

Is sharing the answer to pollution prayers?

Beate Kubitz assesses the potential of car clubs, bike-share and lift sharing

Huge claims have been made for the potential of shared transport. Research and modelling have shown that – in theory – cities could achieve dramatic cuts in the numbers of vehicles on streets, congestion and parking requirements on the back of radically shared transport.

Take the example of the much-fêted paper *ITF Urban Mobility System Upgrade*. This was a modelling exercise which looked at the Portuguese capital, Lisbon. It treated all trips of less than a kilometre as walking or cycling, all longer journeys with up to a single interchange as public transport and the rest of journeys were assigned to a system of shared ride-hailing taxis of varying sizes.

The paper showed the potential to remove 90% of vehicles from the streets.

Given its findings, the potential appears enormous, leading to high expectations that shared transport will deliver all sorts of benefits to cities – from congestion reduction and air quality improvements to active travel and public health benefits.

But, what is the reality?

Several forms of shared transport, including car clubs, bike-share and lift sharing, have been around for a while. What indications are there – if any – that schemes and developments on the ground could ever live up to the hype? We seek real-

world evidence the travelling public is keen to embrace shared transport in such a way that it could fulfil its claimed potential.

TECHNOLOGY AS AN ENABLER

The rise of transport-related technology means shared transport has become easier to develop, access and use.

Smartphones can enable instant access to bikes and cars, providing the means to plan, book and pay for trips and vehicles. Operators can now verify user identity online, get instant payments and access Driver and Vehicle Licensing Agency records to ensure users have a valid licence.

This has enabled a plethora of new services – and a new cohort of people able and primed to access them.

But, as innovation in the sector increases inexorably, one of the key factors in take-up is consumer attitudes to sharing. The rise of Uber shows people are happy to

▲ **Ride-hailing has become part of everyday life in major cities, but is it an indicator of things to come?**

use technology to summon and pay for transport – but are they willing to share?

MERGE GREENWICH

The Merge Greenwich project is developing a blueprint to assess the potential impact of a scalable autonomous vehicle ride-sharing service, integrated with existing public transport.

The project, backed by a consortium of leading mobility organisations including Addison Lee, Ford and the Transport Systems Catapult, has engaged in consumer research and modelling to assess the potential for using a combination of public and shared transport across the area to help increase transport connections.

The research scoped potential models for the service using different sized and specced vehicles and surveyed customers to determine their attitudes – and therefore the potential take-up. From this research, the team modelled the potential impacts – the numbers of vehicles needed and the viability of services – plus their impact on accessibility, transport hubs, road space, public transport and congestion and emissions.

Its research into the potential for automated ride-sharing services showed that, while 85% of people were willing to use an autonomous vehicle, only 46% were ▶



ABOUT THE AUTHOR

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► willing to share their journey in one.

In the simulation, the research focused on vehicle occupancy being key to reducing congestion and emissions – the higher the proportion of sharing, the greater the potential for benefits. However, an unwillingness to share could have negative consequences.

In the research, people said they would be happier in larger vehicles with more passengers rather than sharing a confined space with a few people. Willingness to share also increased if it was suggested there would be an on-board steward.

The research showed services could be designed to be profitable as well as make travel more accessible. But, there was also the potential for them to have negative consequences without a proper legal framework, regulation and education.

"If you don't design the system correctly, you risk increasing the problems. However, if you get it right, we can see the potential to link the north-south axis of Greenwich without having to engage in massive infrastructure investment," says Andrew Wescott, head of regulatory and external affairs, Addison Lee.

SHARED RIDES

While the autonomous vehicle potential of shared transport is still at a theoretical level, there are already successful shared transport projects with demonstrable benefits in the form of workplace shared commute schemes.

Well-designed schemes show significant take-up and impacts – indicating there is some real-world willingness of people to share transport in particular contexts.

Liftshare works with more than 500 large employers, typically at centres of employment, grappling with full car parks or even extreme congestion causing widespread traffic issues on local roads as people arrive and leave by car. Employers encourage staff to sign up to the Liftshare platform which matches staff trips and also authenticates when staff make shared trips.

Wolseley worked with Liftshare to analyse the origins and destinations of the 360 employees at its Warwick Technology Park site. This analysis showed just how far people have to travel to get to work, who might have active travel options, how many have public transport options and, for the rest, the start points of people driving onto the site in single-occupancy vehicles.

This enabled both employers and employees to understand how many people were making similar journeys and highlighted that there were often numerous different potential sharers for trips – answering concerns that 'no one



goes my way' or that people might be stuck if one lift-sharer lets them down.

After education and training of staff, 61% of employees at Wolseley signed up to the platform with 33% making regular authenticated shared journeys.

This has helped the company save on parking costs – reducing demand by 80 spaces has cut parking costs by an estimated £100,000 per year. It has also reduced the amount of traffic entering the site which cuts congestion on local roads.

Workplace lift sharing in the UK is more popular than sharing between members of the public.

Of the one million shared trips made on Liftshare each month, three-quarters are employees at client sites sharing their commutes. The rest are made by members of the public sharing with each other.

The fact that the UK is not putting a lot of marketing resource into promoting

▲ **Bike-share has been around for quite a while and appears to be growing in popularity**

sharing to members of the public could explain the trend. Ride-sharing is notably more popular in continental Europe. French ride-sharing giant BlaBlaCar has raised more than \$400 million (£305m) of venture capital to grow its market on the continent – while home-grown companies have taken a more organic approach.

CAR CLUBS

While there is not yet anything close to universal availability of multi-occupancy shared transport, there is evidence that sole-occupancy of shared assets is gaining traction across the UK.

The growth of car clubs and bike-share are testament to this.

Over the decade between 2007 and 2017 car club membership grew from 32,000 to 245,000, according to the last *Annual Survey of Car Clubs* by CoMoUK and now stands considerably in excess of this figure. This growth has been particularly strong

in London where the network of car club coverage is more dense.

Two providers in London, Zipcar and BMW-Daimler's DriveNow, both offer cars on flexible hire terms where vehicles can be left within their operation zone rather than being required to be returned to base.

It's been notable that Zipcar has seen a substantial uplift since the establishment of its Flex service – exceeding the 250,000 member mark a few months ago. This represents a 30% growth in membership in the past year.

This increasing take-up is significant as the impact of membership has been measured over several years by the *Annual Survey of Car Clubs*.

While on the surface car clubs appear

to not tackle the issue of congestion and pollution, data shows that users are driving less than those who own their cars, and it reduces further over time.

For instance, 24% of the new user respondents in London were using a car at least once a week before joining the car club, falling to 19% after joining. The gap widens as people use the car club vehicle less over time. According to Transport for London (TfL), 36% of Londoners use a private car at least once a week. However, only 16% of London car club members use a private car once a week.

This research shows car club members are more likely than non-members to use public transport and cycle than other people – 62% of long-term car club members travel by Underground at least once a week compared with 37% of the London population, 33% of car club members use the train (compared with the 16%) and 23% of car club members cycle at least once a week (9%). The overall mileage of car club members drops by an average of 570 miles per household, with driven mileage 3,865 less than the average London driver.

There are also benefits in terms of space. The Annual Survey of Car Clubs 2017 shows that, in London, car ownership falls after joining a car club. Just less than half (49%) of people who had been members for at least a year had owned at least one car prior to joining. This fell to 23% after joining.

The organisation calculates that each car club car replaces up to 13 privately-owned cars as a result of members selling or disposing of a car and not replacing it.

There are other benefits besides a straightforward reduction in car use. Car clubs have a multiplying effect because they enable more people to try new technology and have a particular role in accelerating the use of electric vehicles (EVs) with obvious benefits for air quality.

More than 20% of the Scottish car club fleet is electric. Having lagged behind in recent years, car clubs in London are rapidly adopting EVs as the city strives to improve air quality and the charging infrastructure develops. The DriveNow fleet includes 130 electric BMW i3s, and in 2018 Zipcar rolled out a 325-strong fleet of

fully electric Volkswagen e-Golfs. The first 100 of these made in excess of 20,000 trips within their first three months of operation.

Car club use in London is particularly strong with a number of operators offering vehicles across a patchwork of boroughs – however car clubs thrive across the UK, operating in towns, cities and rural areas.

CAR CLUB SUCCESS FACTORS

Many cities across the UK have procured single operators for their on-street car club provision and support take-up through consistent parking and planning policies and through business use of car clubs.

Car club operators sourced this way are often given access to on-street parking and potentially to flexible parking zones.

Occasionally, this process has helped draw down funding to launch a new car club. However, the procurement is generally at no cost to the local authority.

While on-street positions are favoured by operators – visibility is a key factor in take-up with up to 30% of car club members seeing an on-street vehicle prior to joining – it is no longer essential.

Enterprise Car Club uses on-street and off-street (private land, car parks and paid-for parking). This is supported by its national network of car hire centres and it has also introduced car clubs at nine stations along LNER rail routes.

It is possible that more multi-operator cities will develop as the market matures. However, for the moment there is far from universal coverage and hugely different rates of car club availability across the UK.

There is a sharp contrast even between cities – for instance, Norwich (60 cars and vans serving a population of 196,000) and Derby (five vehicles in a city of 255,000).

Authorities have a range of policy levers which could promote car clubs. These include provision of on-street car parking (in the case of Norwich the authority releases more parking spaces as use of the club grows). In addition, where parking controls favour short-term parking for the users of businesses and services – rather than enabling cheap or free on-road 'car storage' – car club membership becomes more attractive. Norwich Car Club markets itself as the 'hassle-free' option, in contrast with the stress of finding or the expense of paying for parking.

Parking is, however, a contested area. On-street car clubs require local authorities to create traffic regulation orders to enable car club bays to be created or parking schemes that allow flexible car club vehicles to be parked within designated zones.

There are demonstrable future benefits, but political expediency and short- ►

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Merge Greenwich research finding

► term pressures to maximise revenue can make it hard for local authorities to reassign spaces to car clubs.

Other policy levers are less obvious, but can help increase car club provision. Planning conditions requiring new developments to include car clubs (by requiring them as Section 106 contributions or Community Infrastructure Levies) to enable residents to reduce their car ownership requirements – or even specifying car-free developments.

In addition, successful car clubs do not operate in a vacuum. CoMoUK research indicates that they are more likely to be successful where there is good access to public transport. Typically, car club members commute by public transport but use the car club vehicle at evenings and weekends. Where public transport options are limited, people tend to be forced into car ownership by default.

While there is a range of demographics which predict the success of car clubs, the single biggest factor is the level of education in the area.

Shared transport is most likely to take off in areas with higher education establishments – and though schemes will grow beyond these zones, starting with a university or college as a partner is often the springboard to wider success.

SHARED TRANSPORT AND MOBILITY AS A SERVICE (MaaS)

The potential for shared transport to be offered as a last-mile option, enabling end-to-end journeys across multiple modes, has also been eagerly awaited. However, in the UK we're only just seeing the first examples of integration.

With the roll-out of the Whim MaaS app in the West Midlands, Transport for West Midlands is launching bike-share across the seven urban areas of the region.

The scheme, operated by Nextbike, integrates with the Whim app which brings public transport, taxis, car clubs, car hire and bike share into one platform.

The trial in Birmingham is on a relatively small scale, but a study of the first Whim operational zone in Finland shows that making modes available in a simple way encourages multimodal journeys.

The recently published *Ramboll report: Whim Impact, Insights from the world's first Mobility as a Service System* analyses Whim user data and finds rises in bike-share trip density before and after public transport trips, indicating that users solve their first and last mile problems.

This model is spreading as Citymapper launches its Citymapper Pass. Available in London, it bundles public transport, cycle hire and the flexible Citymapper Ride

service into one subscription managed with an app and a contactless card.

Fleets on demand, meanwhile, recently launched its MaaS platform, Mobilileo, which allows users to find, book and pay for their entire business journey (including car hire, car clubs, taxis, bike hire, buses, trains, flights and accommodation) through one transaction on one device.

BIKE-SHARE IS GROWING IN THE UK

In 2018, the average number of bike-share trips per day was 52,321 – up from 29,437 two years earlier.

Bike-sharing has experienced some blips – with the arrival, expansion and then rapid contraction of dockless bike share (see *microbilty feature on page 50*) – but the overall trend is upwards and such schemes have tangible benefits for cities.

A CoMoUK survey found that 14% of bike-share users would have previously used a car or taxi for a particular journey.

They also have greater interest in other shared mobility services:

50% use bike-share in conjunction with public transport, for example (bus, train, tram and tube), while 28% are likely to use car clubs, 22% ride share, 32% shared taxis and 41% MaaS.

Publication of the *Commission on Travel Demand* report last year points to an overall reduction in miles travelled and time spent travelling by individuals over the past 20 years. However, there has been a rise in other types of traffic such as the use of vans for online deliveries.

As individuals, we each make 16% fewer trips than we did in 1996 and travel 10% fewer miles. This trend is particularly strong among younger people who drive less than previous generations.

A new type of travel consumer is emerging and we will only see more new, shared and digital services developed to meet their needs and expectations.

Not all such services have succeeded or will do so. The commercialisation of flexible shared journeys in smaller vehicles has proved difficult.

Ford closed the Chariot on-demand



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shuttle service just two years after buying the business saying it "will not be a sustainable service".

Available in London in the UK, customers booked a place on the 15-seat minibuses via a smartphone app.

"It was our first foray into mobility," says Sarah-Jayne Williams, director of Ford Smart Mobility in Europe.

"The premise was if you take people out of their own transport and into shared, you take vehicles off the road."

She adds: "However, we could see that it wouldn't be sustainable for the future. It is very unusual for a car company to start up and close down [a business], but we think it's the way it will be with some of these new initiatives."

First's MyFirstMile service, which provided taxis to deliver people from outlying areas onto major express bus services, also ended without extension after its funded trial period concluded.

And Slide Bristol, serving commuters with flexible on-demand minibuses matching their travel patterns, closed in late 2018 after two years. Slide made more than 40,000 passenger trips covering

130,000 miles during that time, but was hit by the challenging conditions posed by Bristol's infrastructure and competition from rapid transit routes.

Coralie Triadou, microtransit director at operator Ratp Dev, said when announcing the closure: "Our experience in Bristol has shown that microtransit services in large city centres can only operate smoothly when they are fully integrated with the public transport network."

ON-DEMAND SHUTTLE SUCCESSES

This shuttle model, however, has not entirely disappeared. ViaVan, for example, was launched in London in 2018 covering Zones 1 and 2 with flexible on-demand shared taxis. The service is a partnership between ride-sharing platform Via and Daimler AG. When passengers request rides through the ViaVan app, they are notified of a pick-up point, a time and an estimated journey time.

Via's sophisticated algorithm is constantly routing and rerouting vehicles so it selects the best vehicle and fits it to an optimal route meaning those already on-board are not delayed beyond an acceptable number of minutes by picking up an additional passenger.

The service has recently expanded to cover Zones 1-5 in London and has also launched in Milton Keynes.

Via's platform also powers on-demand bus service ArrivaClick which launched two years ago in Sittingbourne, Kent, and has recently expanded to Liverpool and

▲ **Snap commissions coach trips in response to demand as people search for journeys on its site. A series of forecasting and demand engines analyse searches and predict demand for particular journeys**

Leicestershire. The longevity of these services may indicate that the model is here to stay.

As the succession of trials that have not progressed further shows, there is no guarantee of finding the perfect balance between matching sufficient travellers with services to make them economic.

However, crowdsourcing potential journeys may be a more successful approach – and create efficiency as well as satisfaction.

Snap commissions coach trips in response to demand as people search for journeys on its site. A series of forecasting and demand engines analyse searches and predict demand for particular journeys. Search data allows journeys to be commissioned from, and to, quite local areas rather than forcing people to travel into central bus stations – which reduces overall journey time for users.

Once demand is established, the coach services are commissioned from the best rated operators in any given area via an invitation-only procurement platform. Through this, Snap opens up the intercity trip market to private hire and tour operators.

Thomas Ableman, chief executive of Snap, emphasises that quality is key to the success of the platform. He says: "By only inviting the top 20% of the local operators to the platform – and then selecting operators by their customer satisfaction ratings rather than any other metric – we are able to design high quality services that delight the customer in the process."

Coach drivers have an app which routes their journeys – including the pick-up location and name of each traveller. There's no ticketing and no on-board sales. The travel is personalised and only names are required in order to board. Snap is providing 15,000 customer trips per month and can point to a total of 190,000 customer trips made – 23 million passenger miles.

Ableman adds: "Around 33% of our customers would previously have travelled by train and around 25% would not otherwise have made the journey."

As companies like Snap provide smarter and slicker services, bringing Uber-level planning, personalisation and payment to different markets, the lines between services will blur.

Shared transport may not yet be ready to solve all the transport issues, but the new users, together with increasingly sophisticated services, point to a future away from car ownership and single occupancy trips and towards shared and on-demand cars, bikes and trips.

The policy conditions need to be right to enable new services to establish and grow. Further, it will be up to cities and regions to shape those services to check that they grow in the right direction, ensuring equitable access to travel while limiting congestion and improving air quality. **ST**

TURN OVER FOR THE PEER REVIEWS