



Metropolitan Mobility OBSERVATORY (MMO)

Summary Report
Data **2014**



Overview

The objective of the present document is to summarize the information contained in the 2014 MMO Report, developed by TRANSyT-UPM analyzing the data provided by its members and collaborators.

The MMO is an analysis and observation initiative made up of the Public Transport Authorities (PTAs) of the main Spanish metropolitan areas, the Ministry of Agriculture, Food and Environment, the Ministry of Public Works and Transport, the Institute of Energy Diversification and Savings and the Directorate General of Traffic. It collaborates very closely as well with RENFE, the Association of Collective Urban Transport (ATUC), the Spanish Federation of Municipalities and Provinces (FEMP) and the CCOO Trade Union Federation.

Its main goal is to reflect the contribution of public transport to the improvement of the quality of life and sustainable development in the Spanish cities. This contribution is reflected in the analysis of the general mobility tendencies of the main metropolitan areas, which is done through the study of a set of key transport indicators including public transport supply and demand, financing and investments, quality of service and road safety.

For the 2014 MMO Report, 19 PTAs* (out of 23 included in the MMO) provided information, which represents approximately the 52% of the nation's population. The rest of the information was provided by usual collaborators of the MMO, like RENFE, the Ministry of Agriculture, Food and Environment, the Directorate General of Traffic and the National Statistics Institute.

Main Figures

The following figures summarise some important information about the urban and metropolitan mobility in 2014 in the 19 participating metropolitan areas:

- The annual public transport demand for the 19 areas considered in the report is **24.239 billion passenger-km** (38% for bus and 62% for rail modes).
- A total of **3.301 billion public transport journeys** were made, 1.623 billion by bus and 1.678 billion by rail modes. In spite of the similarity of both figures, it is remarkable the great difference between the lengths of the network that support these journeys: 89.627 km for bus lines and 3.280 km of rail network.
- The **number of journeys per inhabitant per year** differs according to the size of the metropolitan area. The average is 113 journeys per inhabitant per year in large areas, and 58 journeys in mid-sized and small areas.
- **Investment** in public transport in 2014 reached **928.8 million euros**, more than double that those in 2013. It is significant the amount of these investments dedicated to rail modes, 98%.
- The public transport supply is **907 million vehicle-km**: 588 million for bus services and 319 million for rail modes.
- The **average coverage ratio is 53%**, lower for areas including rail modes in their public transport systems (48%), and about 54% for areas served only by bus services.

*Madrid, Barcelona, Seville, Valence, Bizkaia, Asturias, Malaga, Mallorca, Saragossa, Cadiz Bay, Gipuzkoa, Camp de Tarragona, Granada, Alicante, Pamplona, Corunna, Lleida, and Leon.

This summary illustrates key findings on the diversity of public transport systems and public transport policies in the largest Spanish metropolitan areas.

For more on previous editions, see the publications section of www.observatoriomovilidad.es.

General characteristics of the metropolitan areas on January 1st, 2014

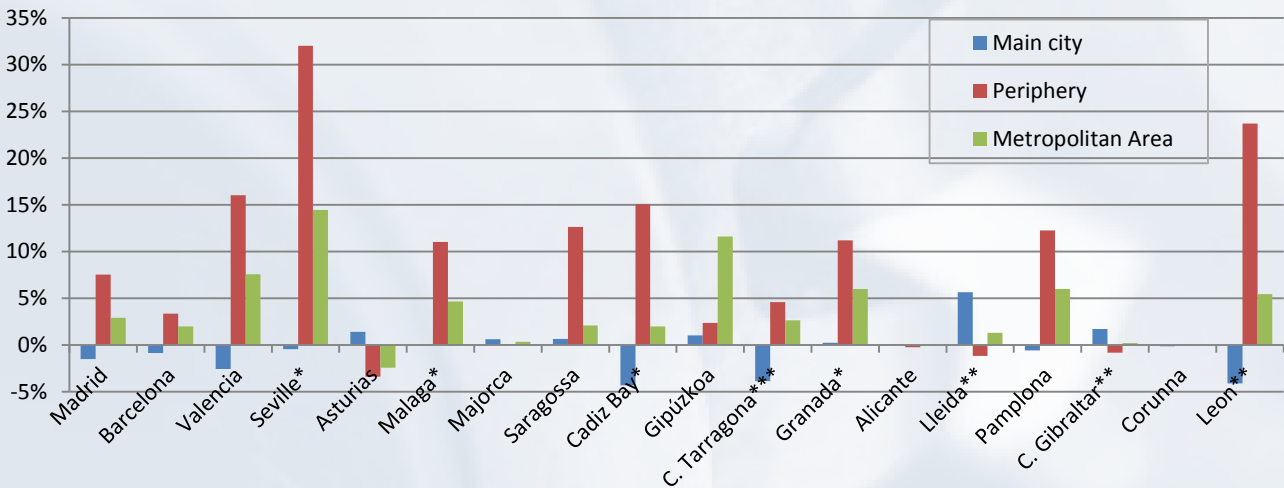
	Metropolitan area (PTA Action Sphere)					Main city			Main city/ Metropolitan area population ratio
	Area (km ²)	Population (inhab)	Density (inhab/km ²)	Number of municipalities	Built-up area (km ²)	Area (km ²)	Population (inhab)	Density (inhab/km ²)	
Madrid	8.030	6.454.440	804	179	1.043	605	3.165.235	5.232	49%
Barcelona	3.239	5.026.709	1.552	164	634	102	1.602.386	15.787	32%
Valencia	1.417	1.910.206	1.348	60	228	134	786.424	5.864	44%
Seville	4.221	1.480.793	351	45	253	141	696.676	4.930	47%
Bizkaia	2.217	1.151.905	520	112	241	41	346.574	8.453	30%
Asturias ¹	10.604	1.054.040	99	78	n.a.	187	223.765	1.199	21%
Malaga ²	1.432	1.017.968	711	15	75	395	566.913	1.436	56%
Majorca	3.623	858.313	237	53	212	214	399.093	1.869	46%
Cadiz Bay ³	3.072	782.392	255	10	n.d.	14	121.739	8.573	16%
Saragossa	2.920	767.559	263	30	2.863	938	666.058	710	87%
Gipuzkoa	1.981	715.148	361	88	n.a.	267	186.126	697	26%
Camp de Tarragona ⁴	2.999	615.668	205	132	185	65	132.199	2.027	21%
Granada	861	530.513	616	32	n.d.	88	237.540	2.699	45%
Alicante	354	452.481	1.277	5	74	201	332.067	1.650	73%
Lleida	5.586	365.273	65	149	182	212	139.176	656	38%
Pamplona	92	337.989	3.674	18	50	25	196.166	7.818	58%
Campo de Gibraltar ⁵	1.520	264.290	174	7	432	86	117.974	1.372	45%
Corunna	39	244.810	6.277	1	36	39	244.810	6.277	100%
Leon	913	209.124	229	16	21	39	129.552	3.319	62%

- 1: The main city is Oviedo, as it is the capital of the region of Asturias
2: Built-up area only takes into account the main city
3: The main city is Cadiz, as it is the capital of the province
4: The main city is Tarragona, as it is the capital of the province
5: There is no main city. The bay area could be considered the origin and destination of journeys
Source: compiled by authors based on data provided by the PTAs

Evolution of population and other socioeconomic indicators

The population in the considered areas increased on average in 2008-2014 about 3.9% (0.6% per year), being greater the increase in the periphery (8.6% in the period - 1.4% per year) than in the main city (0.4% decrease since 2008 - 0.07% per year). Seville shows the highest increase in population, concentrated in its periphery (with an increase of more than 32% between 2008 and 2014). On the contrary, Asturias has experienced a population decline in the whole metropolitan area of 2.4%. Moreover, many cities have lost population in this period: Madrid, Barcelona, Valencia, Seville, Cadiz, Tarragona, Pamplona and Leon, which is consistent with the suburbanization process.

Variation of population in metropolitan areas between 2008 and 2014

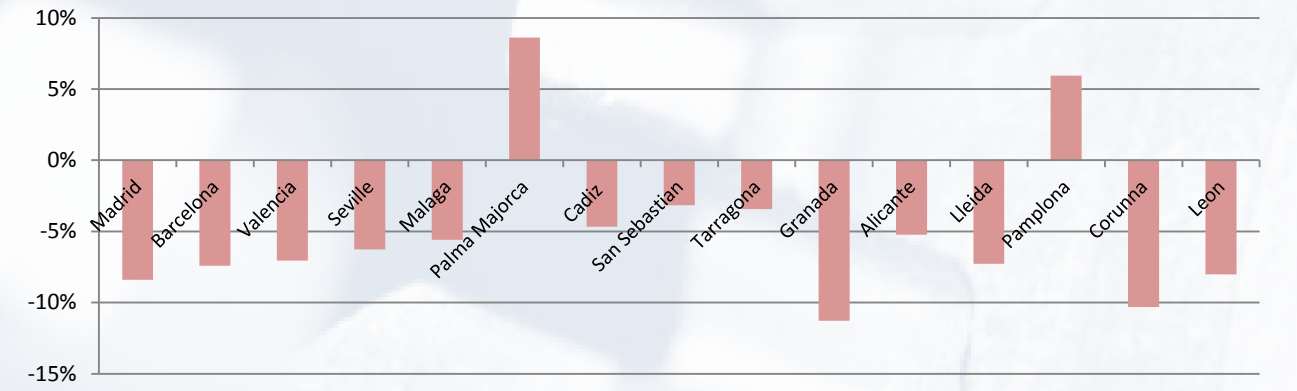


*Seville, Malaga, Cadiz Bay and Granada have incorporated other municipalities into their jurisdiction over the years, which has caused major population variations.
**Lleida and Campo de Gibraltar, variation between 2009 and 2014. Leon, variation between 2010 and 2014.
***The loss of population in Tarragona is due to segregation of Canonja township in 2010.
Source: compiled by authors based on data provided by the PTAs.

The economic crisis in recent years has influenced very strongly the **growing unemployment rate** in almost all metropolitan areas since 2008. The average unemployment rate in Spain in 2014 is 23.7%, the double of the rate in 2008. This situation has influenced how and how much the Spaniards move.

One of the effects and consequences of this economic crisis could be seen in the decline of the motorisation rate since 2008. The next figure shows that all cities have reduced the motorisation rate between 2008-2014, except Palma Majorca and Pamplona. In 2014, the number of cars per 1,000 inhabitants, on average, was 434 in the cities; whereas it was 459 in the metropolitan areas.

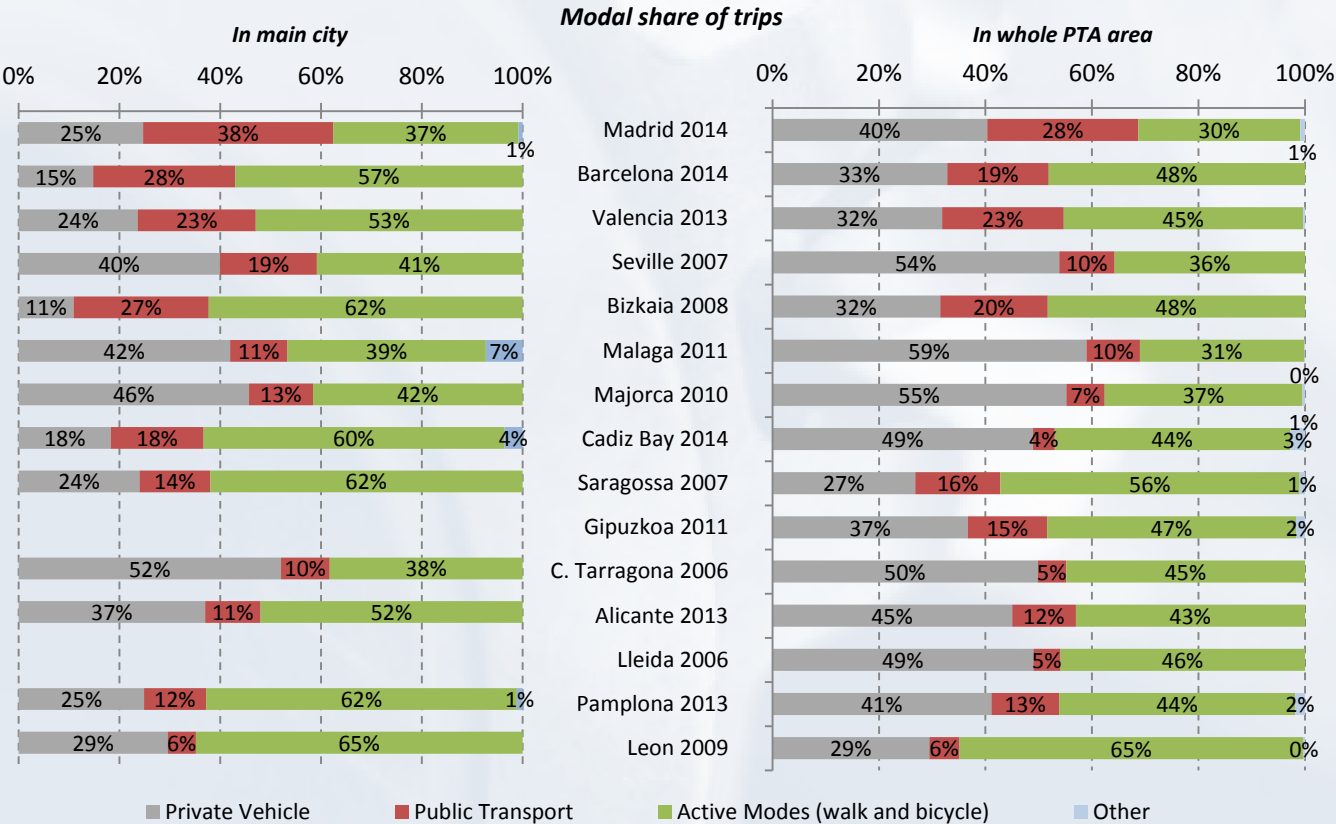
Variation of the motorisation rate in cities (2008-2014)



Modal Split

In trips for all motives, the average modal share for **public transport** in the metropolitan areas is more than 12,5%; however, in Madrid, it reaches a 28.4% while in Cadiz Bay it is 4.1%. On average, active modes (walking and cycling) account for 45.4% of the trips and private cars and motorcycles for 41.1%.

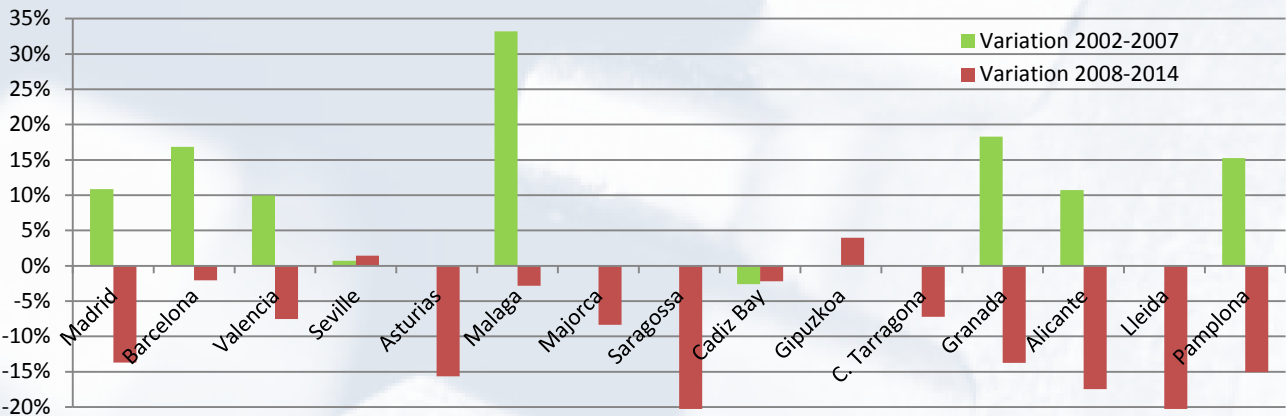
When trips are made inside the cities, the modal share becomes more sustainable, thanks to the concentration of population and activities. This is the case of Pamplona, where car use is reduced from 41% in the whole area to 25% in the main city; or Barcelona, which has a rate of 57% in active modes; or Madrid, with a third of their trips made in sustainable modes (PT, walking or biking).



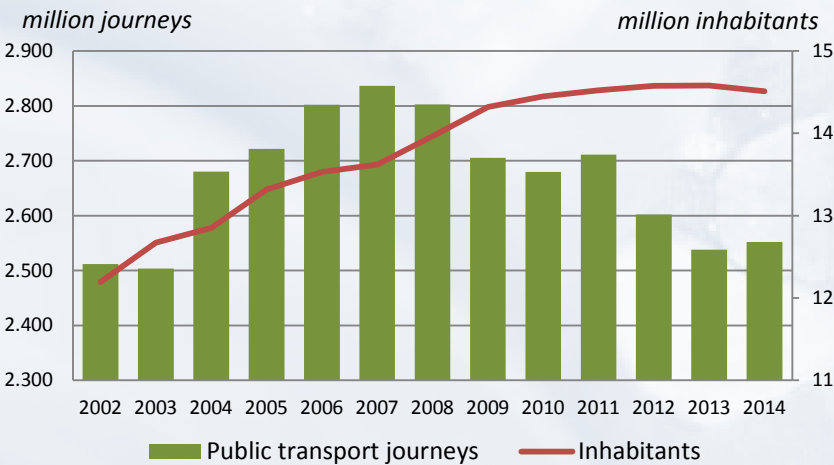
Demand for Public Transport

If we consider the variation of the public transport demand between 2002 and 2014, two phases can be distinguished. First, the variation between 2002 and 2007 shows a general growth of a 12.7% in public transport demand, specially in rail modes journeys (22.6%) against the bus journeys (3.3%). And, second, the variation between 2008 and 2014 shows an overall decrease of 8.6% in public transport demand, according to the economic crisis.

Variation of public transport journeys between 2002 and 2014



Evolution of public transport journeys as compared to population



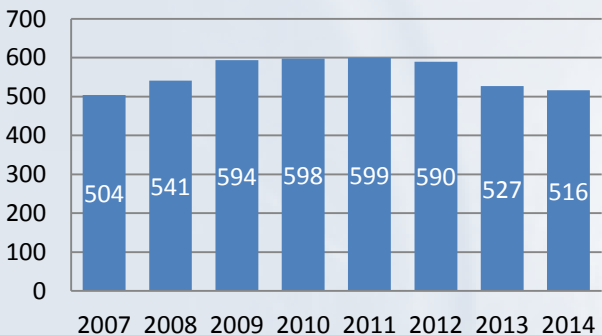
It is important to note that in 2014 there is a slight recovering of the PT demand.

The PT supply has remained steady until 2012, when bus services started to decrease.

Public Transport Supply

The supply of bus services (in terms of vehicles-km) has increased over the years in most metropolitan areas until 2011. The decrease continued in 2014 to levels of 2007.

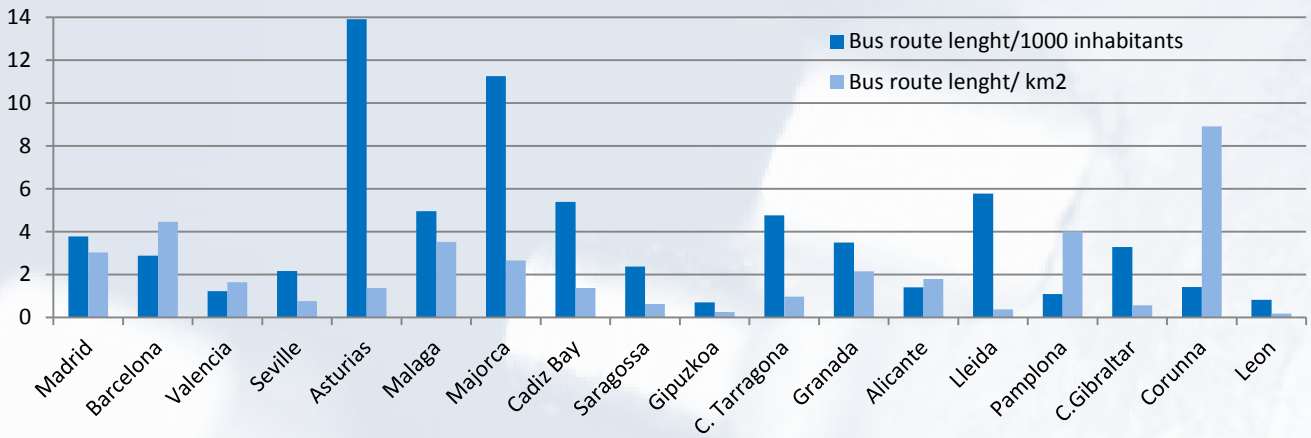
Public Transport supply of Bus services (vehicles-km)



Concerning the **bus networks density**, it is between 2 and 5 km per 1,000 inhabitants in most of the Spanish metropolitan areas, being Asturias and Majorca above this value, with more than 10 km per 1,000 inhabitants. Relating route density with surface area, Corunna, Barcelona and Pamplona reach the highest figures, with 9, 4.5 and 4 km/ km², respectively.

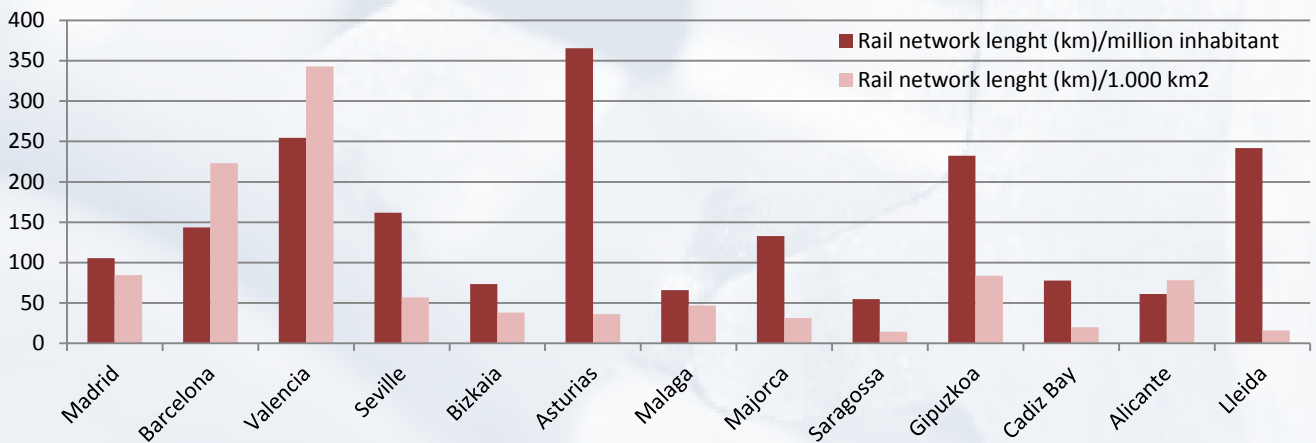
Rail network presents lower densities as compared to bus network. The average in Spain is 160 km length per million inhabitants and 104 km per 1,000 km², an average which is exceed in the case of Asturias due to the great length of FEVE commuter lines with a density of 355 km per million inhabitants. Valencia shows the highest rail network density per surface, 343 km per 1,000 km², followed by Barcelona, with 223 km per 1,000 km².

Bus network density (2014)



Cadiz Bay and Campo de Gibraltar: only metropolitan buses.
Source: compiled by authors based on data provided by the PTAs.

Rail network density (2014)

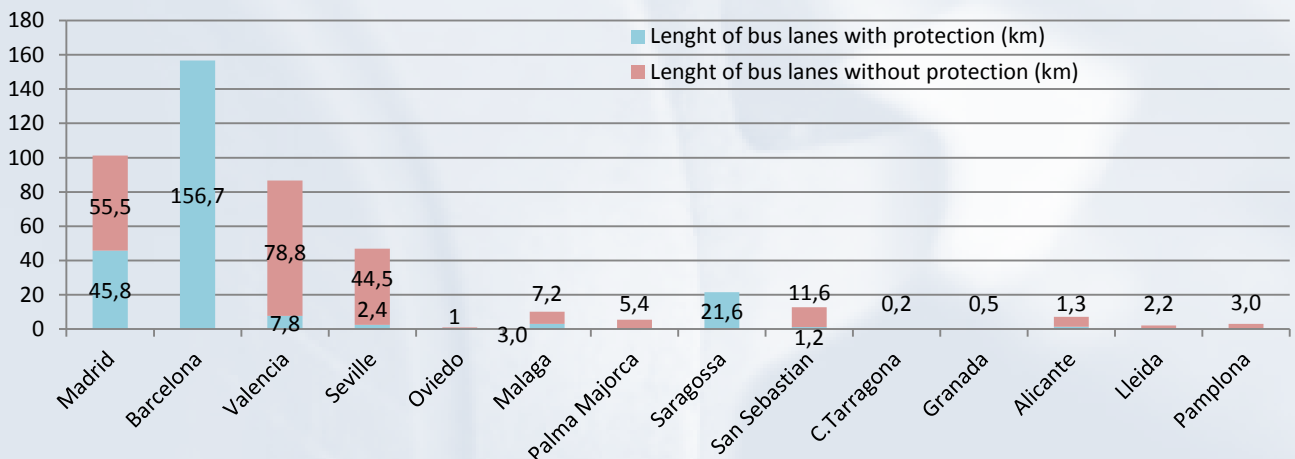


Gipuzkoa: the rail network managed by the regional government is not considered
Source: compiled by authors based on data provided by the PTAs and the RENFE Directorate General of Passengers.

• Bus Lanes

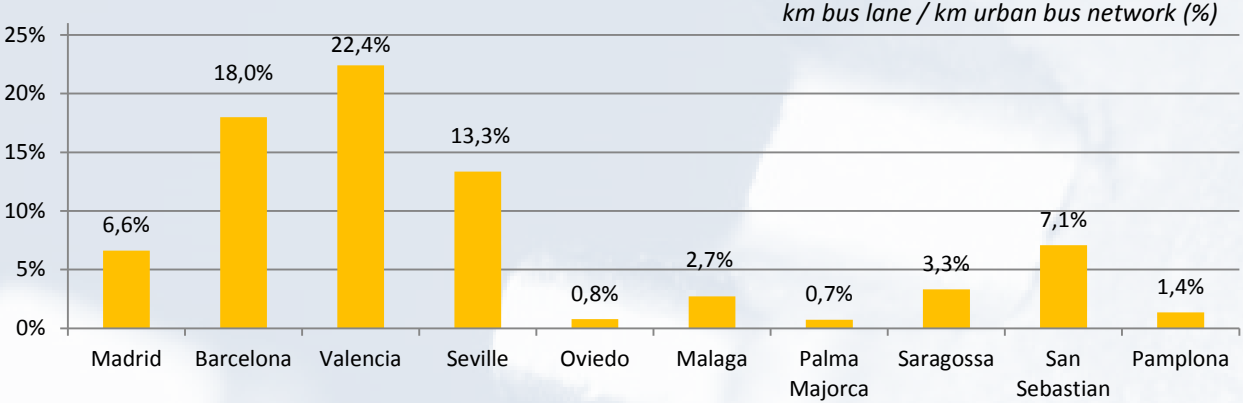
Exclusive lanes for buses is very important to improve their competitiveness with respect to cars. These reserved lanes are more effective if they have a physical protection. In 2014, Barcelona presents the highest length of bus lanes in its road network (156.7 km), although Valencia is the city showing the highest percentage of bus lanes respect to its total bus network (22.4%). They are followed by Seville, with a 13.3% of bus lanes on its network.

Length of bus lanes in main city (2014)



Source: compiled by authors based on data provided by the PTAs.

Percentage of bus network with bus lanes in main city (2014)

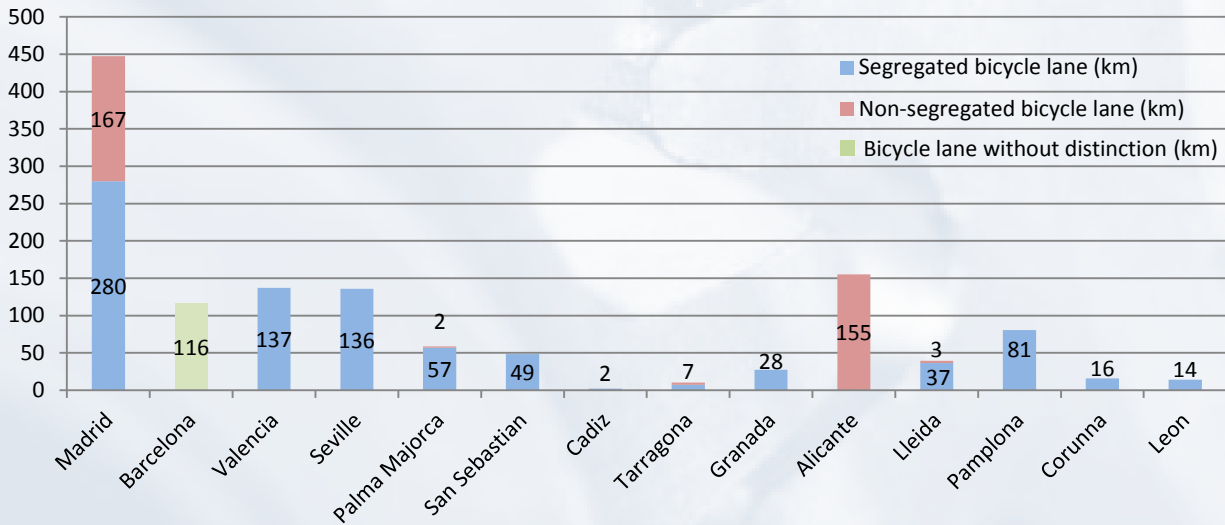


Source: compiled by authors based on data provided by the PTAs.

Bicycle Lanes

In order to promote an eco-friendly alternative way of transport it is important to improve the infrastructure dedicated to bicycles in the cities, creating bicycle lanes on roads, allowing a safer cycling for cyclists. In the last years, the increase in the use of the bicycle as mode of transport in Spanish cities has lead to an increase in the length of the bicycle lanes: both, segregated and non-segregated bicycles lanes. The following figure shows the total length of bicycle in the main cities. Madrid has 447 km of bicycle lanes, being the largest network. Concerning the density of the network, Pamplona stands out with 411 km per million inhabitants, followed by Lleida (284) and San Sebastian (261).

Length of the bicycle lanes in the main city (2014)



Source: compiled by authors based on data provided by the PTAs.



Public bike service in Madrid (BiciMAD)



Intermodality bus-bicycle in Granada

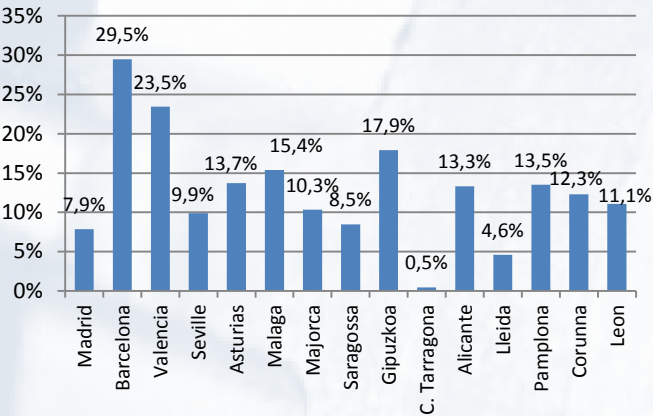
• **Quality of the PT Services**

To be competitive with cars, PT services have to be of a high quality. Thus, the services must be revised and aspects as frequency or accessibility should be improved:

- **Frequency** at peak times: 3-5 minutes for metro services, 9-15 minutes for urban buses, 15-20 minutes for metropolitan buses and 5-7 minutes for suburban railways in Madrid and Barcelona.
- **Accessibility for disabled:** it is very developed in urban buses and trams services, where 100% of the fleet have facilities for this sector of the population.
- **Accessibility to public transport:** Over 90% of the population of the main cities live within 300 meters from a public transport stop, being Corunna the best example of this progress, with 100% of accessibility.

The provision of real-time information is also essential to ensure a competitive public transport. It is closely related to the reliability of the service and improve the perception that users have about waiting times.

% bus stops provided with real-time information screens (urban buses in main city)

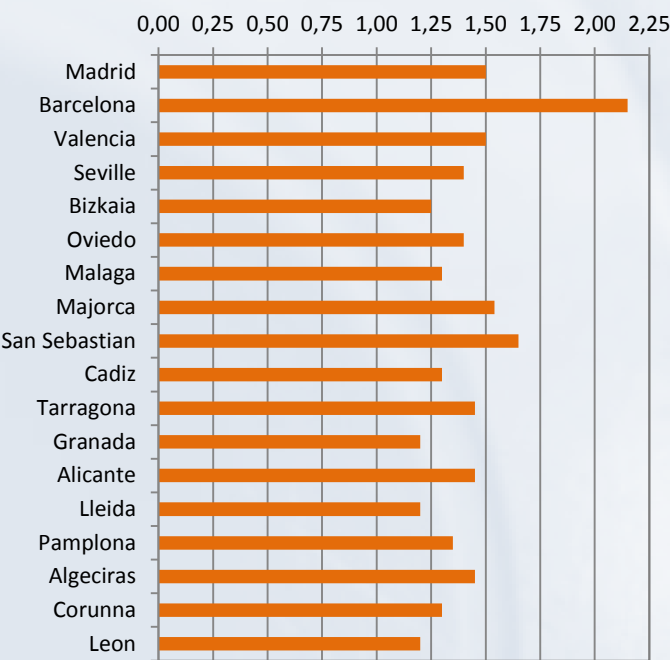


Financial and fare-based aspects

• **Fares**

The different metropolitan areas present different fare systems: concentric ring fare systems, as Madrid or Seville, or fare zones dividing the region, as Barcelona or Malaga. The single ticket is the only one common for all the Spanish cities, as for the rest there can be found a huge range of different tickets, each one with its specific characteristics. The average price for the single ticket in 2014 has raised with respect to 2013, in line with the increase since 2008. In the main city is 1.41 € (1.37 in 2013). Barcelona shows the highest price for the single ticket, with 2.15 €.

Single ticket price for the main city (Euro, 2014)

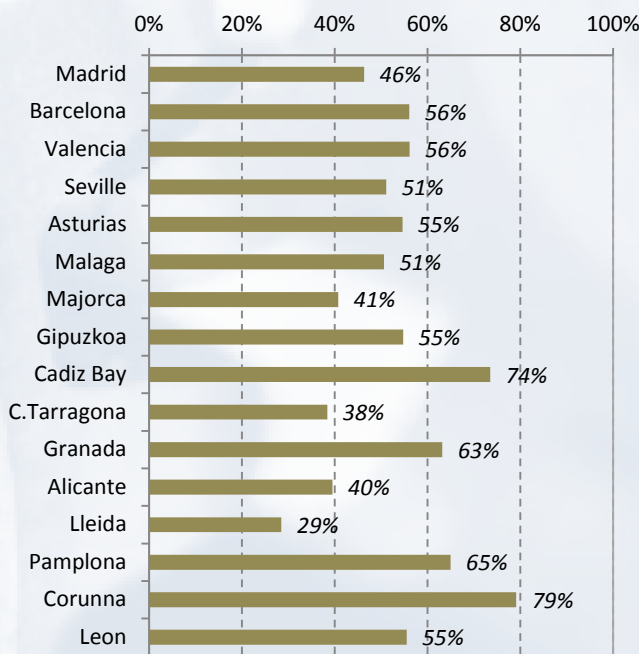


Source: data provided by the PTAs.

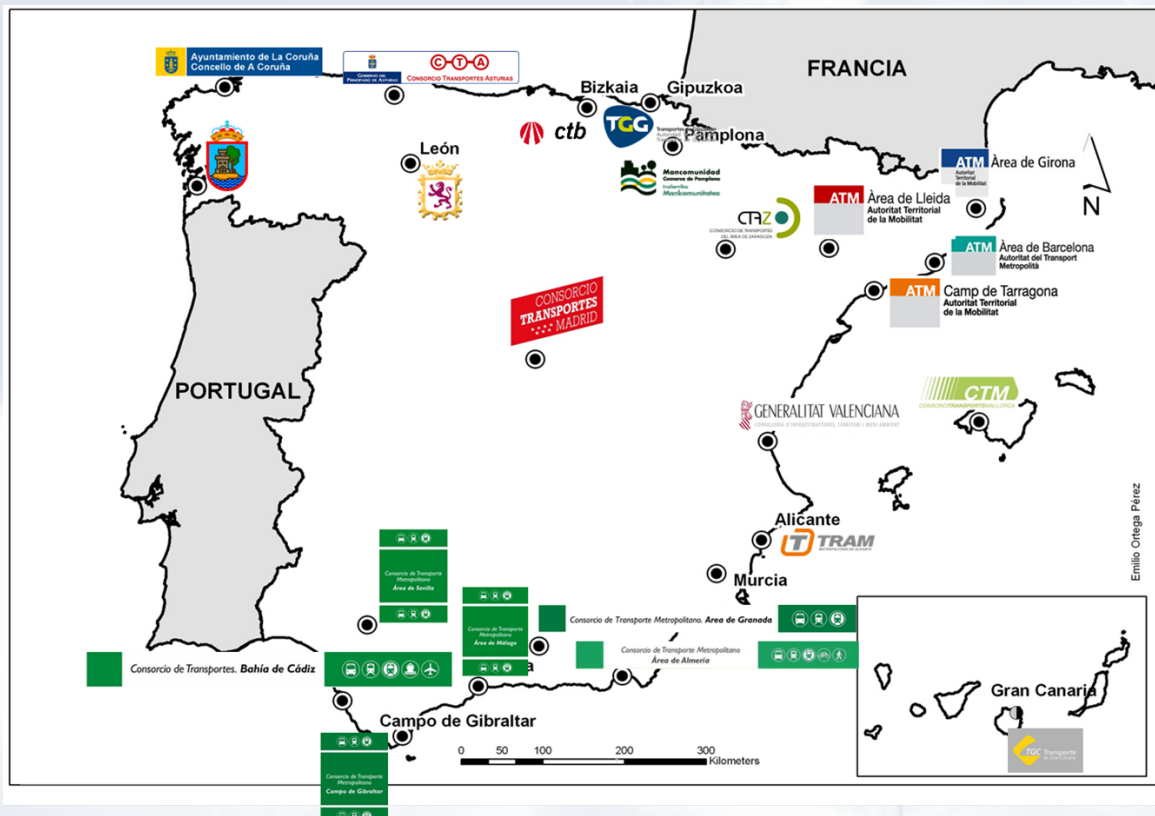
• **Coverage ratio**

The average coverage ratio of all the analyzed areas is 54%. In general, metropolitan areas with rail modes present lower ratios, close to 48%, while areas without rail modes show an average ratio of 57%. Corunna and Cadiz Bay stand out with ratios of 79% and 74%, respectively. However, Lleida and Camp de Tarragona show the lowest ratios: 34% and 38%, respectively. According to the latest EMTA Barometer (from 2014), the operating costs of European areas are covered, on average, by 48% by tariffs, with Spanish areas presenting better results.

Coverage ratio for PT systems in metropolitan areas (2014)



Not included data from Renfe. Cadiz Bay only metropolitan bus.
Source: data provided by the PTAs.



November 2016