

## Prolonging Safe Driving through Technology

This briefing sheet describes the completed 14-month study funded by the **Strategic Promotion of Ageing Research Capacity (SPARC)** initiative supported by the BBSRC (Biotechnology and Biological Sciences Research Council) and EPSRC (Engineering and Physical Sciences Research Council).

### Background

The population of older people in the UK is increasing in number, and is expected to continue to do so for the foreseeable future (ONS, 2004b). In addition, changes in lifestyle as a result of increased longevity and better health and social care mean that older people are driving later on in their life and are driving more miles, more frequently than ever before (Tomassini, 2004). Nevertheless, it is the oldest age group that report most difficulties as a whole in accessing local amenities such as shops, banks and hospitals (ONS, 2004a). It is therefore important that the travel needs of this group are examined to ensure this growing sector of society is able to achieve necessary mobility and accessibility with appropriate safety. Owning and being able to use a motor vehicle can afford this and in turn can also increase feelings of self-confidence, mastery and self-esteem and feelings of autonomy, protection and prestige (Ellaway, Macintyre, Hiscock and Kearns, 2003). However, many older individuals are anxious about the driving task and give up driving (Monterde I Bort, 2004). The concern may be justified - when mileage is taken into account they are slightly more likely to be involved in accidents than those of middle-age (DfT, 2001). Research has identified reasons for this including cognitive function deficits, physiological issues and psychological aspects (DfT, 2001; Lee, Lee, Cameron and Li-Tsang, 2003).

New technologies as an aid to driving have tended to be developed with the driving population considered as a rather homogenous group and therefore ignored specifics of older driver needs and attitudes (Musselwhite, 2004; Rumar, 1986). It is consequently unclear whether the technology would be accepted and used and indeed would have benefits in reducing physiological barriers, cognitive error and mental workload amongst this group of drivers. There is a very clear need for such research addressing appropriate technology to aid safe car driving behaviour amongst the older driver population.

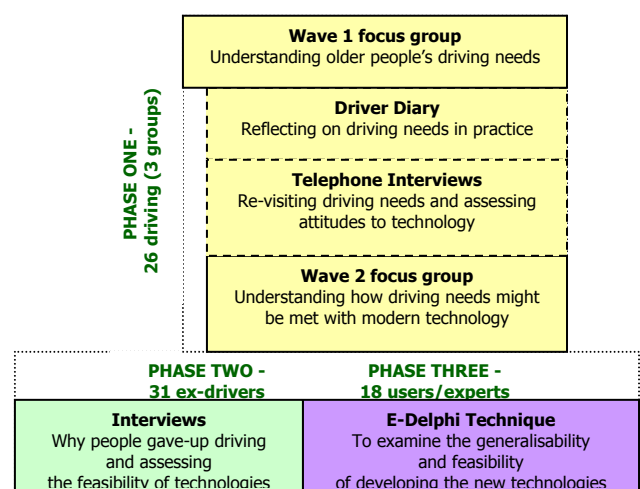
### Aims and objectives

The study had the following aims and objectives:

- develop knowledge on older people's travel needs;
- develop knowledge on older people's driving needs;
- address how older people's driving needs might be met with new technologies, such as Advanced Vehicle Control and Safety Systems;
- develop knowledge on factors affecting older drivers confidence;
- study how new technologies might help increase the confidence of older drivers;
- propose technology that meets older individuals' driving needs enhancing safety and confidence in the driving task; and
- examine the generalisability and feasibility of developing these new technologies.

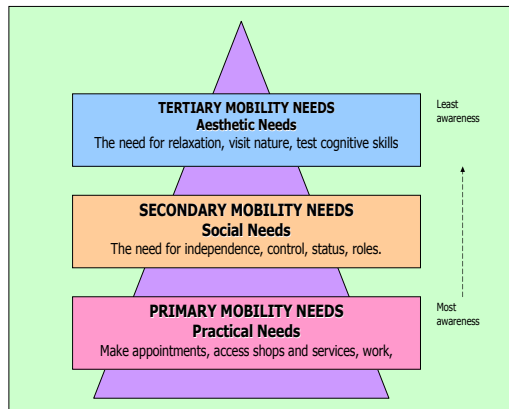
### Methodology

The project consisted of 3 phases. To overcome previous issues associated with technology and driving behaviour research a grounded theory approach was adopted, where participants became co-researchers and participate thoroughly throughout the research process. Phase one worked closely with 26 older (defined in line with Office National Statistics and government policy as 65 years of age and over) people who are still driving; phase 2 worked with 31 people who have recently given up driving; and phase 3 consisted of 18 users/experts (which included older drivers, academics/researchers, designers and engineers). The three phase research is illustrated as follows:



## Key Findings

- Older people travel for a variety of reasons that inhabit three main categories: *practical* (primary) needs, *social* (secondary) needs and *aesthetic* (tertiary) needs;
- Participants were very aware or conscious of practical needs and less aware of social needs and even less aware of aesthetic needs:



- Older drivers stated they were better than the average driver and also they felt they were better than when they were younger;
- Driving issues included problems with signage, maintaining a consistent speed, tiredness and fatigue, longer reaction times, parking, reversing, dazzle and glare from the sun and other drivers lights at night, junctions (especially joining motorways) and overtaking. A range of physiological, cognitive and psychological reasons for these were discussed;
- Older people tended to have good knowledge about in-vehicle technology assistance and information systems that could help driving.
- Findings of interviews with ex-drivers suggest four main triggers that lead to giving-up driving. Self-diagnosis; influence of friends and/or family pressure; result from a specific incident or event; and being forced by a medical professional;
- Female drivers were more likely to decide themselves to give-up driving through self-diagnosis or due to a specific incident. Male drivers are more likely than female drivers to need to be told to give-up driving;
- The participants were most positive towards technology that would display extra feedback on the current speed limit and the current vehicle speed inside vehicle);
- The E-Delphi discussion showed that older people wanted technology that would enhance feedback, whereas 'professionals' would rather have technology that took over part of the driving task;

## Benefits of this research

- The methodology has provided an opportunity for older people to get involved in research in a thoroughly participatory manner;
- The project has increase the depth of knowledge about older people's mobility and driving needs and attitudes to advanced driving technologies;
- This research is a useful anchor to future studies which may develop and prototype such technologies and serve as an important platform for future research addressing similar social and attitudinal issues;
- This better understanding of attitudes towards new technologies in this sample may lead to potential technological advances resulting from this project could enable older people to continue driving (safely) for longer;
- The next stage of research should continue to involve older people but look to develop, prototype and test auditory feedback on vehicle speed, intelligent speed adaptation and in-vehicle road-sign display.

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