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Metropolitan mobility in Spain 2002-2005

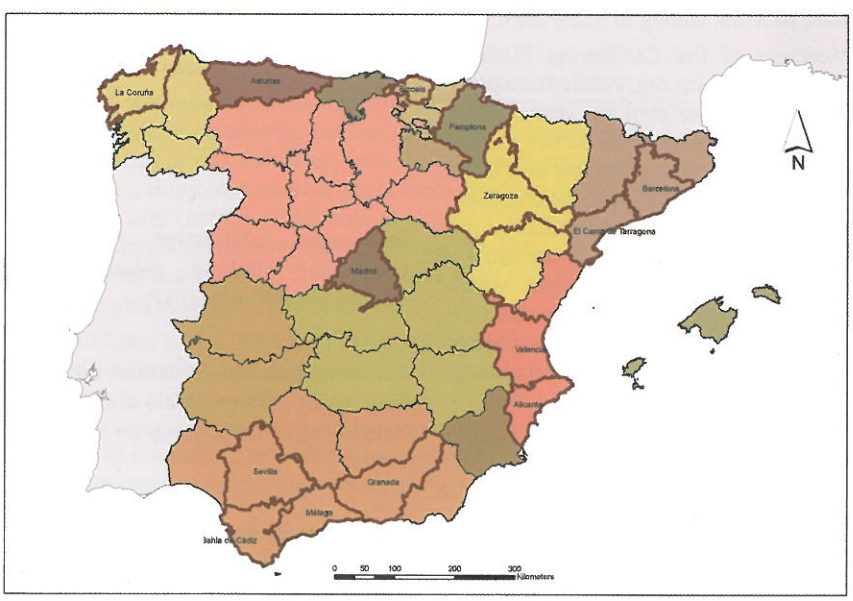
The Spanish Observatory for Metropolitan Mobility (OMM) is a joint initiative of the Public Transport Authority and the Ministries for the Environment and Public Works. Since 2003, the OMM has been analysing urban mobility from three sustainability viewpoints: economic, social and environmental. It also collects best practices and analyses how to achieve better integration of public transport systems and policies with urban mobility and development strategies. The information is presented in the form of indicators corresponding to mobility, transport supply and demand, public transport financing and the quality of the environment in 14 metropolitan areas in Spain. In its four years of existence, the OMM has witnessed major efforts to improve and modernise public transport, facilitating inter-modality and the integration of walking and cycling into mobility, alongside an improvement in economic results for operators.

The Observatory of Metropolitan Mobility

The last report by the OMM (March 2007) collected mobility data for 14 metropolitan areas (figure 1), in which 45.3% of the total population of Spain is concentrated.

The structure of Spanish metropolitan areas comprises a city centre, which is more densely populated, and a metropolitan zone with a wider spread of activities: 6,000 inhabitants/km^2 in the main city as opposed to 910 in its surrounding metropolitan area. These differences are on the decrease due to the phenomenon of urban sprawl, in such a way that the main city loses its prominence within its urban area. As such, main cities grew by 3.7% between 2002 and 2005, whilst the population of the surrounding metropolitan areas increased by 6.7%.

Figure 1: Metropolitan areas that are members of the OMM



Analysis of metropolitan mobility 2002-2005

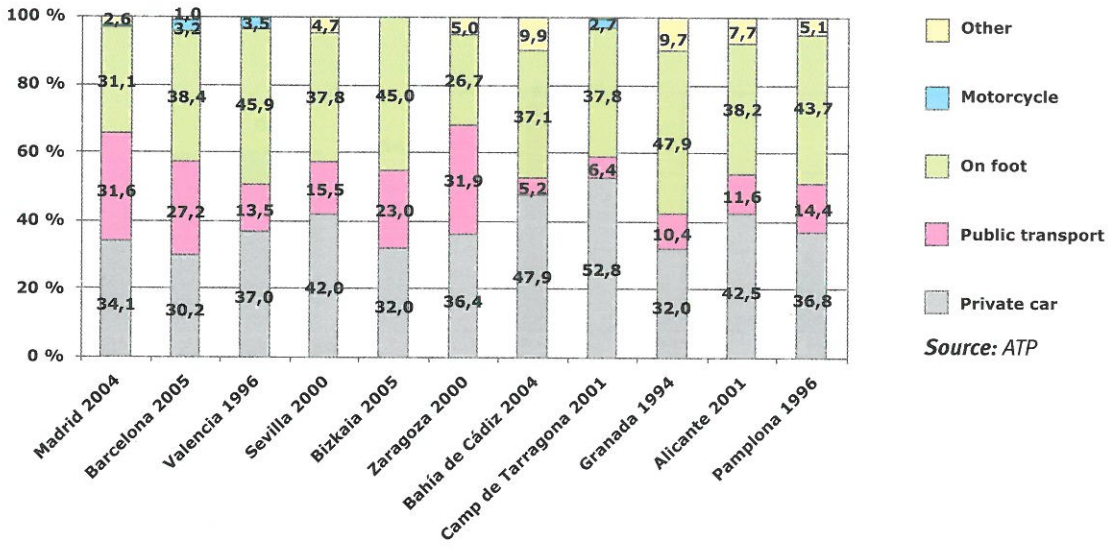
Demand for mobility[1]

The analysis of modal distribution of daily trips (figure 2) indicates that the largest metropolitan areas, Madrid and Barcelona, use more public transport, with 25-30% of journeys made using this mode, 31-34% using the private car, 31-38% on foot and 3-4% using other modes. Valencia and Seville, which are similar in size, have similar mobility ratios. Therefore, **size and modal split are relative;** in general terms, the bigger the city, the more public transport is used. Madrid, Barcelona, Bilbao and Zaragoza see between 23% and 32% of trips made using public transport, whilst in the smaller towns, the percentage varies at between 10-15%.

It is also important to emphasise the **high ratio of trips made on foot** (27-48%), which is the most-used mode in the majority of towns and a distinctive mobility characteristic of Spanish towns, which are traditionally dense and with a mix of activities. The private car has a large share in all areas: **more than 30% of trips are made by car**, or even up to 40% in some areas such as Alicante and Seville.

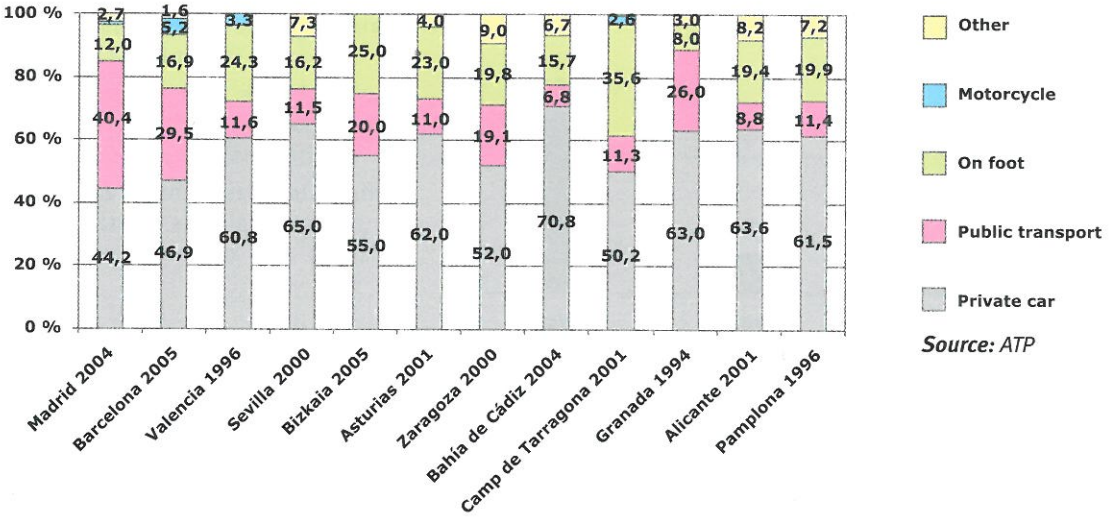
For trips related to **work, the use of the private car is increasing** and has climbed to 60% in some cases; in the large cities it varies at between 44%

Figure 2: Modal split for all kinds of trips



Source: ATP

Figure 3: Modal split for work-related journeys.



Source: ATP

and 52%. In any case, where trips to work are made by car, it is mainly to the detriment of trips made on foot or using public transport.

Non-obligatory trips (leisure, shopping etc) are mainly made **on foot** (up to 60%) or by **public transport**. This indicates that these trips take place in the area surrounding the home, a tendency that is likely to evolve in the coming years due to the changes in the structure of towns and to the location of new shopping and leisure centres in the peripheral zones.

It should be stated that between 2002 and 2005 there was a 10.8% increase in trips made using public transport (figure 4). In Madrid and Barcelona, the increase is largely due to investment in rail and metro services, which has somewhat reduced demand for the bus. The rest of the metropolitan areas have seen a significant increase in demand for bus trips.

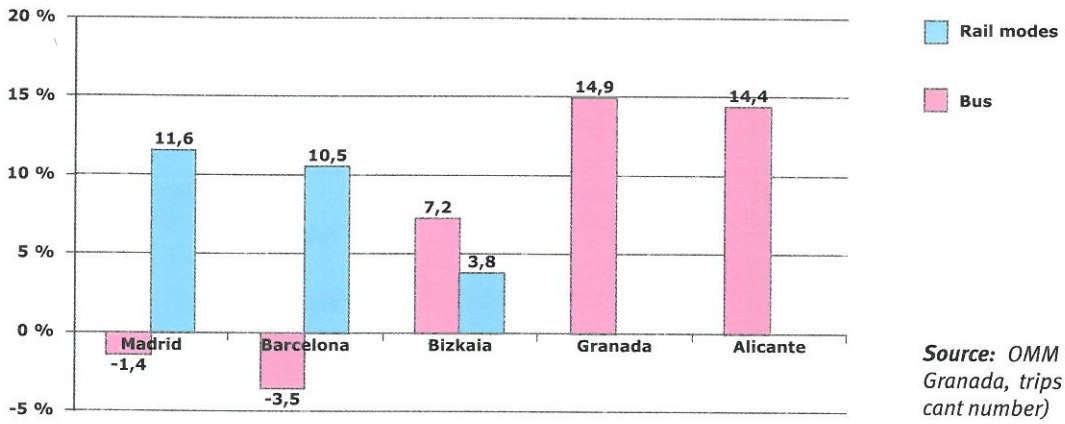
Supply of public transport

Municipal and regional administrations are improving the quality of public transport in order to compete with the private car. Furthermore, public awareness of rational use of the private car is increasing, which allows administrations to apply restrictive car-use measures. All of this is translating into a strengthening of public transport, which is reflected in the current supply of transport in Spanish cities. Figure 5 shows the increase in density of supply.

The high density of public transport networks results in good accessibility to public transport in all areas of Spain. In the large cities such as Madrid, Barcelona and Valencia, almost 95% of the population has a public transport stop less than 300m from home.

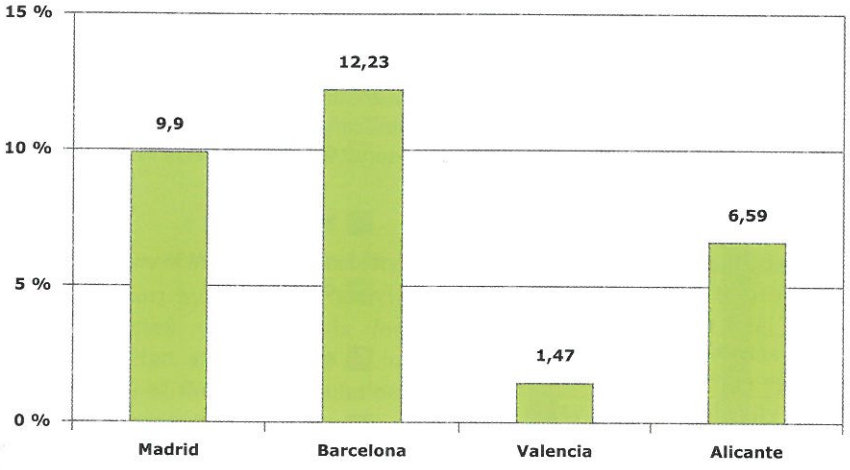
In order to improve the commercial speed of public transport as opposed to the private car, the major bus lines are being given bus lanes and priority at intersections. In Barcelona and Valencia, more than 10% of the bus network operates in bus lanes. Within urban areas, bus speeds are between 10-15 km/h, the metro speed is in the region of 30-35 km/h and trams around 20km/h.

Figure 4: Evolution of annual journeys by network (2002-2005)



Source: *OMM 2005 (In Alicante and Granada, trips by rail are of insignificant number)*

Figure 5: Variation in density of supply of public transport in km² (2002-2005)



Financing and investment

Tariff policies adopted in the different areas have been adequate and, despite network growth, this has allowed the average level of **cost coverage** via ticket sales to remain at around 70%. These figures indicate good management by urban transport operators in Spain.

On the other hand, the majority of metropolitan areas have followed a policy of sustained increases in ticket prices, which are much lower than in other European countries (EUR 1/trip, on average). Between 1990 and 2005, there was a 115% average increase in the average single ticket price (annually 7.6%); the increase has been higher in urban areas, where prices are higher. These increases, which are above the CPI, have compensated for the main operational and maintenance costs of the extension of public transport networks. These increases, together with an increase in the number of trips, have given rise to significant **increases in tariff revenues** in urban areas. However, demand is not greatly affected by current ticket prices, which is why such policies do not pose a threat in terms of a fall in demand and also allow for a continued improvement in public transport quality.

Efficiency of the public transport system: guided modes

The analysis of data from the different OMM reports highlights the importance of guided modes – metros and suburban railways – for public transport to be an important mobility player. The cities in which there is a significant urban railway service are Barcelona, Bilbao, Madrid[2] and Valencia; in Alicante, Asturias[3] and Seville the service is marginal. The former are towns that boast a higher modal share of public transport (figure 6) and in all of these the proportion of rail modes is very high.

Although it would not be correct to conclude that the only reason behind high demand for public transport is rail services, it seems clear that **having a quality service for guided modes is a key element in obtaining high demand for public transport**. Therefore, it could be said that a public transport network is more attractive when it comprises a rail service.

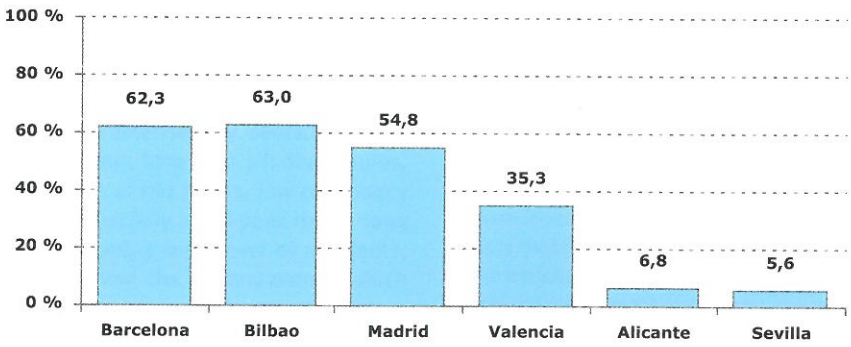
Conclusions

The Mobility Observatory helps to observe best practices and improvements in transport in metropolitan areas in Spain and to highlight the fundamental role that public transport plays in mobility strategies and sustainable urban development.

In this context, OMM reports, which showcase current undertakings involving better coordination between modes, improved information for the public and a priority focus on public transport and walking, are cultivating a positive evolution in the use of urban and metropolitan public transport. The analysed data shows that:

- The use of public transport is clearly growing in all cities, 10% in the last four years.

Figure 6: Trips by rail modes out of total number of public transport trips (%)



Source: *OMM and own input*

- Modal distribution in urban areas is satisfactory and, depending on the size of the area, public transport is better-used the wider the area.
- The private car is clearly predominant in all metropolitan areas, being utilised more for obligatory trips, representing a modal share of 65% in some areas.
- Journeys on foot are significant- more than 30% of the total- especially for non-obligatory trips.
- There is much investment in urban rail systems and fleet renewal, resulting in modern and attractive public transport systems in competition with the private car.
- Public transport systems are managed adequately and cover 70% of costs. Suburban bus services are self-sufficient.

1 Data from mobility surveys in metropolitan areas. In Spain, the methodologies of these surveys are neither homogenous nor regular but give a global vision of existing tendencies.

2 The data for Madrid is for the Community of Madrid, the area of responsibility of the Consorcio Regional de Transportes de Madrid, and not only the metropolitan centre.

3 Asturias features in the OMM as an entire metropolitan area, which is covered by the Consorcio de Transportes de Asturias.

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