PUBLIC TRANSPORT FOR AN AGEING POPULATION

Institution of MECHANICAL ENGINEERS

The changes in UK demographics will greatly increase demand for public transport from older people. By 2021, 20% of the urban population in the UK, and 29% in rural areas, will be over the age of 65. Older people, with longer life expectancy and often greater wealth, are set to play an increasingly important role in society. The transport market and engineering community should be adjusting now to meet their needs.

Engineers play a vital role in using innovation and design to help all travellers on their journeys; ensuring both the physical and mental health of passengers are considered. However, little is currently aimed specifically at the ageing population, and some developments such as web-based booking or journey planning may be a positive hindrance for many elderly people. The 'one size fits all' mentality isn't recognising the need to make public transport accessible to the growing number of older people in the UK. In 2012, the UK Government produced a guide[1] for transport planners which outlined best practice in tailoring transport solutions for older and disabled people, yet much of the UK's transport system suffers from a legacy of historical infrastructure changes and modifications which often render it inadequate for older users.

The Institution recommends that:

1. The Government reviews the universal transport subsidy for older people. Given the economic climate and rising number of older people, the current system will become unsustainable. Consideration must be given to subsidising the vulnerable few, whilst diverting the majority of funds to improve accessibility of the transport network for all.

2. Transport and infrastructure providers, working with Local Authorities and Central Government need to ensure their engineers implement an integrated transport strategy over the next 20 years to cater for the growing older population. For example providing clearer signage, installing more escalators, providing more seating at stops and stations and adapting ticket machines to make them more user-friendly.

3. Government and Local Authorities must include older people's views and experiences when developing new public transport infrastructure. This could be achieved by including organisations such as AgeUK and Voice North in public discussion forums and ensuring that older people engage in all public consultation processes.

Improving the world through engineering

PUBLIC TRANSPORT FOR AN AGEING POPULATION

THE ECONOMIC, HEALTH AND SOCIAL CASE FOR PUBLIC TRANSPORT FOR OLDER PEOPLE

UK society is ageing. The Office for National Statistics data in projecting the age demographic between 2008 and 2033, shows a startling and permanent change (**Figure 1**). AgeUK's[2] statistics show that in 1996, there were just over 10.6m people living in the UK of pensionable age. They predict that this will rise to 15.5m in 2038, despite the increase in retirement age over that time. Moreover, it is predicted that by 2086[3], about one in three people in the UK will be over 60.

Contrary to some stereotypes, many older people are fully active. 22% of people over the age of 65 are in full or part-time employment[4] and many provide child care for other family members. For older people, a large proportion of journeys are taken to visit friends and relatives, or for daily necessities like shopping or visits to the GP and about a half of these older travellers have no private form of transport available.

There are social and health benefits[5] to older people using public transport, in addition to the obvious advantage of being able to get from A to B. Data collected in London suggests that public transport users take more physical exercise than private car drivers and that they have more opportunities to overcome social isolation. 3.9m older people in the UK live alone[6] and isolation can have an economic cost of about £1,000 per year per person.

In the current economic climate there have been many demands to either remove or reduce the scope of the current concession passes. These passes are very popular, with 80% of eligible people taking them up and usage increasing by 93% between 1991 and 2009, corresponding to an increase in passenger distance travelled of 64%. Passes undoubtedly contribute to improving wellbeing[7], but given the economic climate and the growing number of older people, a review of the long-term sustainability of concessionary travel is imperative if we are to ensure older people remain active.

Figure 1: Estimated and projected age structure of the UK population, mid-2008 and mid-2033. (ONS Statistical Bulletin).
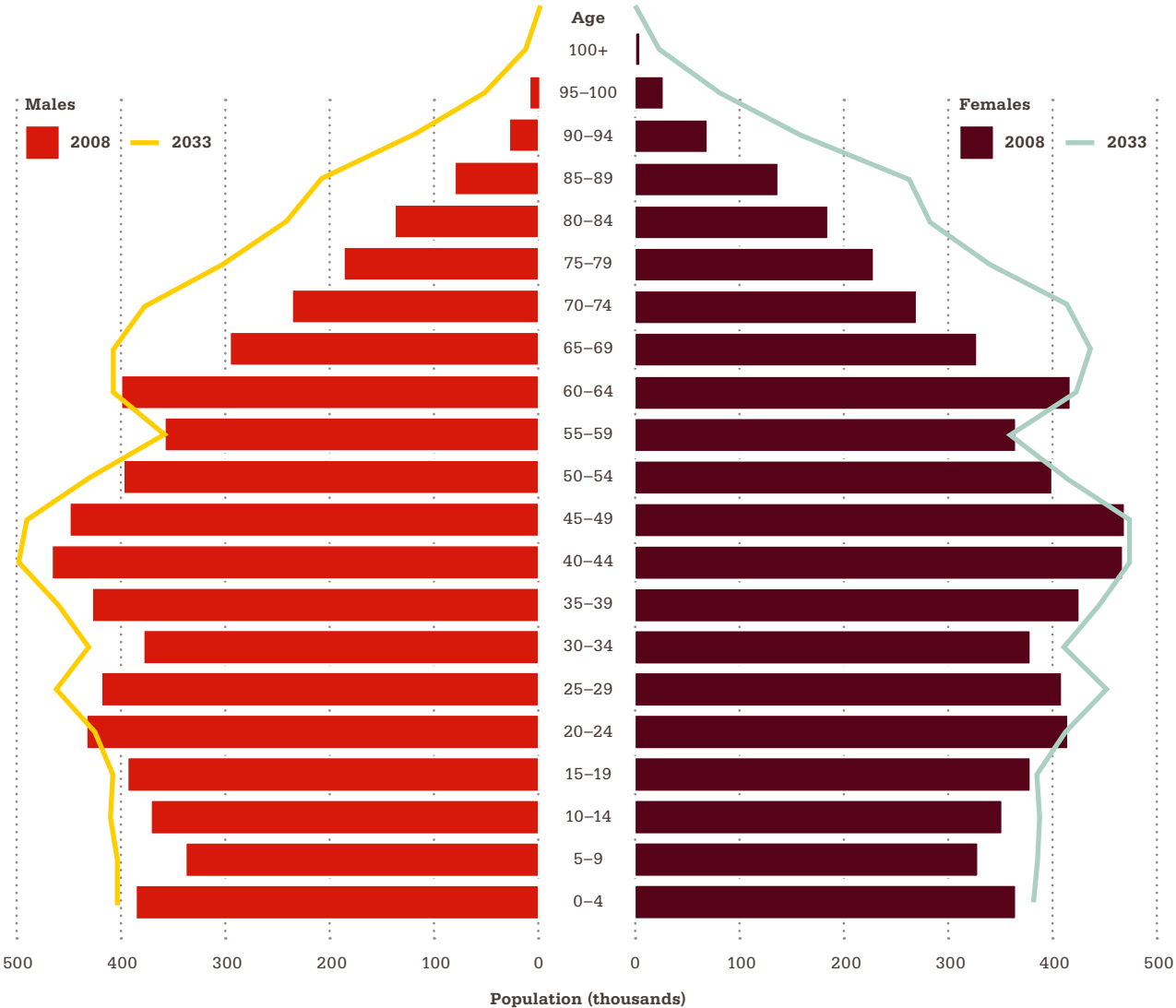
THE CHARACTERISTICS OF OLDER PEOPLE

The process of ageing results in the sequential loss of key skills to a greater or lesser extent in different individuals. There are four key age-related impairments which have a significant effect on the ability of elderly people to use public transport.

- **Hearing** – 47% of the over-75s have some form of hearing loss. Within the busy concourses of bus and rail stations, loud background noise makes it difficult to hear announcements or hold conversations.

- **Vision** – 12% of the over-75s are substantially visually impaired. Passageways and large open concourses can be difficult to navigate, as are gaps between vehicles and platforms. Interpreting text on information boards and ticketing machines can also be challenging.

- **Cognitive reasoning** – As we age, our ability to retain facts or understand written information reduces. It can take longer to absorb the relatively complex information on information boards and ticketing machines, particularly in busy transport interchanges. People with dementia will clearly have additional issues with direction-finding.

- **Mobility** – Speed and agility of movement become more difficult as we age. AgeUK's survey[2] reported 19% of those aged 65+ suffered some limitation of mobility. 10% of older people find it difficult to walk more than 400m and use staircases, and 5% cannot walk 50m without a rest.

A combination of these factors can be used to create an ability scale known as a 'life curve' (**Figure 2**).[8] Superimposing the dexterity needed for bus and tube travel on this curve shows how demanding these types of transport currently are and hence how they are broadly restricted to individuals with 'normal' abilities.

It is crucial that transport planners, engineers and operators start to think differently about ageing if they are to capitalise on the opportunities this changing demographic has to offer. The Institution recommends that the Department for Transport develop a national integrated transport strategy for the next 20 years to be implemented by 2016, which includes addressing the needs of the ageing population, when developing plans for long-term investment in large-scale infrastructure projects.

Figure 2: Bus and tube travel requiring complex manual dexterity and long distance mobility and balance ('life curve' from Kingston et al[8])

BADL, IADL and mobility items (functional domain)
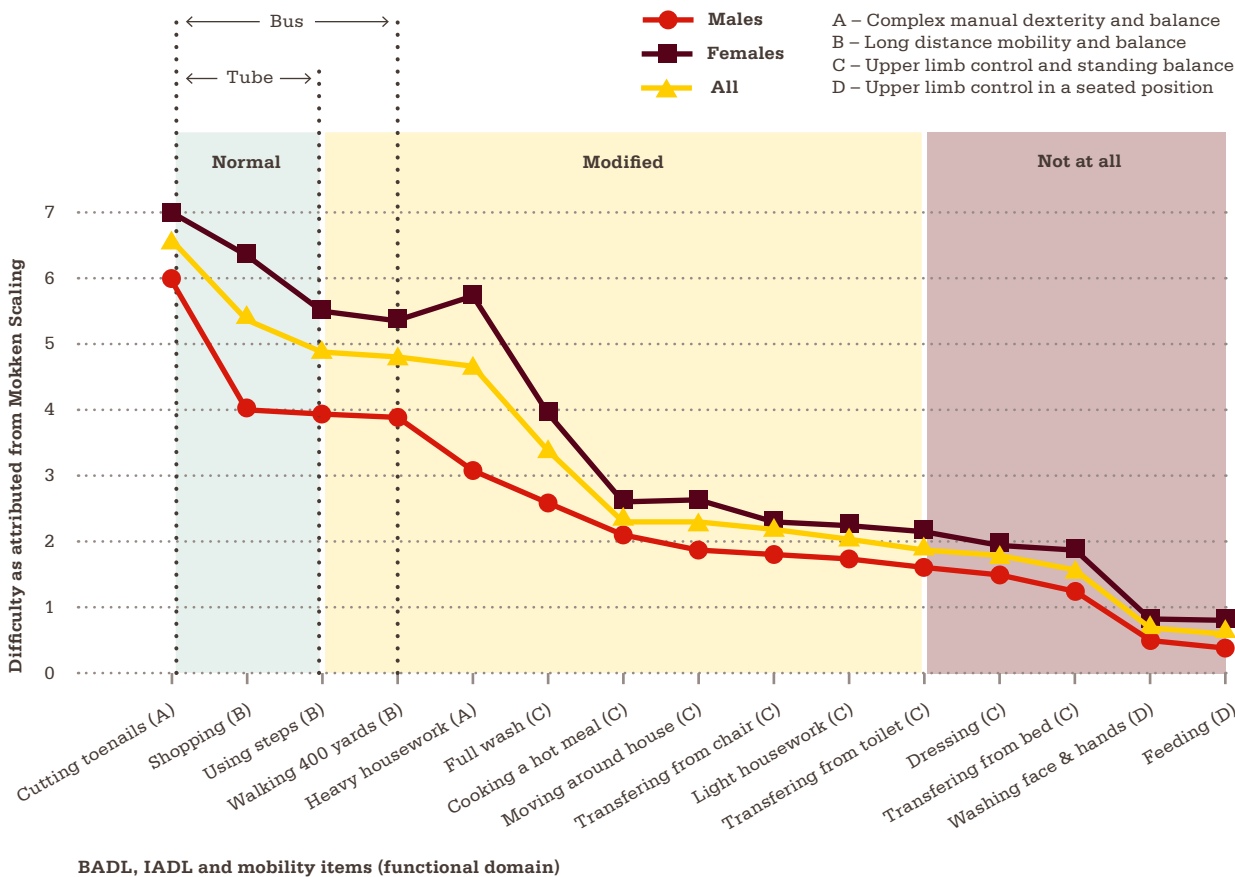
INCLUSIVE DESIGN REQUIREMENTS FOR THE AGEING POPULATION

The British Standards Institution defines inclusive design as: "The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible… without the need for special adaptation or specialised design."

Data* shows that some railway design processes often exclude groups such as the over-65s, children and the disabled, resulting in only 45% of the population being considered. Interestingly, most designers are aged between 20 and 39, significantly younger than many of the people for whom they are designing. Engineers must address the following three key areas, which often fail to meet older user's needs.

Infrastructure

Infrastructure is key to the accessibility and usability of the transport system. Almost all public transport journeys begin with a walk, which needs to be safe, particularly steps, pavements and road crossings. Wherever possible:

- **Seating** should be provided in information areas, on routes to bus stops and on platforms, and seats must not be further than 400m apart[8].

- **Moving pavements** should be used in buildings, where possible, if this distance needs to be increased.

- **Escalators and lifts** should replace steps wherever practicable.

Stops, stations and interchanges should be easy to negotiate and passengers should feel safe and comfortable, especially in the case of interchanges which are often large and on more than one level.

Vehicle/carriage design

The design of trains and buses must include hazard-free access and easy identification of reserved seats. All vehicles must have clear displays of their current position and provide appropriate information before, during and after boarding or alighting.

Information systems

Travellers require correct and timely information including:

- **Loudspeaker announcements.** Most existing stations have poor acoustic properties, coupled with a degree of hearing impairment, the majority of older people have difficulty in responding quickly and reliably. Easily seen and readable information boards are an alternative for some if radical change is not possible.

- **Understanding and reacting to short-term information.** The need to move quickly to another platform or entrance at short notice, especially when among large numbers of people, can be stressful. Better understanding and best-practice models, e.g. availability of well-trained staff, can build confidence.

- **Information and driver management systems.** Passengers need to know where they are, where the vehicle is going, and be certain they know how to get off at the right point. Clear signage and on-board messaging give reassurance and minimise their need to stand up in a moving vehicle.

- **Destination boards.** These often contain large amounts of information in relatively small typeface with fast refresh rates. Boards generally need to be larger and more numerous, with increased time between updates.

- **Ticket machines.** These would be improved by having bigger buttons, good lighting, additional audio outputs and more obvious slots for money and tickets. Point-of-sale systems need to remain with equal priority to digital technology for those without internet access or the necessary IT skills.

- **Journey planning.** This is particularly essential for older people, especially if there are any unexpected changes. Where there are often several routes and services, there is a need to develop journey planning tools which take into account the walking distances between each.

- **Environment.** The largely Victorian layout of infrastructure often makes changes between services complex and expensive. Cities vary hugely in the services they provide[9]. While popular commuter routes may be well designed, less-populated suburbs can have very poorly laid out transport infrastructure. In many rural areas, there is limited public transport but a disproportionately high number of older people. Economic viability in many such cases can be achieved only through public subsidy.

While some excellent examples of inclusive transport design exist, it is often patchy at best; with different service providers implementing different technologies across the UK. Users should not feel stigmatised for not knowing where a train or bus departs from or fear challenging interactions with people or machines which may mark them out as 'an old person'. Consulting with ageing users on inclusive design should be inherent in the design process. This would result in increased usage and greater customer satisfaction.

WHAT POLICY IS NEEDED?

In 2014, the Government provided 26 UK railway stations with a share of £60m funding to improve access for passengers as part of the 'access for all' programme. While this investment was welcomed, it is not enough. As a comparison, £800m of private funding was needed to renovate and refurbish St Pancras, a station which has many good examples of design and technology.

Currently the universal transport subsidy for older people accounts for 1.2bn journeys a year (approximately 100 journeys each) at an annual cost to the taxpayer of £927m (£31.68 per adult tax payer). A cost-benefit analysis by promoters of bus travel claims that the scheme delivers value for money with each £1 spent generating £2.87 in benefits[7]. Yet local authorities continue to be squeezed on transport subsidy funding, resulting in many transport companies cutting vital services; often those used most by the over 65's[10].

Given that the UK now has more than 20m over-50s who are responsible for 40% of UK annual consumer spending and hold 80% of the nation's wealth[11], questions are being raised about the sustainability of the universal transport subsidy. Government must ensure that the socially and financially vulnerable can continue to benefit from the pass scheme whilst diverting the majority of funds to upgrading the transport network for all users. Additionally, Government must incentivise transport providers and private investors to fund large-scale infrastructure programme as part of a national transport strategy.

RECOMMENDATIONS

The Institution recommends that:

1. The Government reviews the universal transport subsidy for older people. Given the economic climate and rising number of older people, the current system will become unsustainable. Consideration must be given to subsidising the vulnerable few, while diverting the majority of funds to improve accessibility of the transport network for all.

2. Transport and infrastructure providers, working with Local Authorities and Central Government need to ensure their engineers implement an integrated transport strategy over the next 20 years to cater for the growing older population. For example providing clearer signage, installing more escalators, providing more seating at stops and stations and adapting ticket machines to make them more user-friendly.

3. Government and Local Authorities must include older people's views and experiences when developing new public transport infrastructure. This could be achieved by including organisations such as AgeUK and Voice North in public discussion forums and ensuring that older people engage in all public consultation processes.

REFERENCES

1 Transport Solutions For Older People Information Resource For Local Authorities, Department For Transport, 2012

2 www.ageuk.org.uk/notts/about-age-uk-nottingham-and-nottinghamshire/older-people-in-the-uk/

3 National Population Projections 2012 based, ONS, 2013

4 Rise in Number of Older Workers Set to Drive Economy, Financial Times, 28 January 2014

5 www.nhs.uk/Livewell/fitness/Pages/whybeactive.aspx

6 Loneliness and Social Isolation Among Older People in North Yorkshire, Social Policy Research Unit, University of York, York, Bernard, S. 2013, ISBN:978-1-907265-25-9

7 The costs and benefits of concessionary bus travel, Greener Journeys, Sept 2014. www.greenerjourneys.com/wp-content/uploads/2014/09/Concessionary-travel-costs-and-benefits-September-2014.pdf

8 Kingston A, Collerton J, Davies K, Bond J, Robinson l, 2012 'Losing the ability in activities of daily living in the oldest old: a hierarchical disability scale from the Newcastle 85+ study', journals.plos.org/plosone/article?id=10.1371/journal.pone.0031665

9 Car Dependency Scorecard 2014 The Top English Cities For Sustainable Transport, Campaign For Better Transport, 2014, www.bettertransport.org.uk

10 Cash-strapped local governments could be forced to ditch subsidised bus services for the elderly and disabled. The Independent, march 2014. http://www.independent.co.uk/news/uk/politics/cashstrapped-local-governments-could-be-forced-to-ditch-subsidised-bus-services-for-the-elderly-and-disabled-9161308.html

11 www.activeage.org March 2012 'The ageing marketplace: how some companies are successfully addressing the needs of the older customer, whilst others are struggling to access this expanding market'

" ""

The one size fits all mentality isn't recognising the need to make public transport accessible to the growing number of older people in the UK.