Remote control – travel solutions for rural communities

Out of sight often meant out of mind when it came to solving the transport problems experienced by non-urban residents, but the focus is shifting, reports **Beate Kubitz**

The rural population of the UK – defined as those living outside settlements with more than 10,000 resident population – stands around 17%. That's 11 million people.

The transport community tends to focus on urban areas where dense population means large numbers of people live close to infrastructure and services – and improvements are accessible to large numbers of people.

As such, rural mobility tends to attract much less attention than urban mobility – the relatively smaller population tends to be lower priority and the nature of rural areas means that, by definition, solutions cannot be created at scale.

Recently, however, rural areas have risen up the transport agenda. A group of rural council leaders has established a new Countryside Climate Network under the aegis of UK100 which has a strong focus on transport. The recent series of roundtables examining rural transport established by the University of Hertfordshire Smart Mobility Unit have brought together researchers and organisations wrestling with the issues to exchange ideas. And, from a different angle, the RAC *Future Mobility for Rural Communities* report focuses innovation on an overlooked part of the transport system and talks to people in a rural area about their needs and desires.

THE CHALLENGES

The challenges of rural mobility are those of smaller populations, distributed unevenly over greater areas (along with jobs and services) and generally connected by lower capacity and less reliable networks.

For instance, 43% of people living in rural England reside more than an hour away from a hospital by public transport, compared with just 7% of people in urban areas. Also, 47% of people in rural England live more than 30 minutes away from a town centre by public transport, compared with just 5% of people in urban areas. As a result, the rural population travels more miles per year than those living in urban areas.

Resources are both scarcer and also more thinly spread. There is 48% less funding per person in rural authorities. Councils in London receive £482 per head, while metropolitan boroughs and cities receive £351 per head, compared with £182 per person in county areas.

"In Peterborough and Cambridgeshire we have a situation with two attractive cities at either end of the authority area," says Tim Bellamy, transport strategy and policy manager, Cambridgeshire and Peterborough Combined Authority. "However, the bit in between has a wide variety of town and village settings with an equally wide variety of issues for transport."

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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.

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Diversity at low density is part of the difficulty in providing rural transport. The devil, is truly in the detail. Which means that diverse competing individual desires must be weighed against what is possible and what is desirable.

▲ Some rural areas are better served than others by the bus service in Cambridgeshire

CHALLENGES OF RURAL MOBILITY: PETERBOROUGH AND CAMBRIDGESHIRE

Huntingdonshire, South Cambridgeshire and Fenlands have different populations and infrastructure. In Fenlands and East Cambridgeshire, 60% of residents are commuting to Peterborough, Cambridge and London. For many, their commute focuses on getting to stations and out of the area. Commutes by car and combinations of car and train are common.

Jobs within the area tend to be focused around agriculture and are relatively low paid.

People can get trapped in pockets of deprivation with no or low paid jobs and without the means to access better opportunities. Those without cars have less choice and much longer journey times on buses which tend to take winding routes between cities and towns.

17%

of the UK population lives in rural areas

Some areas are better served than others. The bus network in East Cambridgeshire provides links to Cambridge, Ely, Soham and Newmarket – even so this will only take people to key points. In an area in which 40% of people live in the three main towns, but the other 60% live in villages, a significant population is underserved. And even where there is a good bus network, it tends to operate during the day but not in the evenings and at weekends. The impact is that it may well not be possible to commute by bus because the return journey can fall out of service times.

Rural towns with and without stations have different issues – those without stations are more disconnected and more reliant on cars, but those with stations can experience congestion and parking issues as commuters converge early morning.

The road network itself is not without issues. Rural roads across the authority have a diverse set of users – with cars, wagons and delivery vehicles interspersed with a significant number of horse riders, tractors and other agricultural plant, cyclists and – where footways are lacking – pedestrians and mobility scooters.

Journey times can be particularly unreliable because of the mix of road users on narrow carriageways. Agricultural vehicles travel slowly and, on these roads, are difficult to pass, creating huge and unpredictable variation in journey times. For instance, the A10 connects Cambridge to Ely but the journey time for the 17 mile trip can vary by as much as an hour in 'normal' traffic.

Large swathes of the area are beyond the strategic road network – meaning any attempt to make journey times more reliable would have to be resourced by the authority (rather than Highways England). Road widening – either for cars or to add cycle paths – is not straightforward. The terrain may be flat, but roads run alongside fens so cannot be widened.

REPEATING RURAL PATTERNS

While the east of England has a particular landscape and demographic, many of the motifs are repeated across the length and bread of rural UK.

Diffuse populations spread across greater distances but with roads and public transport expected to carry a very broad range of traffic and meet diverse needs.

Topography – while varied – usually contains features which constrict infrastructure changes. Where fens bound the potential for road widening in East Anglia, steep sided valleys have the same impact in Yorkshire.

Towns and villages without train stations are particularly car dependent. Meanwhile, rural bus services are in crisis wherever you turn.

Rural communities comprise people across the economic spectrum. Poverty is often hidden or disguised in rural settings but exacerbated by disconnection. Those without cars – in many cases older or already vulnerable people – are prone to isolation.

People living in rural areas appreciate access to the countryside, but that same countryside often supports fewer jobs. Some rural areas are more tourist dependent than others, some more agricultural. Both create journey time unreliability on rural roads.

Commuting creates congestion and parking issues around most rural train stations (either within towns or in adjacent areas) serving all the major cities – and, where this is not possible or becomes too expensive or inconvenient, people drive the entire distance.

Cities are often at pains to reduce the number of cars congesting their streets – but political and funding structures rarely allow redistribution of money to provide public transport in rural areas to enable people to travel from outlying areas without driving.

APPROACHES AND SOLUTIONS

As with all transport challenges the 'individual versus the network' looms large in rural settings. Roads are just as (if not more) constrained as in cities. The business case for allocating resources for infrastructure (and to support services) is harder to make for smaller populations. Better data is needed to help assess demand and the potential for creating services that match people's needs better.

And most critically, as the RAC Foundation report shows, people's desires are sometimes for solutions that directly conflict with and undermine each other. Transport is part of nearly everyone's daily lives – but people rarely see the overview. The classic example is of drivers' perception of themselves as 'stuck behind' other traffic – rather than as part of congestion.

THE RCA/CHALLENGE

The *RCA/Challenge: Future Mobility for Rural Communities* commissioned 35 MA students on the Intelligent Mobility Programme at the Royal College of Art, to look at innovative solutions to rural mobility problems – particularly the 'first and last mile'. The challenge is supported by the RAC Foundation, the Royal Automobile Club and the Intelligent Mobility Design Centre.

The students took the village of Wadhurst in East Sussex (population 5,000) and focused on designing a new mobility vision to help people be mobile, healthy and able to live freely and without compromise in a rural village environment.

On the one hand, it's refreshing that the student group interviewed people about the journeys they made (and wanted to make) and the issues they faced as well as wider cultural and economic questions about the positive and negative aspects of the community.

On the other, even the brightest minds approaching transport afresh fail to unpick some of the assumptions – and the cognitive dissonances – that have become ingrained in contemporary discourse.

Summarising residents' desires, their analysis and insights revealed that residents want to reduce congestion and increase parking. They want to upgrade pavements, improve crossing points and reduce traffic speed. They also wanted better off-road cycle and footpaths.

Key economic issues included the sustainability of the high street, support for developing small businesses (including working from home), reduction of congestion, increased parking to encourage shopping, and improvements to broadband and public transport.

Around 20% of residents are senior citizens and, despite highly motivated community organisations, many felt restricted by changes in local culture and non-inclusive infrastructure.

Residents mainly focused on the beauty of the surrounding countryside rather than the challenges associate with the climate crisis, and their principal concerns were around maintaining the rural feel and zero tolerance towards litter on the streets.

43%

of those living in rural England reside more than an hour away from hospital by public transport

The missing piece of this project is recognition that the evidence and experience of towns and villages is that some of the solutions to these desires are mutually exclusive. And that some of this evidence is unpalatable and, indeed, incomprehensible to residents.

As individuals we are, in general, oblivious to the reality of induced demand, traffic evaporation or the physics of transport systems. Almost everyone – shopkeepers and customers alike – appears to believe that the health of the high street is predicated on parking.

It is also, seemingly, impossible to make the direct connection in people's minds between parking and congestion. While it's obvious in transport circles that the provision of parking will attract cars that will create congestion as the cars converge on their destination and then clog streets with parked vehicles, individuals seem to have difficulty accepting that these things are linked. Even more difficult to address is the fervently held belief that economic success is dependent on these parked vehicles – and that stationary vehicles automatically increase revenue in shops.

Designers attempt to square the circle rather than challenge the assumption that it is possible to design high streets to both increase parking and decrease congestion.

Over and over, the interviewees are quoted as yearning for human scale infrastructure that enables them to walk and cycle. The hard truth is that to achieve this, walking and cycling ▶▶

> **The bit in between (Peterborough and Cambridge) has a wide variety of town and village settings with an equally wide variety of issues for transport**
>
> **Tim Bellamy, Cambridgeshire and Peterbrough Combined Authority**

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need to be prioritised over more space for cars rather than allowing those (healthy) desires to fall outside the scope of interventions.

Similarly, innovation that supports people being able to travel less and work from home – a strong communication infrastructure – continually falls outside the scope of transport interventions despite being an essential component of reducing travel demand rather than a 'nice to have'.

The greatest weakness of this is that, while over and over again people living within the village highlight how much they would like to walk and cycle, the project teams mainly designed vehicles that aim to bridge gaps which are (at times) unbridgeable.

TECHNOLOGY SOLUTIONS

The danger of focusing on technology is that technological solutions can be downright retrograde. For instance, the 'first and last mile solution for all – ByE', which is a personal mobility solution designed to encourage older and younger people to both use adaptable electric scooters so younger people don't annoy older people by cycling, seems to have dangerous implications for active travel.

Enabling active travel means providing space for people to move under their own steam – segregated from traffic. While providing that space is essential, one of the other issues the students addressed is the need to reduce the size of vehicles.

Designing smaller vehicles to be more appropriate for village life is a smart move. It contrasts with the combined forces of consumerism and the automotive industry which have expanded compact cars until they have become SUVs. The impact of SUVs increasing the carbon footprint of transport is widely reported, but their impact on roadspace is less frequently highlighted.

Sold as appropriate for rugged adventures with (sometimes faux) off-road credentials, they are marketed for rural environments. The reality of narrow country lanes makes these over-sized contraptions appear ungainly and faintly ridiculous as they try to pass each other without impaling themselves on dry stone walls or falling victim to the trap of the concealed drainage ditch.

In contrast, the 'Justabus' is specified as a slimline, self-driving minibus 'half the width of a regular car' in order to give more room to cyclists and pedestrians. It somewhat begs the question of how we've reached a situation where modern cars are more than 1,800mm wide when two people seated side by side could, in theory, fit on a 900mm bench. The planned bus-let seats four in an 'open plan' design with an attendant to assist mobility impaired passengers. A rear-mounted bike rack enables onward multimodal and active travel – or leisure trips.

The Justabus team describes a flexible service model – 'during busy hours, the bus is public and dedicated to congested destinations like Wadhurst train station. Between these hours it can be booked to support other local needs'. This echoes trials of demand-responsive services in rural areas (although these tend to be provisioned in larger vehicles).

It is an interesting vehicle – but the challenge for the Justabus is not simply to provide an alternative to large single-occupancy cars, but to ensure an environment that requires people to give up oversize vehicles and a business model that ensures it is sustainable.

The only innovation directly creating better active travel infrastructure is the 'star road'. A neat interactive lighting system consisting of connected pebble-sized light emitting modules installed on pavements and responsive to pressure to light up and guide the walker's path – without adding to light pollution levels. It can be augmented with digital directions and wayfinding to help people move safely in the dark.

The RAC reports says: "For many trips, walking offers the best environmental option provided people feel safe – this solution delivers both on safety and on rural concerns about light pollution."

47%

of people in rural England live more than 30 minutes away from a town centre by public transport

FLEXIBLE SHARED TRANSPORT

Some solutions in the challenge focused on ways of creating flexible shared transport.

There are a number of single person vehicles like the Wago, a three-wheeler that expands, concertina-like, for additional luggage or a passenger or the Dimaxion intended to link together in flotillas. Then there is the Missing Link, multi-purpose moving 'community spaces' bookable for travel, socialising on the move and linked to the wider network outside the village by a suspended cable system.

Flexibility of purpose is also recognised as appropriate in a village setting. For example, commuter 'car pods' could be parked together during office hours to create hubs for other people to use as pop-up meeting spaces, markets or crèches.

This requires commuters to pay a subscription for their travel to the station to fund the vehicles and their use during the day. Flexible pods that deliver from local market gardens, can also open up into 'pop-up shops' and provide the farmer with personal transport. These are intended to support rural sustainability.

These designs are all interesting and recognise that there is a need for diversity of use to ensure high enough levels of utilisation in villages for services to be sustainable. All have aspects that could be tested further but they also highlight some of the gaps in knowledge about rural communities.

For many trips, walking offers the best environmental option provided people feel safe – this solution delivers both on safety and on rural concerns about light pollution

RAC report

DATA AND MODELLING

Modelling has largely concentrated on demonstrating the potential of shared on-demand transport to reduce vehicle and parking requirements in cities – and has shown this only to be dramatically positive if a city switches entirely to such a system.

Without proper investigation into the impacts of small, autonomous, flexible, shared and modular vehicles on rural communities – taking into account potential behavioural elements - it's extremely hard to tell where real benefit would be seen.

City models show that a high percentage of people must switch to a shared transport system and stop driving their own vehicle for there to be a positive impact on congestion and parking requirements. Experiences in cities have shown that there needs to be some kind of regulation to shift behaviour – from congestion charging to workplace parking levies.

A recent Connected Places Catapult analysis of travel patterns in Northumberland which looked in depth at the trips made by people within and to and from two villages concluded there is no less travel demand in such rural areas, and that daily peak and off-peak patterns are similar to urban patterns – the main differences are that there are more very local journeys and commutes cover a greater distance.

More work like this is needed to understand how new services could work in rural areas. The heterogeneity of rural populations could mean a small number of people sticking to existing modes and behaviours may well have a big adverse impact and undermine changes by the rest of the community to smaller and shared vehicles.

Equally, we have little idea whether combining small pods into larger vehicles is truly a benefit or whether it will merely replicate the problem of SUVs or slow moving tractors in a different format.

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▲ Half the width of a regular car – that's the claim made for the Justabus

INNOVATION AND EXPERIENCE

Innovation only really takes root when there is adoption throughout the community – including with Government support. Authority approaches to rural transport focus much less on technology, and much more on infrastructure.

Tim Bellamy again: "We see the lack of cycling and walking infrastructure and we recognise that we need to develop market town strategies and interchange points or services provided to people in rural hubs because, if you haven't got a car, you're very excluded. We're looking at improvements at Whittlesea, March and Manea to create interchanges for cycling and walking and improve accessibility to stations."

In addition, the provision of rural stations is moving up the agenda – which would increase the number of people within a short distance of the railway, making walking and cycling to stations possible for more travellers.

It's clear that technology alone cannot fix the problems of rural mobility. Only infrastructure building and re-apportioning road space will ensure safe walking and cycling routes. Service models need developing to match shared vehicles of any kind with travel patterns. Regulation (and maybe financial incentives) will need to be deployed to reduce vehicle size. What works for one person as an individual does not create a thriving community, and the weight people attach to this community needs to be clear when weighed against their personal vehicle choices.

A few issues can be solved by technology, some with resources, but adoption of better technology and habits will come down to better communication, local democracy, and leaders having the courage to challenge the hegemony of the motor car. ST

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