



# Metropolitan Mobility OBSERVATORY (MMO)

## Summary Report Data **2015**

# The Metropolitan Mobility Observatory (MMO)

The objective of the present document is to summarize the information contained in the 2015 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 (PTA) of the main Spanish metropolitan areas, the Ministry for Agriculture and Fisheries, 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 the National Railway Operator (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 2015 MMO Report, **21 PTA**\* (out of 24 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 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 2015 in the 21 participating metropolitan areas:

- The annual public transport demand for the 17 areas considered in the report is 23.981 billion passengerkm (35% for bus and 65% for rail modes).
- The number of journeys per inhabitant per year differs according to the size of the metropolitan area. The average is 120 journeys per inhabitant per year in large areas and 49 journeys in mid-sized and small areas.
- A total of 3.340 billion public transport journeys were made, 1.645 billion by bus and 1.695 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: 107,317 km for bus lines and 3,285 km of rail network.
- Investment in public transport in 2015 reached 695.8 million euros. It is significant the amount of these investments dedicated to rail modes, 65%.
- The public transport supply is about 596 million vehicle-km for bus services and 316 million car-km for rail modes (not included Cercanias RENFE).
- The average coverage ratio is 52%. While metropolitan area transport systems which include rail modes have an average coverage ratio of 45%, those which consist exclusively of buses present an average of 57% coverage.

\*Madrid, Barcelona, Valencia, Seville, Asturias, Malaga, Mallorca, Saragossa, Cadiz Bay, Gipuzkoa, Camp de Tarragona, Granada, Alicante, Lleida, Pamplona, Campo de Gibraltar, Corunna, Jaen, Leon and Caceres.

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 <u>www.observatoriomovilidad.es</u>.

## General characteristics of the metropolitan areas on January 1<sup>st</sup>, 2015

	Metropolitan area (PTA Action Sphere)					Main city			Main city/
	Area (km²)	Population (inhab)	Density (inhab/km²)	Number of municipalities	Built-up area (km²)	Area (km²)	Population (inhab)	Density (inhab/km²)	Metropolitan area population ratio
Madrid	8,030	6,436,996	802	179	1,043	605	3,141,991	5,193	49%
Barcelona	3,239	5,028,258	1,552	164	634	102	1,604,550	15,808	32%
Valencia	1,551	1,788,162	1,153	60	306	138	786,189	5,677	44%
Seville	4,221	1,482,600	351	45	253	141	693,878	4,910	47%
Biscay	2,217	1,148,775	518	112	245	41	345,141	8,418	30%
Asturias <sup>1</sup>	10,604	1,051,229	99	78	n.a.	187	221,870	1,189	21%
Malaga <sup>2</sup>	1,432	1,024,365	716	15	75	395	569,130	1,442	56%
Majorca	3,623	859,289	237	53	212	214	400,578	1,876	47%
Cadiz Bay <sup>3</sup>	3,312	822,722	248	12	n.a.	14	120,668	8,498	15%
Saragossa	2,920	766,965	263	30	2,863	938	664,953	709	87%
Gipuzkoa	1,981	716,834	362	88	n.a.	267	186,095	697	26%
Camp de Tarragona <sup>4</sup>	2,999	612,234	204	132	184	65	131,255	2,013	21%
Granada	861	530,408	616	33	n.a.	88	235,800	2,679	44%
Alicante	354	452,481	1,277	5	74	201	332,067	1,650	73%
Lleida	5,586	363,783	65	149	182	212	138,542	654	38%
Pamplona	92	339,128	3,700	18	50	25	195,853	7,806	58%
Campo de Gibraltar	1,520	265,640	175	7	432	86	118,920	1,383	45%
Corunna	38	243,870	6,336	1	n.a.	38	243,870	6,336	100%
Jaen	1,761	222,844	127	15	n.a.	424	116,176	274	52%
Leon	913	207,776	228	16	21	39	127,816	3,275	62%
Caceres	1,760	95,617	n.a.	n.a.	21	1,760	94,879	54	99%

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

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

## **Evolution of population and other socioeconomic indicators**

As it can be appreciated in the following figure, the population in the periphery has generally increased between 2008 and 2015 an 8.8%, as well as the population in the metropolitan area, which has also been increased but in a lower rate (3.8% in the period). Asturias is the only area with a decline in its whole metropolitan area (-2.7%). Moreover, we can find a different situation in the population in main cities, as its general population has suffered a slight decrease of 0.6% in the period. This is due to the negative growth found in cities like Madrid, Valencia, Cadiz, Tarragona or Leon.

#### Variation of population in metropolitan areas between 2008 and 2015



\*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 2015.

\*\*\*The loss of population in Tarragona is due to segregation of Canonja township in 2010.

\*\*\*\* Leon, variation between 2010 and 2015.

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. In 2015 the average unemployment rate in the areas considered is about 22.8 %, lower than 2015 and the national average (20.9%).



The effects and consequences of this economic crisis could be seen in the slight decline

of the motorisation rate since 2008. The next figure shows that all cities have reduced the motorisation rate between 2008-2015, except Palma Majorca, Cadiz and Pamplona. In 2015, the number of cars per 1,000 inhabitants, on average, was 435 in the cities; whereas it was 468 in the metropolitan areas.





## **Modal Split**

In trips for all motives, the average modal share for **public transport** in the metropolitan areas is more than 13%; 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 44% of the trips and private cars and motorcycles for 43%. It is remarkable the case of the two main big cities, since Barcelona has a rate of 56.1% in active modes and Madrid accounts for a 37.8% of public transport trips. Those two cities show two different characteristics, while in the first one exists a deeprooted habit of walking/biking, in the second one it is highlighted the high use of the public transport system.



### Private vehicle Public Transport Active modes (walk and bycicle) Other

## **Demand for Public Transport**

If we consider the variation of the public transport demand between 2002 and 2015, 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 2015 shows **an overall decrease of 7.2% in public transport demand,** according to the economic crisis, despite the slight rise in the last year (1.5%)



#### Variation of public transport journeys between 2002 and 2015





Since 2014 it could be appreciated a **recovery of the PT demand**, after the strong decrease suffered during the economic crisis.

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

Only considered Madrid, Barcelona, Seville, Malaga and Granada. Source: compiled by authors based on data provided by the PTAs.

## **Public Transport Supply**

The supply of bus services (in terms of vehicles-km) has decreased over the years in most metropolitan areas since 2012. In 2015 the supply of bus services has slightly increased.



Public Transport supply of bus services (million vehicles-km)

Concerning the **bus networks density**, the average is 4.6 km per 1,000 inhabitants, being Asturias and Majorca much above this value, with more than 10 km per 1,000 inhabitants, due to their special support to this mode of public transport. Relating route density with surface area, Corunna, Barcelona and Leon reach the highest figures, with 9 km/km<sup>2</sup>, 8.9 km/km<sup>2</sup> and 4.4 km/km<sup>2</sup>, respectively.

Since rail transports cover long distances as they are more efficient, the **rail network density** is higher for larger population's areas. The average in Spain is 141 km length per million inhabitants and 78 km per 1,000 km<sup>2</sup>, an average which is exceed in the case of Asturias due to the great length of FEVE commuter lines with a density of 366 km per million inhabitants, or in Valencia, with 264 km per 1,000 km<sup>2</sup>.

#### Bus network density (2015)



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



Rail network density (2015)

#### Bus Lanes

Buses operate most of the time in mixed traffic, so in order to be competitive with respect to cars, to improve their service and in matter of effectiveness, it is necessary to reserve space in the streets for its exclusive use, especially if they have a physical protection. In 2015, Barcelona presents the highest length of bus lane in its road network (160.8 km), although Valencia is the city showing the highest ratio 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 road network, mostly with protection.



#### Length of bus lanes in main city (2015)

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

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.

#### Percentage of bus network with bus lanes in main city (2015)



km bus lane/ km urban bus network (%)

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 facilities of the bicycle in the cities, creating bicycle lanes on roads where traffic and speed of the vehicles are exceeding the limits. Therefore in the streets it is possible to find segregated and non-segregated bicycles lanes as well as mixed traffic streets, where cycling is allowed but it is not as safe as in the previous ones.

As seen in the following figure, bicycle lanes of all types have been increased among the years in Spain, especially due to the development of different public sharing systems, as it is the case of the city of Madrid.



Length of the bicycle lanes in the main city (2015)

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



Segregated bicycle lane in Madrid



Public bicycle service in Saragossa

#### Quality of the PT Services

In recent years, users increasingly demand a high quality public transport system. Thus, the quality of the service must be revised and improved frequently, involving some factors such as:

- 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.
- Night services: Generally it is easy to find night bus services during the week in the larger cities and at weekends in the rest of the cities.
- 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.

## **Economic and fare-based aspects**

#### Ticket and fare types

Fare types are different among some of the metropolitan areas due to the different systems employed: concentric ring fare systems, as Madrid or Seville, or fare zones dividing the region, as Barcelona or Malaga. Concerning ticket supply, 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 fare. One of them is the monthly pass, which is mainly used in Madrid by a 72% of the users, while in other cities it is being used a smart card that allows the user to buy single trips with some discount, being the favourite type of ticket in Pamplona, Jaen and Gipuzkoa, used by a 79%, a 78% and a 70% of the users, respectively.

#### Single ticket price for the main city (Euro, 2015)



Source: data provided by the PTAs.

• Accessibility to public transport: Over 90% of the population of the main cities live within 300 meters from a public transport stop, being Corunna and Leon the best examples of this progress, with 100% of accessibility.



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

#### Coverage ratio

The percentage of operating costs covered by fare revenue (coverage ratio) reached on average a 53% in 2015. In general, metropolitan areas with rail modes present lower ratios (48%) than those without rail modes (58%). The outstanding cases are in the one hand, Corunna and Cadiz Bay, with ratios of 77% and 74%, respectively, and in the other hand, Lleida with a ratio of 27%. Finally, it is remarkable that Spanish results are better than European results, where the coverage ratio is on average 48% according to the EMTA Barometer, five points lower than Spanish one.



Not included data from Renfe services. Asturias, Malaga, Gipuzkoa, Lleida only urban bus. Saragossa and Cadiz Bay only metropolitan bus. Source: data provided by the PTAs.

# Coverage ratio for PT systems in metropolitan areas (2015)



## **MEMBERS AS OF 1 JANUARY 2015**

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#### REGION

Community of Madrid Barcelona Metropolitan Region Metropolitan Area of Valencia Metropolitan Area of Seville Province of Bizkaia Asturias Region Malaga Metropolitan Area Mallorca Gran Canaria

Metropolitan Area of Zaragoza Province of Gipuzkoa Cadiz Bay Camp de Tarragona

Granada Metropolitan Area Almeria Metropolitan Area Alicante Metropolitan Area Pamplona Region Municipality of Vigo Gibraltar Camp Girona Metropolitan Area Municipality of Corunna Municipality of Lleida Municipality of Leon Jaen Metropolitan Area Municipality of Caceres

#### WEBPAGE

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