

Commission on Travel Demand

Evidence Session Four

New Mobility Options

Transport for Greater Manchester, 25th July 2017

Summary

The overarching aim of the evidence session was to examine how new mobility options have already begun to change the demand for travel and to consider how they might do so in the coming decades. This note summarises some of the key outcomes of the discussion and will inform the Commission's future work programme. The report does not imply consensus amongst all of the participants of the evidence session and the opinions shared, whilst not attributed, were those of the individuals rather than the organisations they belong to.

Key uncertainties were identified and debated. It seems clear that transport is at the foothills of a set of significant changes to the way in which people travel. In some places, substantial change has already happened although these changes are as yet impacting on a small part of total travel demand. It remains to be seen if, and if so how, the different parts of the mobility system transition will work together and what conditions are necessary to make this happen quickly and in support of the goals of public bodies. This makes understanding the future travel demand implications of new mobility options very challenging. The range of potential outcomes is large.

Whilst uncertainty in demand futures was acknowledged there was some agreement across the participants that the demand that occurs will be a feature of what those with influence want it to be and what types of demand are encouraged (or not) in what places, at what times of day and under what conditions and prices. In thinking about demand futures, demand should not be seen as separate from the policy environment in which it unfolds. A critical challenge is how to bend the opportunities that new mobility services will create to support public policy goals without stifling the innovations.

Perspectives from Industry

The Commission received presentations from Enterprise, Uber and the Transport Systems Catapult. Enterprise described their work in promoting and developing car clubs and access to car use without the need for car ownership. Uber described the evolution of Uber services and the relationship to the existing transport system. The Transport Systems Catapult focussed on Mobility as a Service. To protect commercial sensitivities, the discussion below summarises some headline outcomes from the discussion rather than detailed insights.

In different ways, all of the industry providers were developing business models based around the inefficiency of individualised car ownership and use. There is an established literature that shows that those people choosing to join a car club are likely to give up a car in the household or to postpone a decision to own a car. Latest research from Car Plus shows there are 245,000 car club members in the UK with access to over 4000 cars. This is particularly densely concentrated in London where there are 3000 cars and 193,500 members. Key factors which have helped to accelerate car club development has been active participation as scheme users by local authorities. Alongside the health service, local authorities are the largest employers in a city and have significant fleet mileage. Working in partnership with car club providers can accelerate deployment of vehicles for the use of residents out of hours whilst reducing miles driven in the older and more polluting private 'grey fleet'. It is known that once people become part of a car club they conduct more of their journeys by

public transport and active modes. The growth of car clubs is also therefore tied in to the inconvenience of owning a car and the quality of the alternatives (as demonstrated by the success in London).

The success of ride sharing services derives from providing an efficient alternative to the car either for whole journeys or for connecting to public transport and completing the last mile. In cities in which Uber operates, the coverage of the system has expanded very rapidly to bring large areas within a 12 minute wait time. A large proportion of journeys start and end within a mile of a public transport stop suggesting that the success of systems like Uber may, in part, be linked to the integration with mass transit as part of a broader transition away from an individualised car ownership way of living. Indeed, partnerships are being formed between Uber and public transport providers in the US to avoid the need for investment in parking lots around mass transit and for last mile connectivity where bus provision is too costly. Whilst not operating everywhere, Uber POOL is proving popular in cities such as San Francisco and London where users can share trips and the costs of the journeys. This is significantly more efficient in the use of the network.

Mobility as a Service is an overarching term for the integration of different mobility options through a common platform. Users can access and pay for services and have integrated solutions provided for them through a single app although the extent to which complete system integration happens and is deemed necessary by users and providers is still evolving. Increasingly such services will though be able to offer information on vehicle occupancy, comfort and other personalised preferences. There are different models for who might provide MaaS systems with some of them being led by existing transport providers and some by specialist service integrators. Under any model, there is still the opportunity for local government to work with the providers to try and support the kinds of system they would like to see for their area.

In terms of understanding what all of this means for demand, there was comparatively limited evidence. The longest time-series in trends is around car clubs but the scale of car clubs is still comparatively limited so it is not clear yet how much this might influence overall ownership levels. Looking back to evidence from [Tobias Kuhnimhof](#), whilst car club ownership has grown significantly in Germany, so has household car ownership. The change in use of services like Uber in the past three to four years has been rapid, with far greater levels of spatial coverage and faster service times. However, the data on the extent to which the use of Uber and services like it replaces a car trip or substitutes some other means of making a journey or, indeed, opens up new demand opportunities is, as yet, not sufficiently robust to make an assessment of the likely demand impacts. The rate at which such systems are deploying, changing and integrating with other services make gathering that understanding a challenge.

The speed with which these systems might deploy and integrate to provide a really significant transition in the quality of a mobility system which is not dominated by individual car ownership is a significant uncertainty looking ahead. Some of the deployment, as has been clear to date, will happen with very little intervention from government. Other aspects, such as the management of parking or ensuring that such services are truly accessible to all parts of the population, will be shaped by what role the state decides to play.

Perspectives from Government

Presentations were given by Transport for Greater Manchester, Transport for the West Midlands and the Department for Transport. The two large city authorities focussed on the role of mobility innovation in their strategic planning whilst the Department for Transport discussed the evolution of connected and autonomous vehicles.

It is clear that the new technologies being discussed could work towards achieving public policy goals. For example, the safety augmentation of CAVs could be substantial and a rapid uptake of ride sharing could significantly reduce emissions and congestion. However, as noted above, the innovations are rapidly evolving and are challenging existing regulatory frameworks and classifications. Questions were raised about whether local authorities have the powers currently to intervene in new mobility innovations and whether they should have different powers. If so, what would they be and how would they be written in order to avoid stifling innovation? The current position is to seek to work in partnership with new providers and to try and encourage them to develop systems which support the overall aims of the city and, by doing this, learn more about what might need to change.

It seems clear that new innovation services, to be successful in taking market share away from private car trips, would need to be 'better' in terms of lower generalised cost than that offered by the current system. There is, therefore, a potential for any new systems to both stimulate demand which is not currently on the system. There may be some users today who do not travel much as a result of poor system provision and this could have significant social benefits. However, if the additional demand is not offset by more efficient use of vehicles and roadspace then this could lead to more traffic.

Whilst uncertainty about the nature and speed of deployment of new mobility innovations exists, there is still a need to progress current critical infrastructure projects. A key uncertainty will be the extent to which increasingly autonomous driving delivers improvements to network capacity and over what time frame. This is most likely to impact the inter-urban network first where the deployment environment is simpler. In urban areas, a critical element to facilitate a more multi-modal system for the future would be to develop better interchange designs capable of being easily adapted to different types of service integration. In some scenarios, the private car will be replaced to a large degree by fully autonomous cars or pods capable of navigating urban areas but, whilst all of the attendees saw this as a potential future, there is little clarity over when and how that will happen. There are likely to be many niche applications which will be used to demonstrate the technologies before they come to the centres of urban areas in a significant way.

Evidence on impacts of new mobility services

Dr Zia Wadud presented evidence from studies that have considered what the potential impacts of increased automation of the vehicle fleet will have on demand. The work necessarily focuses on what is already understood about people's sensitivity to costs, journey time, interchange in order to consider what might change with the new technologies. Studies to date looking at what will happen with more autonomous vehicles all draw from stated preference surveys rather than revealed preference. There are limitations therefore to demand estimates around such technologies and a very substantial range of potential impacts from the evidence base to date.

New users would be able to access fully autonomous vehicles, with greater use by elderly and disabled travellers possible and estimated to lead to an increase in travel demand. One of the critical variables that will change with increased autonomy in the driving task is what people can do in the car. In the short run this may make car driving less tiring but at high levels of automation this may allow fully hands-off driving and the question would then be how people were able to use that time. The impact on kilometres travelled would also depend significantly on whether autonomous vehicles were owned personally or more part of a shared mobility system. Without sharing the potential to increase kilometres substantially exists. It is also unclear whether fully autonomous vehicles would allow new sorts of journeys or uses of vehicles to emerge. Previous mobility revolutions have not just replaced like for like. Overall, the range of potential impacts on demand estimated in a [recent study](#) by Dr Wadud and colleagues was between +5% and +60%, underscoring the significant uncertainty that exists in future demand projections for a more automated fleet.

Elliot Martin presented evidence from University of California Berkeley's [Transportation Sustainability Research Center](#), drawing on his work with Professor Susan Shaheen. The work focussed on what was understood about the demand impacts of car clubs. Of particular importance is evidence suggesting that joining a car club lowers car based vehicle miles travelled by up to 43% per person. The impacts are highest in urban areas and also higher for two-way car clubs (where the vehicle is returned to its pick up point) compared to one-way car clubs (where the vehicle is dropped at another point). Similar effects in terms of postponing the intention to purchase a vehicle or disposing of a vehicle on joining the car club were evident across the US studies as have been reported in the UK. There had been growth in the US market up to 2015 with 70,000 car club vehicles now available. However, this has plateaued subsequently although this may be a feature of one operator leaving the market.

Acknowledgments

The report was assembled by Greg Marsden based on the rapporteur notes provided by Ersilia Verlinghieri. The workshop participants are gratefully acknowledged for their contributions. The report is agreed as a summary of the meeting by the Commissioners and we are responsible for any omissions or factual errors.

In attendance at Evidence Session Four:

Andy Bland, Head of Mobility Consultation – North West England, **Enterprise**

Anesu Bwawa, Policy Advisory, **National Infrastructure Commission**

Chris Lane, Head of Smart Travel, **Transport for West Midlands**

Ersilia Verlinghieri, **University of Leeds and Oxford University**, Commission Rapporteur

Fred Jones, Head of Cities (UK & Ireland), **Uber**

Professor Greg Marsden, Institute for Transport Studies, **University of Leeds**, Commission Chair

Ian Palmer, Head of Modelling and Analysis, **Transport for Greater Manchester**

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