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Bike share programmes reduce car use in cities but benefits are less strong in London

Bike share programmes appear to have successfully reduced private car use in Brisbane, Melbourne, Washington DC, Minnesota and London, suggests recent research. In London, however, high demand for vans to transport bicycles between docking stations may have increased overall motor vehicle use in the city.

Bike share programmes, where people can borrow a bicycle at one docking station and leave it at another, have been adopted in over 700 cities around the world. They offer a sustainable mode of transport that can reduce car use, congestion and emissions.

It is generally assumed that bicycle journeys replace car journeys. This study explored bike share programmes in Australia (Melbourne and Brisbane), the US (Washington DC, and the neighbouring cities of Minneapolis and St Paul in Minnesota) and the UK (London), to see how they affect car use. It estimated bike share use based on the electronic tracking data of annual bike share members (not casual users) for the year 2012.

Members using the bike share programmes were surveyed online by either the bike share operators or the researchers. Nearly 9000 members across the five cities completed the survey, although numbers varied significantly between cities: from 372 respondents in Melbourne, to 5287 in Washington DC. The survey asked which form of transport their last bike trip had replaced. The majority of respondents across all cities said the bicycle had replaced public transport or walking.

However, the bike trips had still avoided a significant number of car journeys. The researchers estimated they had replaced 21% of the total distance that would have been covered by cars in Brisbane, 19% of the distance in Minneapolis/St Paul and Melbourne and 7% in Washington D.C. The lowest car substitution rate of 2% was found in London. The researchers suggest that many commuters have already switched to public transport or walking in this city as car use is inconvenient.

To make sure that users can find a bike or a space to leave a bike at each docking station, operators need to rebalance the bikes, moving them between stations with vans. The researchers calculated the impact of these vans on overall motor vehicle use in the five cities, accounting for effects of the bike programmes on private car use. They expressed the results in terms of total vehicle kilometres travelled in the different cities.

Motor vehicle use was reduced by approximately 90 000 km a year in Melbourne and Minneapolis/St Paul, and by 243 291 km a year in Washington D.C. Although London's bike share programme significantly reduced private car use in London by 632 841 km a year, the greatest distance of all the cities, its heavy use of support vans increased overall motor vehicle use by 766 341 km. The vans were estimated to travel 2.2 km for every 1 km of avoided car journey. Vehicle support figures for Brisbane were not made available to the research team.

The high demand for vehicle support in London may be partly explained by the city's strong separation of residential and commercial areas, which creates a 'tidal' commuter pattern. The study suggests that London's bike share scheme needs to increase private car substitution rates to counter the effects of the support vehicles. Should substitution rates increase to 10%, for example, car travel reduction would rise to 3.1 million km, which is just over twice the distance travelled by support vans.

The researchers emphasise that there are other benefits to bike share schemes, other than reduced vehicle use. These include health benefits, cost savings and the 'normalisation' of cycling, which may ultimately lead to more bicycle use in future.

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