The mobility model is closely linked to the city's characteristics

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A stream of vehicles in the Basque Country. Credit: UPV/EHU

The massive use of motor vehicles leads to a whole host of problems, such as pollution, noise, accidents, occupation of space and others, which need to be tackled in two ways, according to the authors of this research: by improving the offer of public transport and properly managing the mobility demand.

As far as the conclusions of the study are concerned, the following aspects, among others, are worth highlighting: the more compact the

town or city is, the more concentrated is its population; the more jobs there are in the municipality itself, etc., the less private vehicles are used; the better the offer of public transport, the lower the number of people who use private cars; the higher the per capita income is (in small localities), the greater is the tendency to use the private car. According to Mendiola, despite the significance of these data, what has to be emphasised is "that this mobility model is not sustainable. This model depends, to a certain extent, on the characteristics of the city, so if the former are controlled, the mobility model can also be transformed".

Bizkaia underwent a radical transformation between the 1970s and the 1990s: coinciding with the industrial crisis, the hub of the economy shifted from the industrial sector to the services sector. This transformation triggered others; for example, the phenomenon known as "counter-urbanisation", in other words, the migration of many citizens and jobs from industrial towns and cities to small localities, and the resulting creation in the latter of low-density, residential areas. The following illustrates this phenomenon: at the end of the 1980s the rural area of Bizkaia lost 4.6% of its population; at the end of the 1990s, however, it saw an increase of 7%. Most of those who moved from the city to smaller towns and villages were socioeconomically on a medium-to-high level, and many of them continued to work in the capital. So they became commuters.

In their study "The Link between Urban Development and the Modal Split in Commuting: the Case of Biscay", the university lecturers Lorea Mendiola, Pilar González and Ángel Cebollada quantified the consequences this demographic growth had for mobility. According to Lorea Mendiola (co-author of the research), "the study has made it very clear that the characteristics of the town or city influence the mobility model". The conclusions of the study are, among other things and briefly, as follows: in the period analysed (the year 2001), motor vehicle use increased because the distance between the place of residence and

work also increased. As the offer of public transport is more limited in rural areas, this mobility need was largely met by the private vehicle. In 2001, in Bizkaia as a whole, 52.5% of the commuting was done in private vehicles; in the small localities (with less than 2,000 inhabitants), the percentage rose to 82%. According to Mendiola, "the characteristics of the town or city largely determine the mobility need. If these characteristics are controlled, the mobility model can also be controlled".

The socioeconomic characteristics of the user (relating to his/her way of life and habits) also influence the choice of transport to get to work. This is why, the researcher pointed out, apart from the planning policies to control city expansion, awareness campaigns and measures to discourage the (unsustainable) use of the private vehicle are also indispensable.

Multiple Regression

For this study, data from the population and housing census for 2001 were used and, even though its authors are keen to pursue the study further, "we have come up against difficulties because in 2011 the system for drawing up the census was changed," pointed out Mendiola. Furthermore, apart from commuting, the authors of the study also want to analyse the trips made by students.

As regards the system used to produce the study, "we resorted to an econometric procedure known as 'multiple regression'. What does this regression consist of? Well, it involves expressing a dependent variable through a set of independent variables using mathematical models for this purpose," explained Lorea Mendiola. Three types of variables have been used to produce this work: those relating to land use, the characteristics of the transport system and those relating to the socio-economic characteristics of the travellers. "More than anything, we have used the models proposed by spatial econometrics," pointed out Mendiola, "and that has in fact been one of the most innovative aspects

of this work. What is spatial econometrics? It is a methodology that takes into account the fact that what happens on a specific geographical point is related to what occurs around it. In this case, this methodology shows us that the transport model of a locality is linked to that of the adjacent towns and villages and that the solutions need to be sought among them all."

The Research Team

The research team comprised Lorea Mendiola (UPV/EHU-University of the Basque Country), Ángel Cebollada (UAB-Autonomous University of Barcelona) and Pilar González (UPV/EHU). The study consisted of an empirical analysis of the link between the use of urban land and the mobility model using, for this purpose, data on the municipalities of Bizkaia from 1991 to 2001. The methodology used: multiple regression, and spatial econometrics techniques, in particular. The study classified the commuters into three groups: those who go to work in private vehicles, those who use public transport, and those who walk or cycle to work. So these were the dependent variables of the regressive analysis.

More information: Mendiola, L., González, P. & A. Cebollada (2014). The Link between Urban Development and the Modal Split in Commuting: the Case of Biscay. *Journal of Transport Geography*, 37, pp. 1-9

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