

Barcelona's Urban Mobility Plan: towards a more sustainable city model

European cities increasingly face problems caused by transport and traffic. In that direction, the Barcelona's City Council is working to renew the Urban Mobility Plan of the city in order to improve citizens' life quality, strengthen the economy, and meet the European regulatory parameters for environmental issues by promoting sustainable urban mobility and increasing the use of clean and energy efficient vehicles. The Plan has established 4 main lines of work:

1. **Safety** by decreasing accidents.
2. **Sustainability** by reducing the use of private motorized vehicles.
3. **Equity** by guaranteeing access to mobility for all people.
4. **Efficiency** by reducing the economic/congestion costs of the transport system.

The new Plan needs to solve the problems and negative



Pilot electric bus in Barcelona. Source el Periódico.



Freight distribution electric bicycles.

impacts on urban life quality associated to the current mobility model and mainly caused by motorized traffic and congestion:

Loss of habitable urban spaces. Vehicle circulation and parking consume a lot of space in cities, up to more than 65% of the mobility public space (directly or indirectly).

Noise and vibrations. Traffic is one of the most important and annoying sources of urban noise, being the cause of 80% of urban noise above permissible limits.

Air pollution. It has multiple effects, including global warming, health problems and effects on buildings.

Energy consumption. Transportation consumes 42.8% of total energy in Barcelona.

Accident. There were 10.260 injured people by traffic accidents in Barcelona during 2011.

Diagnosis of mobility in Barcelona

Barcelona city has a population of 1.615.448, but its metropolitan region (RMB) counts 4.777.042 people. The city generates 7.833.495 trips/day, 64% are internal (BCN-BCN) and

36% connection trips (BCN-RMB).

Modal distribution shows the high proportion of pedestrian mobility, with 31.9% of all trips, encouraged by the density, compactness and climate characteristic of the city, and the significant low bicycle utilization, with 1.5% of all trips, linked to the lack of tradition in the use of this transport in our country.

Pedestrian mobility

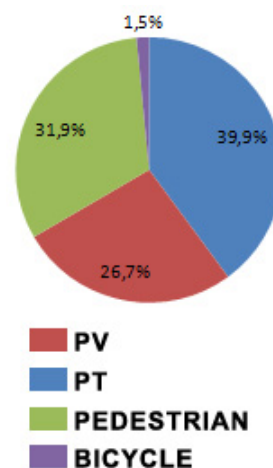
As mentioned, Barcelona has favorable conditions for pedestrian mobility. Moreover, some municipal activities are currently promoting this mode of mobility such as the continuously improving accessibility in pedestrian areas, the extension of the "30 zones", and the integral project "Camí escolar, espai amic", a network of school trails proposed to students to move safely on foot.

However, there are areas in pedestrian mobility to be improved.

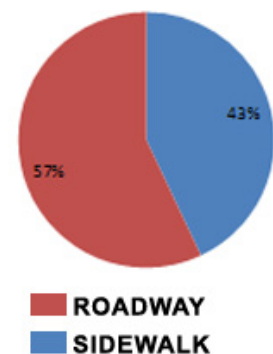
Security, for example, remains as unresolved with pedestrian still involved in a significant portion of accidents that occur in the city.

Additionally, street space for private vehicle use is still

very high, 57%, when private vehicle represents only 26.7% of trips, which means a lack of public space for other uses. We need to change the current mobility model in order to balance the occupation of public space between the different modes.



Modal distribution 2011.
Total trips.



Distribution of street space.

Bicycle mobility

Although bicycle represents only 1.5% of all trips, with 118.151 bicycle trips/day in 2011 (109.282 internal), cycling mobility is the mode that shows the most significant rise with a continued increase (237.5% increment between 2005 and 2011)

In addition, “Bicing”, the public urban bike sharing system inaugurated by the City Council in 2007, counts currently 121.800 users who generate 14 million trips/year, representing 36% of total bike trips, and plays a key role in promoting bicycle mobility.

Barcelona offers 181 kilometers of bike lanes, with a regular increase in recent years. 59% of the population live <200 meters of the bicycle network (1 minute) and 64% <3 minutes of a “Bicing” station (200m).

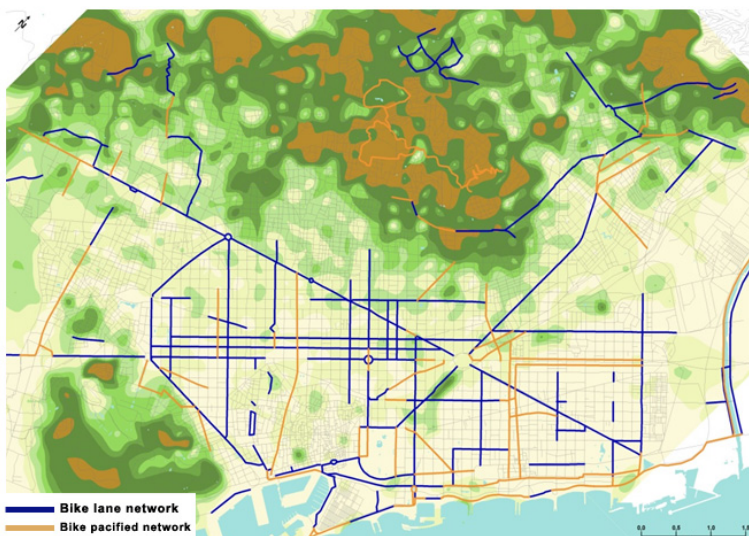
Despite this positive diagnosis, bicycle mobility requires some improvements to help to promote the use of this sustainable transport. In that direction, the current significant lack of connectivity and continuity to the different sections of bike lanes, or the security problems, are handicaps to be solved which may act as a deterrent to the use of bicycle transport.

Barcelona has also a lack of tradition of bicycle use, and this two-wheel transport mode has not the status symbols that may have motor vehicles.

Private vehicle mobility

The modal distribution of private vehicle in Barcelona has positively decreased from 29.1% to 26.7% between 2007 and 2011 (8.4% reduction). This tendency shows that now is the time to take restricting actions towards private vehicles and to promote more sustainable transport modes.

Private vehicle mobility represents 18% of internal trips, but up to 42% of connection trips. That means that traffic reduction in Barcelona involves discouraging private vehicle mobility between the surrounding municipalities and the city of Barcelona.



Bike network 2012.



Bicing, public urban bike sharing system.

As a Mediterranean city, Barcelona has a long tradition in the use of motorbikes. They represent 17.4% of private vehicle mobility, and have become a good scenario to introduce and popularize cleaner vehicles, especially electric mobility.

The parking management (availability and prices) is a key element in the politics of private vehicle mobility. In that sense, the establishment of the "Green Area" parking policy in the city has decreased parasite traffic looking for free parking and is acting as a deterrent for the use of car too.

Between 1999 and 2012, fuel price has more than doubled (almost tripled in the case of diesel), and between 2009 and 2012 the increase has been 50%. The future trend will be similar (or worse). This could encourage a reduction in private vehicle use and act as an incentive to introduce the use of clean and energy efficient vehicles.

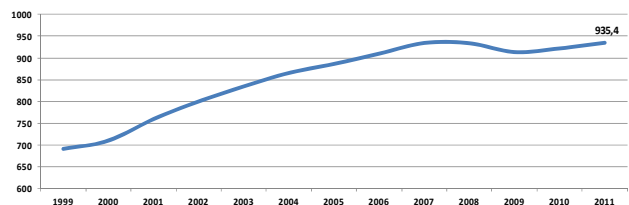
Public transport mobility

Although the use of public transport has risen progressively the last decade with a total of 935.4 million trips in 2011, the demand has remained more stable in recent years, probably due to the effects of the current economical crisis.

As regards environmental issues, the aim is to meet the European regulatory parameters for air quality. In order to achieve this, one of the goals the City Council has set in the 2013-18 Urban Mobility Plan is to reduce the number of trips made by private vehicles in Barcelona to 18.6% (currently it is 26.7%) and achieve a figure of 43% for trips by public transport (currently it stands at 40%). With this intention, the council is carrying out a number of improvements to encourage the use of public transport. One of these projects is the implementation of the new

orthogonal bus network of the city, which among other things will improve current service efficiency by increasing the buses commercial speed (currently commercial speed stands at 11.31 Km/h for buses, compared to 20.6 Km/h for private vehicle).

In addition, the council continues its commitment to the use of cleaner vehicles, as evidenced by the recent pilot incorporation of the first electric bus to the metropolitan bus fleet, or the presentation of the city's first all-electric taxi, the Nissan e-NV200 model. Xavier Trias, the Mayor of Barcelona, believes that "there is a basic element and that is hybrid and electric vehicles. It is a revolution that is upon us and to dodge it is a mistake. It is the great challenge".



Public transport mobility. Evolution of demand for the RMB.



City's first all-electric taxi, the Nissan e-NV200 model.