

CARRYING CAPACITY THE CARGO FUNCTION OF THE CAR

- Activities that involve moving forms of cargo are more likely to be carried out by car than by other modes of transport.
- Car use in everyday life is influenced by many areas of policy other than transport, including those which are implicated in the need to move cargo.
- Interventions to reduce car dependency should consider the cargo carrying associated with different activities and help design new cargo related transport services.

Introduction

Car travel is responsible for 14% of total final energy consumption in the UK. Analysis of the broad categories of journey purpose measured in the UK National Travel Survey shows that some activities such as escorting friends and relatives, shopping trips and travel for personal business, are more car dependent than others. Beyond this, little is known about specific instances in which people depend on the car.

This Research Insight focuses on the use of the car to transport purchases, equipment or other cargo including pets and other people. Although the size of the boot is regularly cited as a priority in research on car purchasing, this cargo function is overlooked in attempts to understand and influence patterns of car dependency.

We investigated the role of the car in 265 different everyday activity categories, undertaking novel analysis of data on people's sequences of activity on a typical day from the UK Time Use Survey, 2000. This enabled us to identify activities within which car use is integrated.

Questions

- How likely is it that certain activities are preceded or followed by car use?
- To what extent do these activities involve the need to carry cargo?
- What do these findings imply for the potential to shift some car travel to other modes of transport?



Findings

- Activities involving the movement of cargo are amongst the most car-dependent. Fig. 1, plots the likelihood that activities, as categorised in the time use data, are preceded or followed by travel (Mobility Intensity – MI) against the likelihood that when an activity is flanked by travel, this is travel by car rather than other modes (Car Modal Share – CMS). The activity with the single highest car modal share is 'disposal of waste'. Thus when waste disposal is preceded or followed by travel (44% of cases), in 90% of these instances it involves use of the car. Other activities such as 'walking the dog' have a similar profile. Many types of shopping activity (e.g. for food, or relating to purchasing furniture/household goods) are also car dependent (combining both high MI and high CMS), as is 'accompanying child'.
- When a broad category such as 'shopping and service' is broken down into more specific activities, further important differences emerge. Figure 2 shows that there is a positive relationship between the bulkiness of objects involved in the activity and car modal share, with letters and envelopes ('commercial and administrative services') and clothes requiring less carrying capacity than furniture or shopping bags full of food.

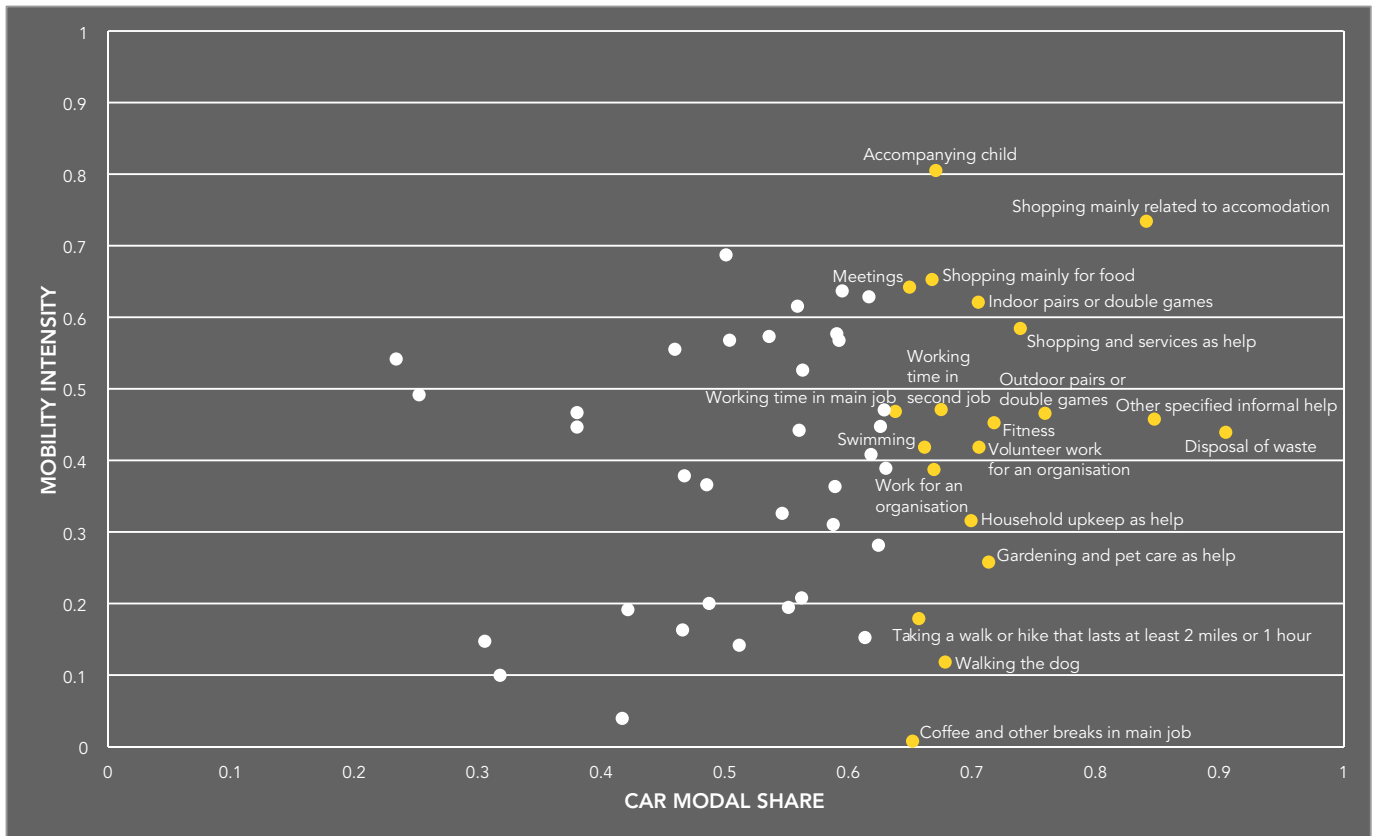


Figure 1 The car dependence of time use activities identifying (in yellow) the 20 most dependent (Source: UK time use data 2000)

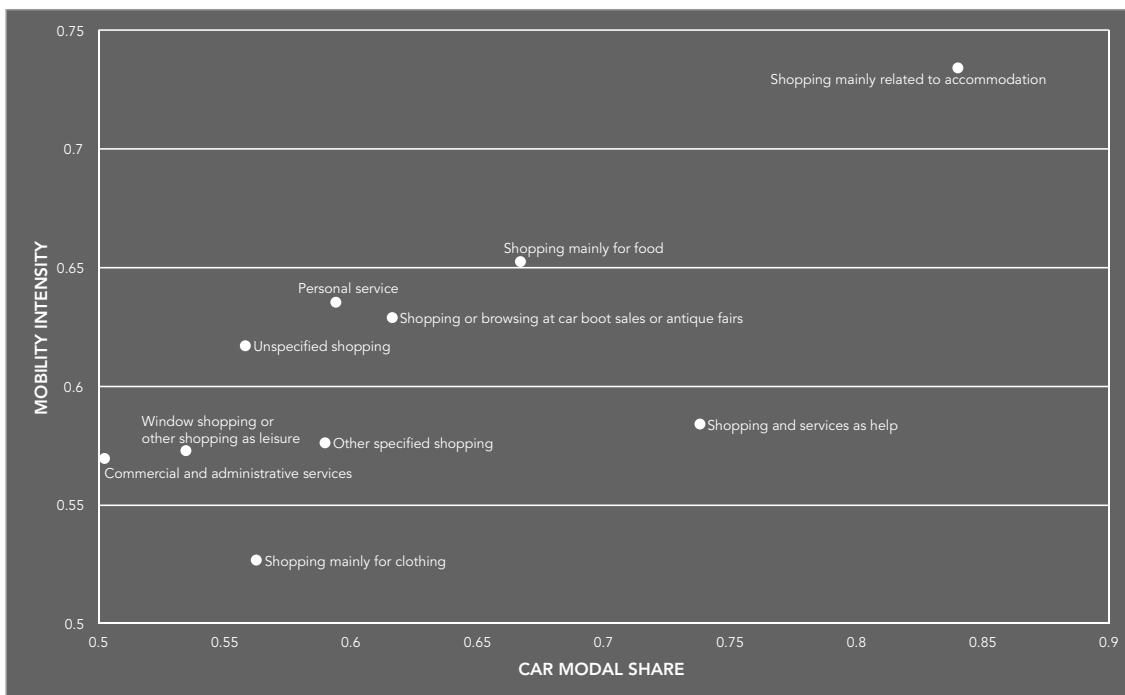


Figure 2 Shopping and service activities (Source: UK time use data, 2000)

- Furthermore when 'shopping travel' is followed by at least 10 minutes of 'arranging purchases' (suggesting the presence of bulky items that need putting away), car use is higher than when this is not the case.
- Some activities involving physical exercise are also more car dependent than others (Figure 3), reflecting the need to carry equipment (e.g. golf), travel in a group (team sports), or requiring access to specific facilities (fitness clubs or swimming pools).

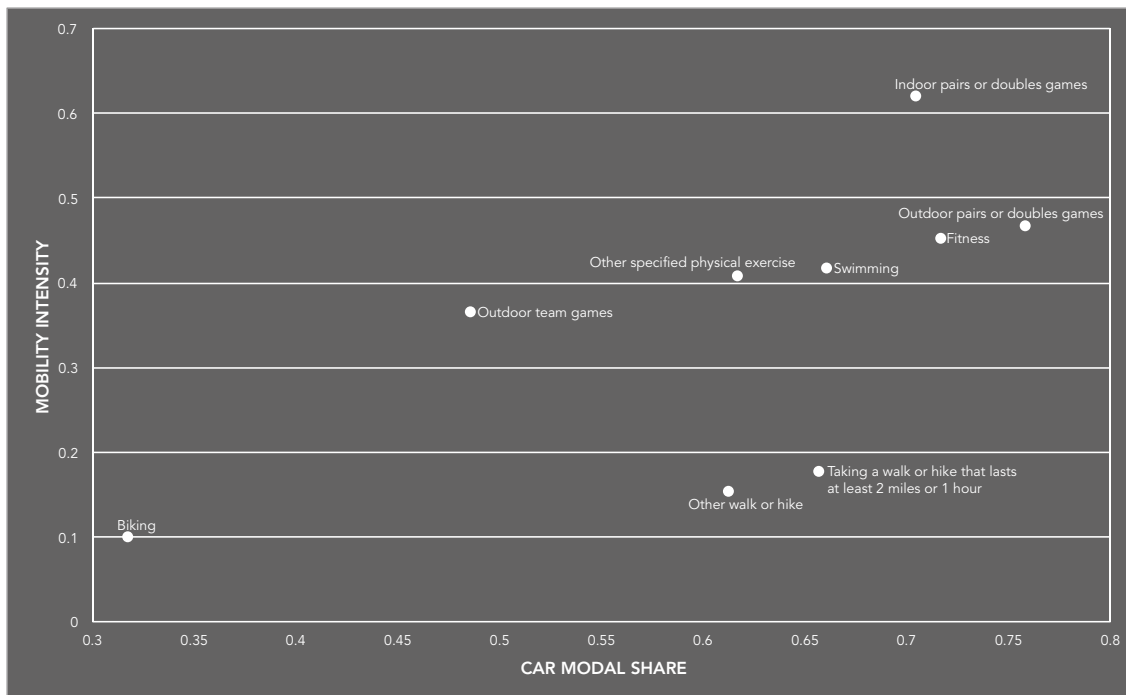


Figure 3
The car dependence of physical exercise activities (Source: UK time use data, 2000)

Significance

This research demonstrates the value of examining the specific activities of which travelling is a part. This means looking beyond broad categories like 'commuting' or 'shopping' that are generally used in travel behaviour studies. In analysing how detailed sequences of activity connect to each other, and the position of car use within these sequences we have shown how important the carrying of objects or other people is for patterns of car dependence. The more cargo an activity involves, the more likely that activity is to depend on the use of a car.

Implications

- Policy interventions need to recognise and take account of the importance of cargo carrying when promoting modal shifts away from the car. For instance, bicycles used in bike sharing schemes could be designed with more capacity (larger baskets, panniers), thereby providing potentially viable alternatives to carrying cargo by car.
- Public transport operators should exploit and develop opportunities to design flexible spaces that can accommodate bulky items, building on recent improvements in physical accessibility (e.g. wheelchair access). Regulations could be introduced to ensure that sustainable cargo-oriented design is embedded into urban and building design, as well as transport.

- There has been a persistently strong focus in transport policy on the journey to work. In comparison, other mobility and energy intensive activities have been neglected. We have highlighted shopping-related travel (30% of all car journeys) as a priority area.
- The mobility and car intensity of everyday life is influenced by areas of policy other than transport. For example, the car dependence of waste disposal relates to recycling and refuse collection policy and the location of waste disposal sites. Similarly, the provision of local sports facilities is important for car dependence *and* for initiatives to improve public health.
- There is value in analysing time use data as a means of discovering what people travel for and specifically how activities are sequenced around travelling. Such forensic investigation sets the context for more qualitative studies into the car dependence of specific practices. It also promises to help explain recent and unprecedented changes in car travel patterns, including the phenomenon of 'peak car'.

DEMAND research insight #3 CARRYING CAPACITY (2015)

Further reading: www.demand.ac.uk/research-themes/theme-1-trends-and-patterns-in-energy-demand

Contact the researchers: Giulio Mattioli (g.mattioli@leeds.ac.uk, [@giulio_mattioli](https://twitter.com/giulio_mattioli)), Jillian Anable (j.anable@abdn.ac.uk, [@jillian_anable](https://twitter.com/jillian_anable))



DEMAND is one of six Centres funded by the Research Councils UK to address 'End Use Energy Demand Reduction'. DEMAND also has funding from ECLER (EDF R&D), Transport for London and the International Energy Agency.

www.demand.ac.uk