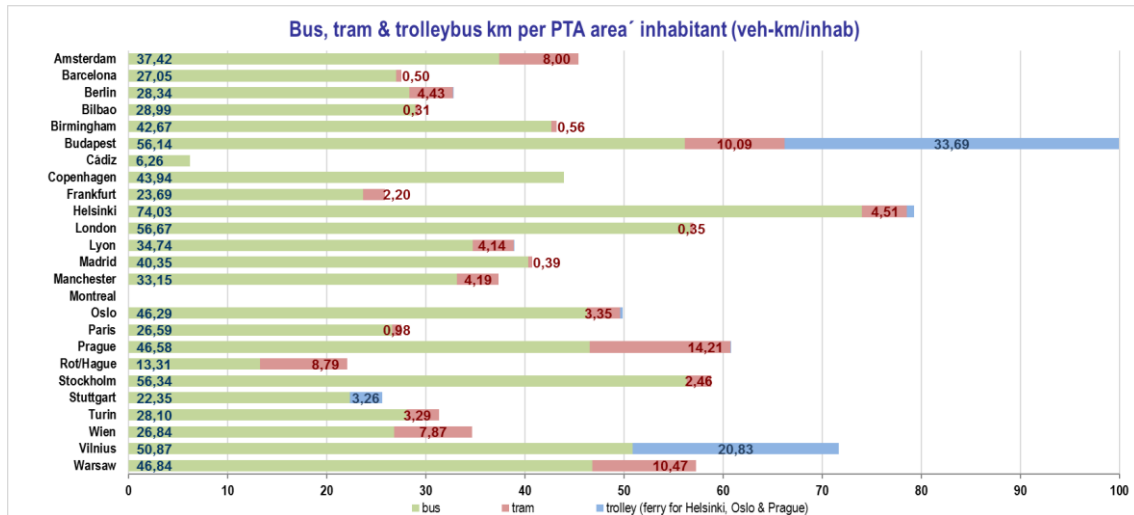


T17. Ratio of metro & commuter train network length in the PTA area

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

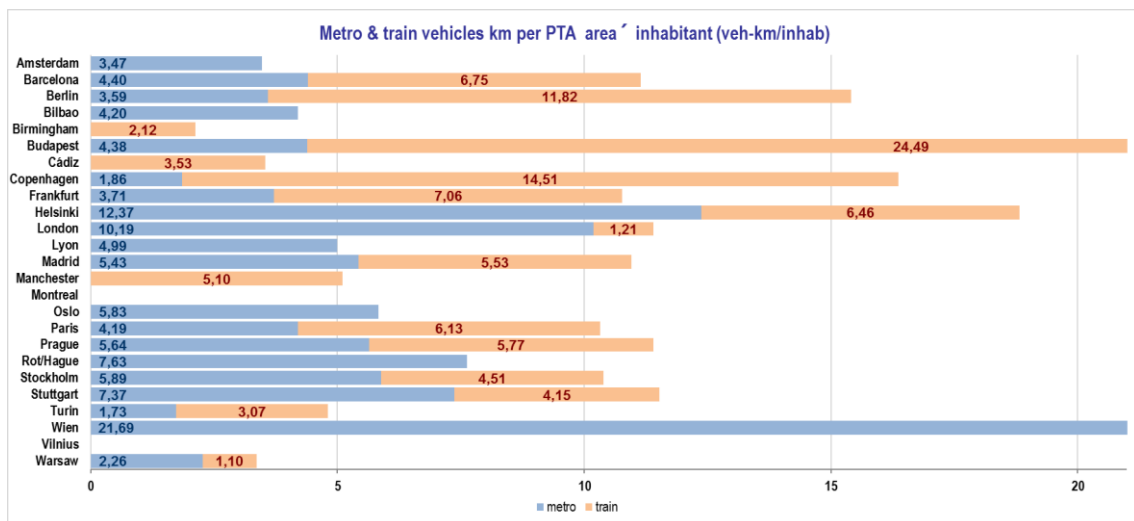
12. Vehicles-km per inhabitant and PTA area

The average number of bus-km per one million inhabitants is 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).



T18. Bus, tram & trolleybus km per PTA area inhabitant

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.

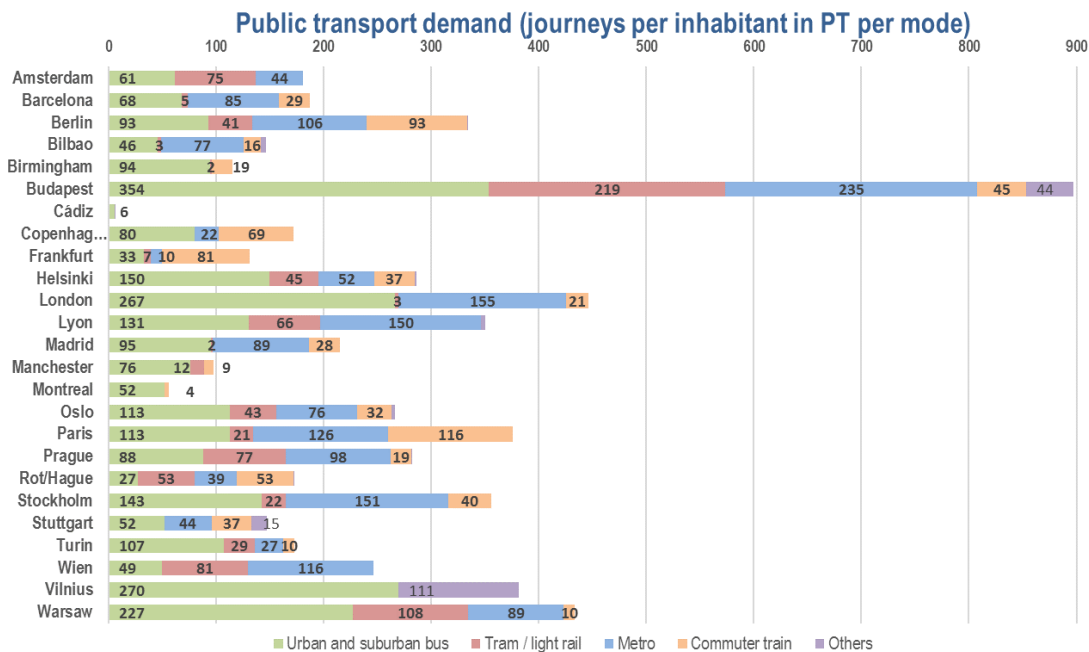


T19. Metro and commuter train vehicles km per PTA area inhabitant

Oslo is lacking vehicle-km for train.

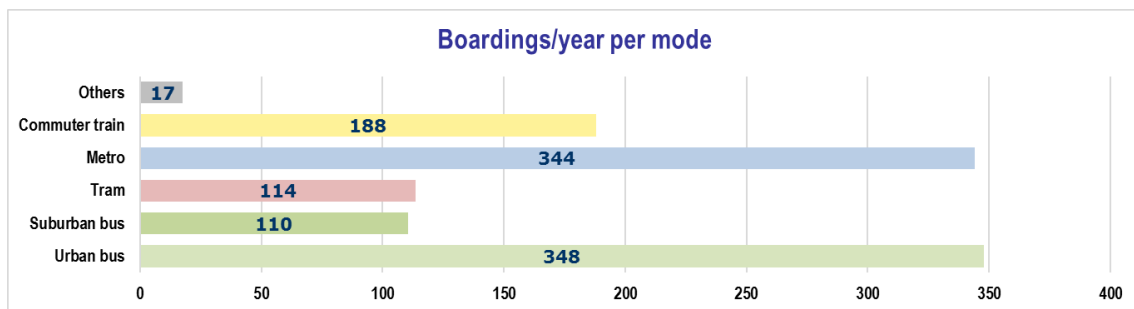
13. Public transport demand per inhabitant in PTA areas

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).

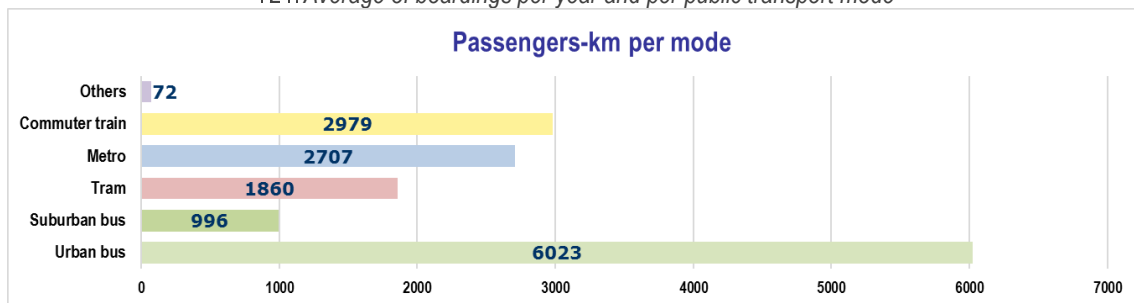


T20. Number of trips in the public transport

The average of passengers-km and boardings/year per mode for the 25 selected PTAs is as we can see in the next figures:



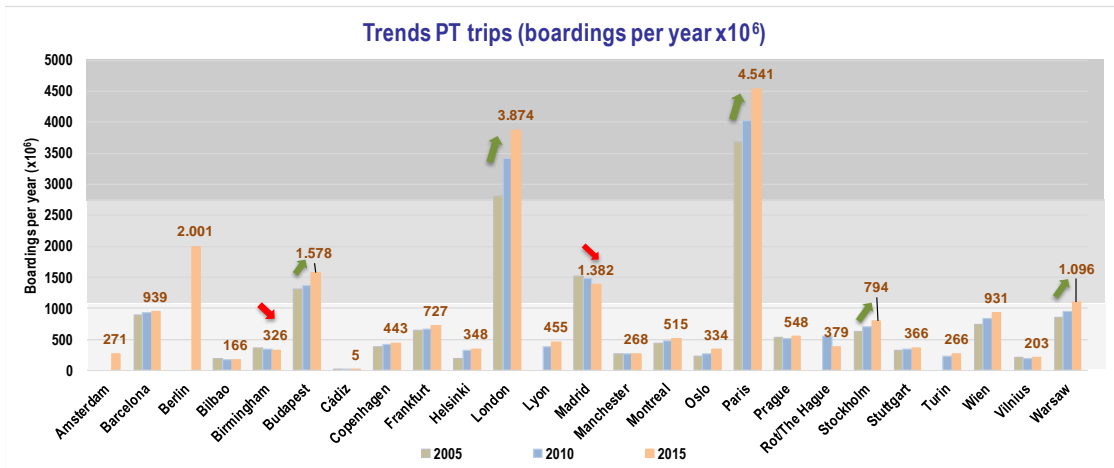
T21. Average of boardings per year and per public transport mode



T22. Average of passengers-km per public transport mode

14. Public transport demand trends

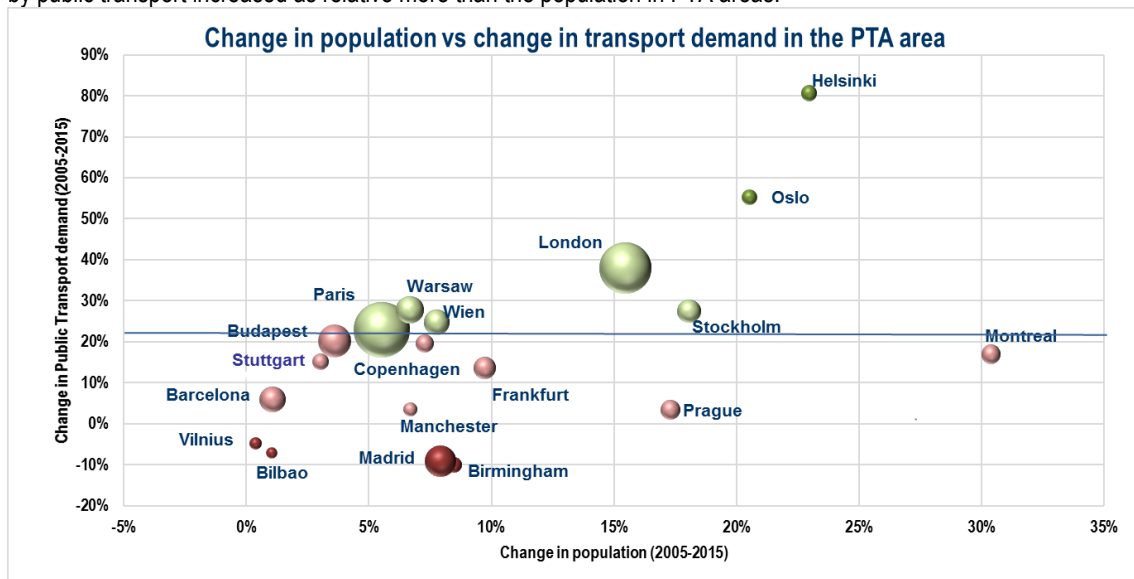
Public transport demand trends have evolved differently over the last ten years. The average of 2005 was 938 million of boardings in public transport, in 2010 the PT system lost 5,8% of boardings (884 million of total demand) and in 2015 it has recovered with +7%, rising to 947 million, 19 million more than ten years ago. The PTA of Greater London and Paris Île-de-France represent the 43% (2005), 41% (2009) and 38% (2015) of the total public transport demand in the studied PTA areas, whilst they represent only 26% of the total inhabitants in 2015. From 2010 to 2015, 50% of the PTAs experienced an increased demand in the public transport system over a 10%. On the contrary, Birmingham and Madrid continue a declining demand in their public transport system. In terms of demand we can distinguish three main groups: a first one that moves between 0 and 1,000 million (10^6) boardings (with 15 PTAs); a second one from 1,000 to 2,000 million (10^6) boardings (with 5 cities); and more than 2,000 million that accounts for two of the largest PTA areas (Greater London and Paris Île-de-France).



T23. 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 2005 and 2015 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 50%. 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 7% growth of population. This means that the number of journeys by public transport increased as relative more than the population in PTA areas.



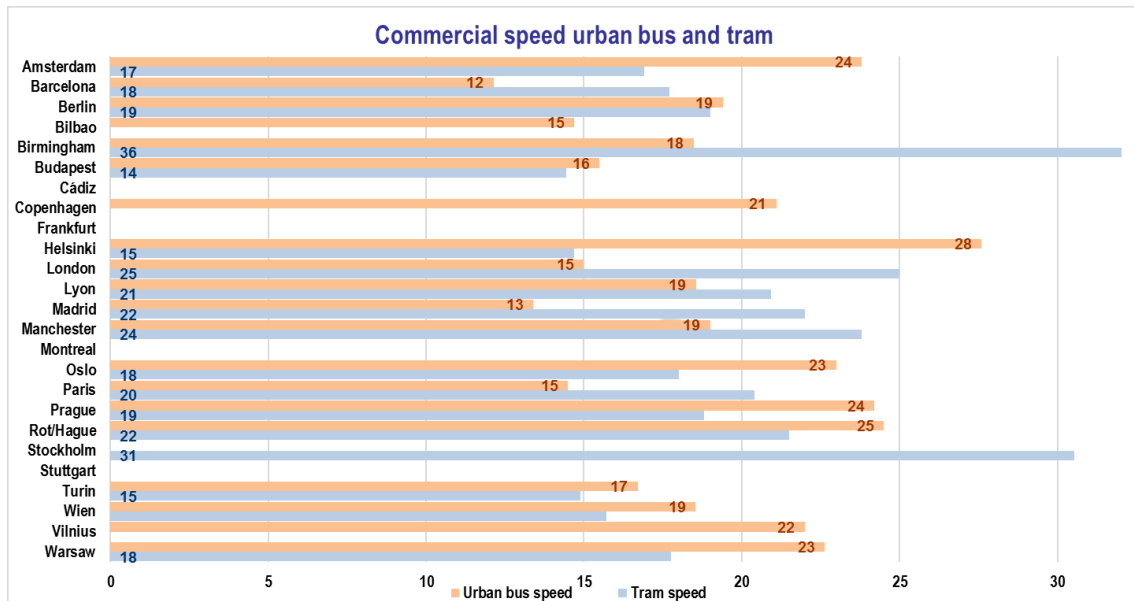
T24. Change in population vs change in transport demand in the PTA' area

SERVICE QUALITY

16. Commercial speed

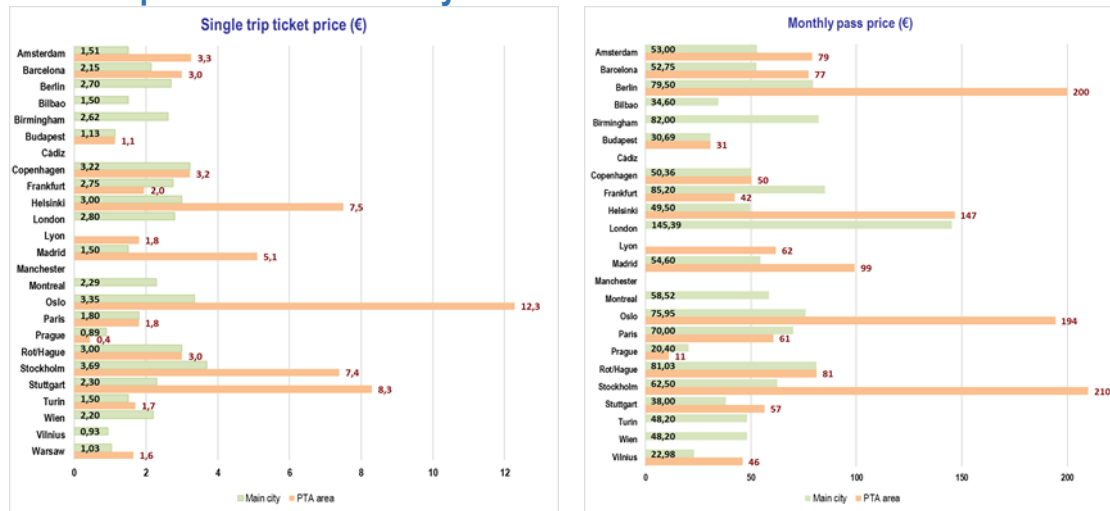
The commercial speed for the public transport is one of the main issues that the planners have to deal with it in the urban areas. The average speed for the urban bus and the tram is about 19 km/h and for the suburban buses the average has risen to 29 km/h. The same happened with the metro and the commuter 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.



T25. Commercial speed for urban bus and tram

17. Ticket price for the main city and PTA area

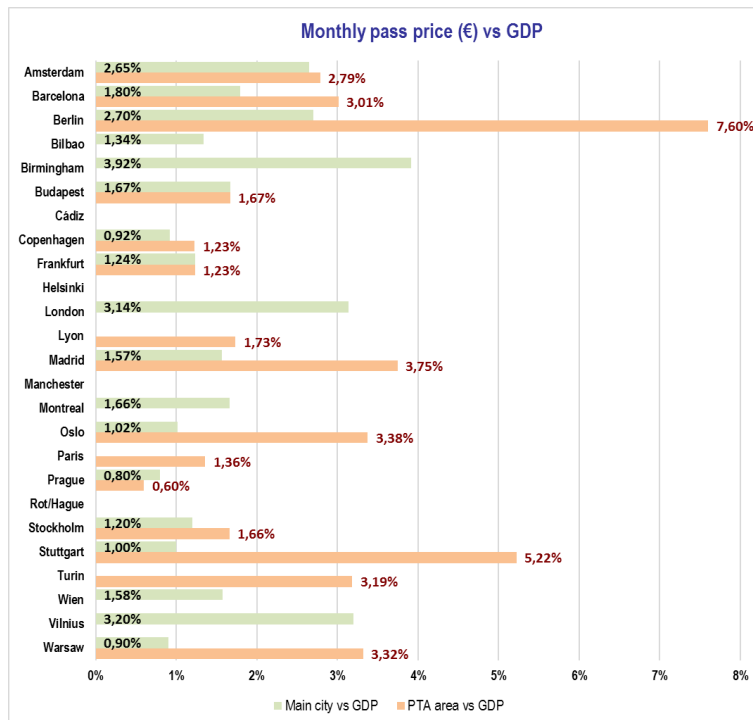


T26. Single trip ticket price (€)

T27. Monthly pass price (€)

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.

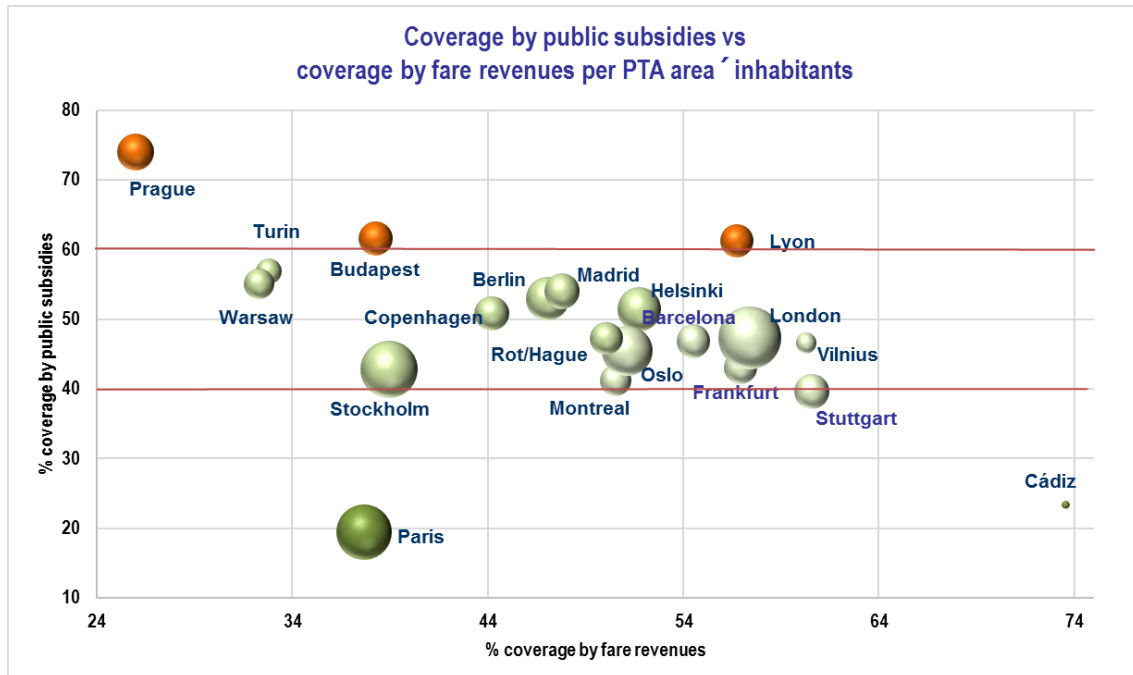
The average ratio between GDP and monthly pass fare is 1.8% in main city and 2.8% for the PTA area. Berlin, because of its large surface, continues to be the PTA with a higher ratio in the PTA area, 7.6% and Copenhagen and Warsaw are in 2015 the cities with a lower rate with respect to the monthly pass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



T28. Monthly PTA area pass vs GDP

18. 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).

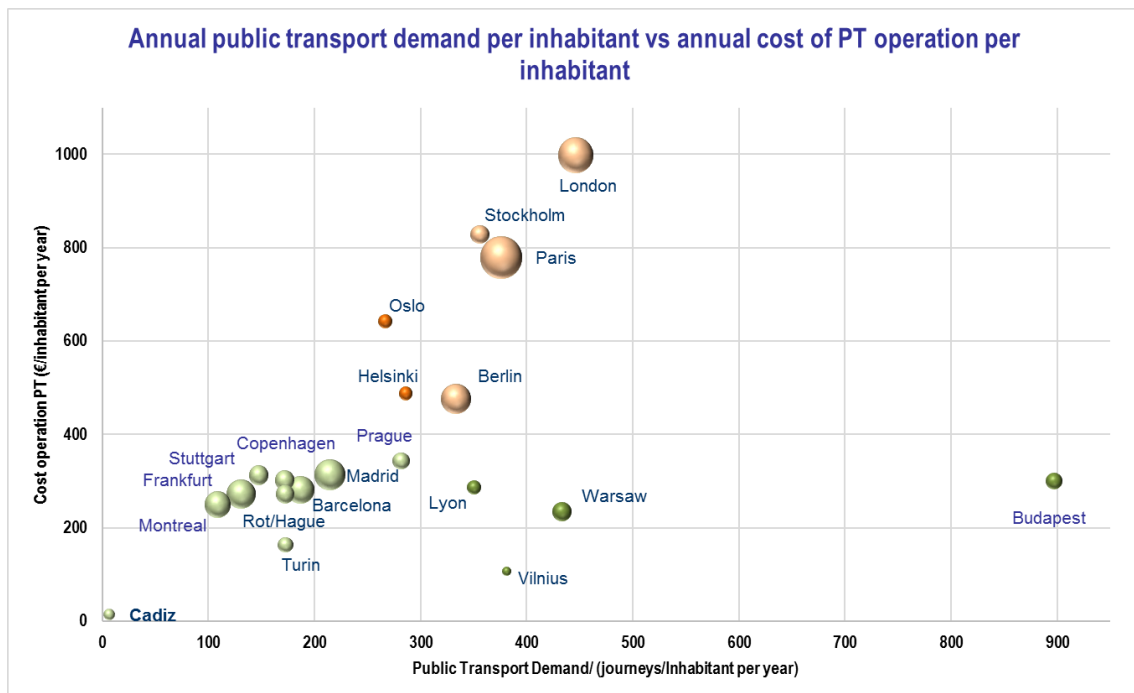


T29. Coverage by public subsidies vs coverage by fare revenues per PTA area inhabitants

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%.

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 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.



T30. Annual public transport demand per inhabitant vs annual cost of PT operation per inhabitant

GENERAL TENDENCIES AND CONCLUSIONS

The Barometer 2015 provides information on how organizing 24 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 (2013-2015) we can draw some conclusions on the following parameters:

Population:

- Main cities are losing inhabitants with a tendency of a 2% whilst metropolitan areas as a whole are increasing with approximately the same factor.
- 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 2014 (6,6%) while in 2015 it has dropped again (-2,3%). Partly this can be explained by a change in the composition of members.

Mobility and demand:

- The mean number of trips per inhabitant per day in the PTA area continues to rise at a very shy trend, similar as the increase in inhabitants in such areas. On the other hand, the demand in public transport per PTA inhabitant is steady on the same level for the last three years and decreased compared to the previous five and ten-year period.

Supply:

- The bus and tram network length has risen in the last three years from 1,455 to 1,653 kilometers for urban buses; 5,957 to 8,732 kilometers for suburban buses; and 166 to 186 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 three years.

Fleet:

- In term of sustainable combustion, the main variation is that from 2013-2015 the use of CNG as fuel type for urban buses has gone up.
- The composition of the suburban bus fleet by EURO diesel standardization has triggered the influx of buses with EURO V technology.

Park & Ride:

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

Fares:

- The fares for the single trip tickets in the main cities did not have significant variation, 2.10 € to 2.18 € however, remarkably in the PTA areas has increased from 2.78 € (2013) to 3.97 € (2015).
- The average price for the main city monthly pass has gone down from 69.00 € (2013) to 59.2 € (2015) but if we compare with the average rise of the GDP it has increased nearly 2% per annum.

Financial:

- The different concepts related with financial and operation (costs, coverages, subsidies...) did not suffer main variation.

Finally, the 2015 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 customer centric quality of metropolitan and urban public transport systems.

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

Indicators	“Standard” PTA area
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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