



The Royal Academy
of Engineering

Call for Evidence: Behaviour Change – Travel- Mode Choice Interventions to Reduce Car Use in Towns and Cities

A response to the House of Lords Science and Technology Select Committee

January 2011

Introduction

The Royal Academy of Engineering welcomes the House of Lords Science and Technology Select Committee's investigation into the use of behaviour change interventions to achieve policy goals, with a case study on *Travel-mode choice interventions to reduce car use in towns and cities*.

This consultation sought views on plans to encourage people to travel more sustainably, particularly in relation to the previous government's *Low Carbon Transport Strategy* published in 2009. While we are unable to comment on all parts of the inquiry, the Academy has made general points on carbon reduction and modal shift in transport, with an emphasis on electric vehicles.

Consultation questions

Question A: *What are the most influential drivers of behaviour affecting an individual's choice of mode of travel?*

Car use in towns and cities depends on traffic generated within the town and also traffic coming from outside the urban area. Much of the peak hour congestion is in the latter category. For many journeys, there is no real choice: one person living five minutes walk from Carshalton Beeches station and commuting to an office in Victoria Street and another person living in Betws-y-Coed and commuting to an industrial estate on the outskirts of Wrexham may have very different sets of options. The former could easily commute the 20km by rail (and probably chose to live at that address to make it possible); the latter has no choice but to commute the 75km by road.

Other than from city-centre to city-centre, it often takes longer and is more complicated to use public transport. Consider a trip from the new BBC site at Salford Quays to an address in Telford: more than three hours by public transport with at least five changes, each of which could fail, or less than two hours by road.

Similar problems exist for many trips within an urban area. London is unique in that it has a centrally-planned bus system and an extensive metro and rail network. For many other cities there is much less choice. Someone travelling from Solihull to Harborne (both in the Birmingham conurbation) could take a bus into the city centre and then a bus out again or drive round the A4040 in less than half the time.

Price is important. With first class "anytime" rail travel from Wilmslow to London costing more than an airfare it is unsurprising if people travel by plane.

Question B: *What is the role of infrastructure in encouraging and facilitating changes in travel-mode choice?*

Multi-mode transport hubs with easy connections between rail and bus services (as in Sweden) and good feeder services to main line stations (as in France) both contribute to a greater use of public transport.

For intra-urban travel, a well-planned and pervasive network, as exists in many continental cities, is important. In many UK cities, bus deregulation has led to a concentration on high-density radial routes, making any trip other than into the city centre uncompetitive with a car.

Question C: *What are the latest developments in the evidence-base in relation to changing travel-mode choice and the implications of those developments for policy?*

We are not aware of any recent fundamental changes. The topics discussed in answer to question (a) have applied for many years. There is anecdotal evidence that congestion, whether of the road network or of public transport, affects modal choice but we are not aware of any hard research that demonstrates the extent of this.

Question D: *What are the most appropriate type and level of interventions to change travel-mode choice?*

Road traffic can be divided between journeys that are fairly straightforward to transfer to rail or bus and those that are difficult or impracticable. The former category includes travel for business and pleasure between reasonably large centres of population by people who are largely unencumbered. The latter category includes trips between places that are far from an inter-city station and those involving people who, either by choice or because of their job, need to travel with bulky equipment or other luggage. In the second category can be included families with children, people going on activity holidays with climbing or windsurfing equipment, musicians with cellos or drum kits, business representatives with samples or tradesmen with an estate car full of power tools. We do not have statistics on the relative sizes of these groups but the latter form a very significant sector of the travelling public.

It seems likely that rail is already the dominant mode on many routes served by frequent inter-city services. Few people travelling from central Birmingham to central London (and having the financial resources to make a choice) would consider any other means of transport. Improving the service, for example by building a new high speed line, is unlikely to result in a significant modal shift.

The most appropriate interventions to achieve modal shift from road to rail for people coming into a city would address those issues raised in answer to questions (a) and (b) – extend the geographical penetration of a high-quality rail network, better multi-modal connectivity, simpler passenger interface, better feeder services and lower prices.

For trips within a city, establishing (or re-establishing) an integrated network, as opposed to a number of self-contained routes, is obviously important.

It is evident on many urban corridors that giving free bus passes to those over 60 has caused a major shift from private cars to public transport, particularly in those urban areas outside London where fares charged by monopoly operators are otherwise higher than the marginal cost of motoring.

Question E: *Who are the most effective agents for the delivery of behaviour interventions to change travel-mode choice?*

No comment.

Question F: *How do current behaviour change interventions seek to change travel-mode choice and what use is made of available scientific evidence?*

No comment

Question G: *Are current policy interventions addressing both psychological and environmental barriers to change?*

It is not obvious that there are consistent policy interventions designed to encourage modal shift. Some, such as forcing an increase in rail ticket prices, appear to have the opposite effect.

Question H: *Are policy interventions appropriately designed and evaluated?*

The ultimate objectives of policy are sometimes not clear – reducing car use may be a means to minimise accidents, reduce local noise and pollution, reduce social exclusion, provide a more congenial street environment or reduce global warming. Simply discouraging car use *per se* is not a self-evident public good. For example, if the objective is to reduce CO2 emissions, some interventions such as discouraging the provision of off-street parking, may, in the long term be counter-productive as they will discourage ownership of electric vehicles. The cheapest and easiest way of charging an electric vehicle is to put an outside socket from the domestic electricity supply and charge it in the driveway. Parking at the kerbside will be expensive and complicated (i.e. finding a vacant charging point and methods of payment).

There is evidence that provision of bus services that have low ridership levels can produce more CO2 than the cars they might replace. Research a few years ago¹ discovered that the average bus ridership in two major cities was seven passengers. At this level, it is not obvious that modal shift is necessarily desirable from the perspective of emissions, although it might be justifiable on the grounds of social inclusion.

Modal choice is heavily dependent on policies that are not generally considered to be in the “transport” sphere. For example, the encouragement of specialist, free or faith schools or the centralisation of medical facilities and promotion of choice are policies that are likely to increase travel flows that can only be met by private car.

Question I: *What lessons have been learnt and applied as a result of the evaluation of policy?*

No comment.

Question J: *What lessons can be learned from interventions employed in other countries?*

Countries with a high proportion of low-carbon transport, such as Japan or France, are generally those with a well-integrated public transport system.

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¹ Professor R. Kemp, RSSB Research Project T618 *Traction Energy Metrics*, 2007