

# What is the FUTURE for public mass transit services?

PAST

How must they evolve to meet the different needs of the 21st century traveller? asks **Beate Kubitz**

**T**oday's traveller demands convenience, accessibility and control at a low cost. Digital interfaces and new micro-vehicles from e-bikes to kick scooters are in the ascendant. But set aside the hype and there's a basic element these innovations depend on: "There is a symbiotic relationship between public and shared transport. Making the shift to car club membership means reducing car use – and to make the sums add up, it requires reliable and extensive public transport to replace core car trips such as commuting," says Antonia Roberts, deputy chief executive of shared transport organisation CoMoUK. "Similarly, bike share thrives where there are clusters of people able

to ride core routes, often typically last mile trips after a public transport journey."

In CoMoUK's latest bike share survey, 19% of respondents used bike share in conjunction with the bus and 28% with the train.

"At the same time, public transport relies on shared transport to fill the gaps and offer the flexibility that enables drivers to switch to a low-car lifestyle," adds Roberts.

"If we are ever to make a success of digitally integrated transport travel packages, there must be partnerships with shared mobility to ensure convenience and flexibility that competes with private car use."

New mobility depends for its success on a core of public mass transport.

## HOW EFFICIENT IS PUBLIC TRANSPORT?

From the point of view of cities trying to maximise their land use, mass transit enables huge numbers of people to be moved in relatively small spaces, far more than cars.

While a 3.5m-wide lane can carry 1,500-2,000 people in cars per hour, in buses this jumps to a potential 5,000, rising to 9,000 with segregated bus lanes.

With fixed rails, this increases several fold: light rail/trams can take 18,000-20,000 people in the same space and time. Trains between 40,000-90,000 people per hour.

By comparison, active travel sits between the two: a 3.5m lane can take up to 12,000 people on bikes or 15,000 pedestrians per hour (although the distances travelled are much shorter).

It is both mathematically and experientially the case that using urban space for public transport enables tight urban cores and centres of dense social, cultural and economic activity.

However, the wider context is that UK households spend roughly 80% of transport outgoings on privately-owned cars and just 20% on public transport. The vast majority of journeys are made by car.

Public transport in the UK is largely commercially provided, but it still attracts large public subsidies which mean that its value is continually questioned. A quirk of the system is that, despite subsidies (apart from London), local and national government have limited powers to specify which areas are served and how – particularly by buses.

Transport policy has started to recognise that it is essential to reduce reliance on private cars to reverse their environmental,

public health and congestion impacts. Revisiting the provision of mass transport will be key.

## CONVENIENCE VS SPACE

The key elements of public mass transit systems are those of scale and of sharing space.

The attraction of high capacity public transport for urban planning is clear. For users, the attraction is more variable, which local authorities need to take into consideration if they are to persuade greater uptake.

Public transport implies giving up private space. In the best cases, this is a trade-off for faster journey times and the ability to do other things while travelling.

The classic example is the train traveller working or relaxing when moving at 100mph. In less ideal scenarios, it can be expensive, unreliable, slow and uncomfortable. Buses can be caught in congestion, with poor connections and multiple changes and long waits between them.

However, in contrast to perception, public transport users tend to have a positive view of their experiences, according to Transport Focus. Its research shows buses to have a satisfaction rating of 90% and trains 91%, compared with 82% for road journeys.

Those experiences are shaped by availability, speed, cost and convenience.

Consumers' top priorities for mass public transport are value for money, punctuality and reliability. They also want productive journeys with door-to-door solutions.

"People will only change their mode if the offer is excellent," says Linda McCord, Transport Focus passenger manager.

This requires more than the evolution of mass transit services; it requires local authorities and city planners to create policy frameworks that encourage people to change their modal preferences.

AECOM's Dave Wildger says: "We have to link places where people work with the places where they live. This requires liberal

and flexible policy, efficient partnerships and public/private investment."

Philip Beer, partner at Burges Salmon, adds: "You have to make it easy for people to understand pricing with clear information about journeys and interconnected services. You have to make it easy to find the cheapest way to get from one side of a city to another in the quickest, easiest way."

## AVAILABILITY

The availability of public transport has a huge impact on use. While it may seem obvious that both origin and destination must be served for a journey to be possible, this is often forgotten when it comes to providing public transport. Services are generally regular and frequent in urban cores, however, many people travel from or to suburbs and outlying districts.

Shrinking privatised bus services mean many people are unable to access public transport when and where they need it.

If people bridge the gap with a private car, there often seems no reason to stop and change mode – the simplest (and usually cheapest) course of action is to continue to their destination.

## COST

Car travel provides a fairly constant cost per mile, while public transport fares vary wildly. The difference between peak and off peak fares and the relative expense of first- or last-mile local travel (which tends to



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ANTONIA ROBERTS, COMOUK

80%

of a household's transport spend is on privately-owned cars



## ABOUT THE AUTHOR

**Beate Kubitz** is a writer, researcher and consultant in new mobility. She is the author of the *Annual Survey of Mobility as a Service in the UK*, as well as reports on car clubs, bike-share, open data and transport innovation. She is director of policy and communications for TravelSpirit and previously worked for CoMoUK.

► be more expensive per mile than long distance journeys] creates a complexity that tends to mitigate against relying on public transport. The sunk cost of car ownership also tips the balance in favour of car use.

**SPEED**

Train and tram journeys are largely unaffected by road congestion, but bus speeds have been affected as traffic has slowed in city centres. Analysis by Professor David Begg in 2016 found “a direct correlation between operating speeds and patronage: a 10% decrease in speeds reduces patronage by at least 10%”.

**CONVENIENCE**

Many journeys necessitate changes either between routes or between modes. This adds journey time and often an additional layer of inconvenience. There’s no automatic co-siting of bus and train services to make connections simple – these services are run in a free market environment in which the operators are, effectively, in competition with each other.

The lack of cooperation between services is further encoded in legislation and regulation. For instance, a bus cannot legally wait for a late train. Timetables are enforced by the Traffic Commissioner and ‘anti-competitive practices’ by the Competitions and Markets Authority.

**TRENDS IN PASSENGER TRANSPORT AND MASS TRANSIT**

There has been a shift to rail over the past decade, as more people opt for the rapid access into and between cities it provides.

“Regional rail patronage (which includes the city regions outside London) has grown by 36%,” notes a 2018 Urban Transport Group report on transport trends.

“The UK’s expanding urban tram and light rail networks have also boomed with patronage growth of 44%.”

However, buses, which nationally account for 70% of all public transport journeys, are in decline. The decline in London follows a long period of high growth; elsewhere bus use has fallen over a number of years.

Bus use in the city regions outside London has fallen by 11%, from 1.1 billion journeys in 2009/10 to 937 million in 2016/17.

Meanwhile, urban centres with good public transport provision have seen a decline in private car use.

Transport for London (TfL) finds: “There is a strong relationship between car use and access to public transport, with car use rising as public transport accessibility falls.”



Lothianbridge Viaduct, Newtongrange  
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**CASE STUDY: BORDERS RAILWAY – BUILD IT AND THEY WILL RIDE**

The UK’s longest new domestic railway for 100 years was opened on September 6, 2015.

The Borders Railway runs over a 30.3 mile route between Newcraighall (in south-east Edinburgh) and Tweedbank (between Galashiels and Melrose). The journey times reduced from a minimum of 83 minutes on the bus from Galashiels to central Edinburgh to 55 minutes or less.

The reopening was the result of 15 years of campaigning. Initially, the business case was downbeat – an early assessment was based on 23,500 return trips per year, later revised to 650,000.

However, from the moment it opened, the Borders Railway exceeded expectations. The eventual first year patronage was more than a

million trips and it has since exceeded 1.5 million.

Initial evaluation found that the re-opening of the railway resulted in significant modal shift from the car to public transport – 57% of users who previously made their trip by another mode stating that they used to drive all the way to their destination.

The Borders Railway has also affected residential and workplace choices. More than half of users who moved house and over 80% of those who moved employment since the line re-opened said the railway was a factor in their decision.

Consequently, it has resulted in a significant economic uplift in the area. It has also opened up smaller towns for investment and boosted the number of tourist trips.

**OPTION 1: RAIL**

In terms of the volumes and speeds at which people can be transported, rail is enormously efficient. It potentially offers a great customer experience with good productivity outcomes as people can engage in meaningful activity while travelling.

The rail network exists in the dual state of being both profitable for [some] operators and directly subsidised by Government to the tune of around £5 billion per year.

Cost has been one of the key drivers in ‘rationalising’ the railway. Until recently, the assumption has been to create efficiencies by trimming the network and focusing on a more limited and intensively used trunk route system. Local railways were cut (most significantly as a result of the Beeching Report), but radial routes from London remained – leaving a network largely focused on the capital.

Rail shows that cuts in transport networks have much wider impacts. Researchers at the Centre for Economic Performance

at the London School of Economics concluded that the 20% of places most exposed to rail cuts between 1950 and the 1980s have seen 24 percentage points less population growth than the 20% least exposed along with a brain drain of young and skilled workers and an ageing of the population.

Conversely, the positive impact of railways on social fabric – and on people’s assumptions about place and connectivity – is reflected in the increase in land values around stations. People pay a premium to live close to a railway station or tube stop.

Only lately has a change in attitudes to rail been reflected in new schemes (see Borders Railway case study, left).

**OPTION 2: LIGHT RAIL AND TRAMS**

The success of the Edinburgh tram shows its potential in the UK. Despite being late and over budget, the system has been popular and reached profitability two years ahead of schedule.

Since then, both passenger numbers and revenue have exceeded targets.

Transport Focus reports high levels of passenger satisfaction with tram networks – Edinburgh recorded a high of 99% in 2017.

Trams have the advantage that they are commissioned by local authorities, enabling them to design and control the network. They take priority over other road users, speeding up journeys.

However, the capital requirements have proved beyond many local authorities, usually requiring a combination of local and national money, and the number of UK cities with trams is in single figures.

**CASE STUDY: THE JERSEY BUS FRANCHISING MODEL – NETWORK-LEVEL COMMISSIONING**

Jersey has its own government – the States Assembly – which is able to set its own legislative framework unrestricted by UK transport legislation.

Faced with severe and rising congestion, the assembly launched a Sustainable Transport Policy in 2010 to address traffic congestion by increasing bus ridership.

It recognised that its existing model would not enable this shift and devised a new network-level contracting framework for a competitive tendering process to run the Jersey bus network in its entirety.

This process was multi-stage, calling for initial expressions of interest and shortlisting candidate operators via a pre-qualification questionnaire proceeding to an invitation to tender and price a model network.

This provided a level playing field to assess the quality and relative costing of bids. The final stage



of tendering asked two shortlisted organisations to use their expertise to propose a network and schedules that met the strategic objectives set by the assembly – a year-round network for modal shift.

The States awarded the contract in 2013 to HCT Group. The new service launched on schedule on January 2, 2013, under the LibertyBus brand.

Since it began, passenger ridership has increased by 32%, and the levels of subsidy have reduced by £800k per year. Customer satisfaction has increased by 5%, five new routes have been introduced and key corridor frequencies have improved.

**OPTION 3: OPEN ACCESS ROUTES**

Novel approaches to rail include Open Access Routes in which operators take the full commercial risk for running a service, buying access to the track to create routes between franchised services.

These increase the number of services and destinations from regional stations, such as the Grand Central Service from smaller West Yorkshire stations to London, which has expanded from one route to two, and from two trains per day to five, due to demand. They can reduce journey times and improve connectivity.

**OPTION 4: BUS**

The decline in bus use has created a negative spiral. Operators make cuts to ensure profitability – which pare services back to profitable trunk routes. Local authorities are unable to subsidise the other services.

Outside London, network oversight is almost impossible. Competition regulation prevents operators from working together. It’s also commercially difficult to justify loss-making services that provide access to core routes. This gives rise to local authorities paying to run an ever-decreasing minority of unprofitable, but socially necessary, routes – effectively subsidising access to (profitable) trunk bus and rail routes.

In addition, bus routes are subsidised through the Bus Operators Grant which repays some fuel duty incurred by operators, who are also recompensed for concessionary travel. In 2017-18, central and local government paid £2.18bn in subsidies to private bus companies in England, of which £1bn was for concessionary travel.

**RETHINKING BUS SERVICES**

In September, the Government announced it would bring forward a National Bus Strategy and commit additional funding to new networks and innovations.

The move was largely welcomed, with Jonathan Bray, of Urban Transport Group, saying: “It’s good that senior politicians are now in a bidding war over who is most pro-bus, something that would have been inconceivable only a few years ago. ►



Vantage bus on a guided bus route from Leigh to Salford

**CASE STUDY: TfGM-GUIDED BUSWAY – INCREASING SPEED**

Congestion is a major barrier to providing efficient – and therefore attractive – bus services. The Leigh-Salford-Manchester Bus Rapid Transit is a guided in-cariage busway designed to provide a fast and frequent link between Leigh and Manchester. Initially, the busway was controversial as it was perceived as removing road capacity and unlikely to improve services.

However, since opening in 2016 it has achieved an annual ridership of 2.6 million with 20% of passengers switching from car travel. The full route of 15 miles takes 55 minutes in peak and around 40 minutes in early morning and late night. Currently, the route is served by up to eight buses per hour. In addition, Transport for Greater Manchester reports traffic times have returned to levels prior to construction.

**36%**  
is the growth in regional rail patronage

### CASE STUDY: ZEELO – USING DATA TO BUILD NEW SERVICES

Zeelo is a personalised bus service which uses travel data to design and operate services when and where people need them.

Services include commuter transport between Bristol and Newport and smart buses for employees at Gatwick Airport. It also provides a service for automotive companies Jaguar Land Rover and Aston Martin at Gaydon near Leamington Spa.

Zeelo head of marketing Cale Pissarra focuses on the collaboration that services such as Zeelo need to be able to create an attractive offer:

“People talk about the death of car ownership, yet more than 65% of the UK population say they would struggle to get to work without their car. We are working with businesses and municipalities across the UK to address such problems.

“We are seeing great results. 80% of our riders have switched from using their cars for every single journey to work.

“The average Zeelo takes 30 cars off the road. But we can’t do this alone. It is a problem we need to tackle together.”

► “The real prize is long-term bus funding reform to provide simpler, substantially enhanced and ring-fenced revenue funding for bus services.

“A national bus strategy could also help as long as it doesn’t degenerate into second-guessing from London on what is a hyper local mode of transport. It should focus on funding reform, improving bus safety, a base level of consumer protection and promoting more research and development.”

Case studies demonstrate a wealth of regional experience that could help build a better future bus service.

Note Oxford City Council, which has been working with Oxford Bus Company to solve the issue of commuting from residential areas to the east of the city. It launched Pick MeUp, an on-demand ride-share mini-bus that collects from virtual bus stops in the travel zone within 10 minutes of a booking.



### CASE STUDY: ARRIVACLICK – AREA-WIDE FLEXIBLE BUS SERVICES

ArrivaClick is an on-demand bus service which operates across a service area and is booked via an app. It operates ‘corner to corner’ and uses a smart algorithm to maximise efficiency and minimise the travel times for users sharing the service. Users are

guaranteed a seat on the service’s mini-buses (including bookable wheelchair and buggy spaces).

The latest area to launch is Lubbesthorpe, a new 4,250 home development to the west of Leicester. The Drummond Estate, which owns the land on which the 1,000 acre development between Enderby and Leicester Forest East is being built, signed a five-year contract with Arriva as part of its planning obligations to support the local community.

The service connects the area with Leicester city centre – with bookable destinations including the city’s university campuses as well as railway and bus stations, Leicester Royal Infirmary and other employment and leisure destinations.

ArrivaClick’s introduction was simultaneous as the first new residents moved into the initial 500-home wave of the development and is expected to grow with subsequent waves. Within the first three months 5,000 people downloaded the app, growing by 700 each week. The service is exceeding passenger growth forecasts with 3,500 journey requests being made each week.

The Click model works across an area rather than sticking to set routes so can cover a wider operating area with competitive operating costs – as well as creating a more coherent network for users.

Lubbesthorpe is the third ArrivaClick scheme following launches in Kent and Liverpool.

### MAAS – BRINGING TOGETHER PUBLIC TRANSPORT AND NEW MOBILITY

Mobility as a Service (MaaS) solutions have the potential to provide seamless multi-modal journeys, mixing public transport with bike share, ride-hail and car clubs.

This multi-modal network could reach more people, enabling them to access the fast core routes more easily. It can, through the use of technology, also open up more flexible MaaS transit solutions, such as on-demand buses which can fill the hole on unprofitable routes (see panel above).

However, while the technology is increasingly available to enable people to book and pay for journeys, as PAYG or subscription, collaboration is required at a national level.

At a regional level, there is evidence of progress among city authorities.

Manchester is creating a ‘repository’ of data which includes real-time updates, re-routing, wayfinding and journey planning for bus, tram and cycling, with integrated ticketing via an online app.

A trial found that 73% of the 626 journeys included two or more transport modes.

Transport for Greater Manchester (TfGM) plays the role of portal keeper. It controls the central data repository and allows private sector companies to take feeds and create their own apps.



According to TfGM intelligent mobility officer Kit Allwinter, users have different needs – students, families, workers, executive travel, disabilities – so this approach facilitates specialist applications.

“We want to avoid the private sector having a monopoly, or siloes where one app is used by only one bus operator, or barriers where there is no bike share on an app,” he says.

“Different users have different needs and we have an opportunity for different providers to offer different services.”

Allwinter concedes that a full service is “five-to-10 years away” and notes several challenges to resolve, including questions of who owns the customer, how revenue, profits and/or subsidies are divided and governance over data-sharing decisions.

Collaboration between stakeholders will be essential to any successful MaaS project.

Cale Pissarra at Zeelo (see panel) says: “We see MaaS becoming smarter by private and public organisations working together to share data, create multiple mobility options for people and incentivise the change from private car ownership.

“There are many stakeholders in the ecosystem, including municipalities, employers, property developers, public and private transport organisations. If we all work together we can make a real impact.” **ST**