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D I G E S T

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Shared mobility

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The role of car sharing in low carbon mobility

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A study of free-floating car sharing (FFCS) in 12 cities found that it is mainly used for shorter trips with a rental time of approximately 30 minutes. The study found that FFCS has the potential to contribute to low carbon mobility if the vehicles are electric and if usage does not displace active travel and public transport use.

Shared mobility includes sharing options from services in which the vehicle itself is shared such as car sharing, ride-hailing and carpooling. FFCS allows users to book a vehicle through their phone, use it and then return it anywhere within a designated area of a city. Vehicles in station-based car sharing are returned to the place where they were picked-up. FFCS fees are per minute, while station-based car-sharing fees are per hour and distance travelled.

This study examined travel time and usage patterns of FFCS vehicles among early adopters in 12 cities in Europe and the United States of America (USA), and whether electric vehicles (EV) in the fleet are used differently. For example, whether EVs are used for shorter trips compared to internal combustion engine (ICE) vehicles.

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DIGEST

TRIMIS

The Transport and Research and Innovation Monitoring and Information System (TRIMIS) supports the implementation and monitoring of the Strategic Transport Research and Innovation Agenda (STRIA) and its seven roadmaps.

TRIMIS is an open-access information system to map and analyse technology trends, research and innovation capacities, as well as monitor progress in all transport sectors.

TRIMIS is developed and managed by the Joint Research Centre on behalf of the European Commission.

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The role of car sharing in low carbon mobility

A dataset of sampled FFCS rentals (2014-2017) from two different companies for nine cities in Europe (Amsterdam, Berlin, Cologne, Dusseldorf, Hamburg, Madrid, Munich, Stockholm and Vienna) and three in the USA (Denver, San Diego and Seattle) was used. In addition, data on alternative transport modes was collected, but only from four cities in Europe (Amsterdam, Berlin, Madrid and Stockholm) and three in the USA (Denver, Seattle and San Diego) due to sampling restrictions.

The study found that FFCS was mainly used for one-way trips with a medium rental time of approximately 30 minutes. However, actual driving time was closer to 15 minutes. The rest of the rental time consisted of cruising for parking and free reservation time including access time.

The free reservation time is 20 minutes in the European cities studied (except Stockholm with 15 minutes) and 30 minutes in US cities. However, there was no major variation in the time difference between driving time and rental time in the cities studied.

For the majority of trips (85%), there was a 30-minute gain for using FFCS compared to that for walking. The travel time for cycling is faster for the majority of trips (70%) with a distinction between European (80%) and US cities (60%). FFCS was faster for the majority of trips compared to that for public transport, with a time gain of between 10 minutes and 30 minutes.

The analysis showed that there are differences in usage patterns between battery EV (BEV) and ICE vehicles in the mixed fleet. BEVs are chosen for shorter trips, even though these are lower than the vehicle range. Evidence from cities with a fully electric FFCS shows that the service has a high usage level. A major challenge when electrifying fleets is to ensure there are extensive charging opportunities.

Despite the higher cost of an FFCS trip and differences in time gain, further research is required to better identify other time elements such as time spent looking for parking and accessing vehicles – and how important these are for users.

FFCS has the potential to contribute to a transition to low carbon mobility if EVs are used and if the usage does not displace active travel or public transport use. The study concludes by highlighting the need for local policy makers and urban planners to take action to facilitate FFCS, reduce mode displacement, and reduce the travel time between FFCS and other transport modes. Travel time by public transport tended to be longer than by FFCS and could be improved (e.g. designated bus lanes), while urban planning and infrastructure development can influence the travel time of active modes (e.g. walking and cycling). Those cities (Amsterdam and Madrid) with an all-electric fleet have higher usage levels, with local regulations such as free parking for BEV being a major reason for operators to have a BEV only fleet.