



# Bus use in a developing world city: Implications for the health and well-being of older passengers



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## ABSTRACT

The aim of this article is to investigate the implications of bus use on the health and well-being of older passengers in a developing world city. Two complementary methods were used. Twenty-six participants aged 60 and over in Guadalajara, Mexico took part in four focus groups to identify the door-to-door elements of the bus service that impose difficulty in terms of accessing and using it, and their impact on the perceived or actual safety, usability and comfort of older passengers. The second part of the study comprised real time observation of 144 older passengers, to investigate the relationship between the characteristics of the bus service and the observed behaviour of older passengers. The results show that issues such as driver behaviour, features of bus design, crowded buses, pedestrian infrastructure and other passengers' behaviour present difficulty to older passengers who need or want to use the bus service. The existence of these issues presents serious implications for older users in terms of perceived or actual safety, usability and comfort. Given the importance of the role of public transport, the overall conclusion is that there is an urgent need for further improvement of bus services to maintain and promote the health and well-being of older people.

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## 1. Introduction

### 1.1. Context

The impact of global ageing is expected to be particularly high in developing countries, due to the high rate of population change and limited time to adjust to its impacts (United Nations, 2010). The World Health Organisation claims that 'in all countries, and in developing countries in particular, measures to help older people remain healthy and active are a necessity, not a luxury' (WHO, 2002:6). Transport, and particularly public transport, is one of the services that have been identified in supporting this (WHO, 2007).

A number of studies highlight the benefits, including health and well-being, of continued mobility (Metz, 2000, 2003; Mollenkopf et al., 1997, 2005; Webber et al., 2010; Yeom et al., 2008). Some studies show that poor transport use can be linked to a reduced health status (Marottoli et al., 2000; Ragland et al., 2005), and this may be worse in developing countries where transport problems are a barrier to older peoples' access to basic social services and participation in local activities (Help the Age International, 2002). Of the transport modes available to older people, public transport, and particularly buses, is one of the most viable options, especially for those who cannot afford a car, or who have ceased driving a car.

Despite the potential benefits of public transport, there are barriers relating to accessibility and use for all passengers, but older and disabled people in particular (Broome et al., 2009; Carlsson, 2004). In public transport, safety, ease of use, and comfort are expected attributes in a good service (Balcombe et al., 2004; Molinero and Sanchez, 2005; Redman et al., 2013). In particular, the degree to which people feel safe using public transport has been shown to have a significant effect on their willingness to use these services (WHO, 2007).

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## 1.2. Approach

The research was guided by two complementary design approaches – Inclusive Design and Service Design. Inclusive Design ‘is a general approach to designing in which designers ensure that their products and services address the needs of the widest possible audience, irrespective of age or ability’ (Design Council, 2008). Whilst this is clearly relevant to the design of public transport, it has less presence in developing countries where there is the fastest growing need for the inclusion of older and disabled people. However, it is important to extend the concept of inclusion beyond the physical design of the vehicle since an ‘accessible bus’ does not necessarily guarantee an ‘accessible bus service’ (Nickpour et al., 2012:14). The concept of Service Design is an emerging discipline that aims to innovate or improve services that are useful, usable and desirable from the user perspective, and efficient, effective and different from the organisation’s perspective (Mager and Sung, 2011; Moritz, 2005). Service Design also considers the user experience based on the full customer journey, during all stages of a user’s interaction with the service (Mager and Sung, 2011). Integrating an inclusive perspective with consideration of the full customer journey experience (defined within this study as ‘door-to-door’ representing from door of origin to door of destination), and the influence of the multiple transport stakeholders, will enable a more complete understanding of the safety, comfort and usability barriers to wider uptake of public transport by the older population within a developing country.

## 1.3. Aim and objectives

The overall aim of the paper is to identify, from a passenger perspective, the issues that prevent widespread uptake of the bus transport system by older passengers in a developing world city. Little research has been undertaken in this context and given its potential significance in relation to the rapidly ageing demographic of such countries and the importance of mobility in supporting health and well-being within the older population, the research has the potential to tackle significant real world issues.

The research takes a passenger-focussed stance, identifying factors of relevance from the standpoint of older passengers. The specific objectives of this study are to collect data on what older passengers say, and what older passengers actually do, in relation to bus transport. These data are then interpreted in terms of causality in order to identify whether and how the bus service presents problems from an older passenger perspective, and the implications these may have for passenger health and well-being.

## 2. Methods and materials

### 2.1. Overview

The research was undertaken in Guadalajara, Mexico, where there is a high dependency on the private car use due to the lack of an adequate public transport system. The lack of a strong regulatory and legislative regime allows the existence of an informal bus service organisation that comprises operators who have their own bus(es) and work in competition with others. Bus drivers are paid by the number of collected passengers, and so they compete, race and ‘fight’ with other bus drivers (Aceves-Gonzalez et al., 2014). Participants in this study were drawn from the local population who were users of the bus service.

The main methods frequently employed in research of this nature are focus groups, interviews and surveys, with a few studies employing more than one method. Focus groups were selected for use in this research since they enable exploration across a wide range of issues using a large number of participants. In the context of this study, this method would enable the full breadth of the door-to-door experiences of bus use to be captured from a large number of older bus users. Focus groups are also an appropriate mechanism for exploratory data collection but additional care is needed when used with older participants e.g. it is very important to ensure that one person speaks at a time since dividing attention across different sources is more challenging for older people (Barrett and Kirk, 2000). However an inherent limitation of focus groups is uncertainty over the accuracy of the participants’ reporting and thus, in this study, this method was complemented by direct observations of passengers on buses. In addition to the potential for a large number of observations over key parts of the service, this method’s merits were that it would enable comparison with the focus group findings as well as provide the opportunity to identify factors which the focus group participants may have failed to report.

The proposed methods were submitted for review by the Ethics Committee at Loughborough University. Given that the activities required within the methods were unlikely to pose additional hazards in excess of those the participants would encounter in daily living, no significant amendments were required to the proposed research programme.

### 2.2. Focus groups

The aim of the focus groups was to understand the problematic issues for older passengers when using local bus transport and the impact of these on their experience of the service. The specific objectives of this data collection were to:

- Identify which elements of the transport system impose significant difficulty in terms of accessing and using the bus service.
- Prioritise those issues in terms of the level of difficulty they pose.
- Identify the impact of these problematic elements on the perceived or actual safety, usability and comfort of older passengers.

The first part of the study used a structured format of focus groups to understand and prioritise issues that impose difficulties for older passengers using the bus service. This was achieved through facilitated group discussion structured around the elements of the bus service identified in the literature, such as information (routes, bus stop locations, existence and design of maps and timetables), driver behaviour (kindness, driving style and the time they allow for passengers boarding and alighting), and bus design (size and shapes of steps, handrails location, and seats). These elements, which are common to bus service provision in most countries, were then ranked using a card sorting activity. Participants were invited to identify any additional elements which reflected their particular context of use and include these within the card sorting activity.

Participant recruitment was undertaken through the Metropolitan Centre of the Elderly, a local day centre. Twenty-six older people were selected based on being aged 60 or over with sufficient language and cognitive abilities to allow them to provide informed consent and participate actively in the group discussions. Four focus groups were conducted, within the participants’ routine visit, as shown in Table 1. The aim was to recruit a varied sample in terms of gender and travel habits, within the constraints imposed by the target group. A questionnaire was used to capture the participants’ demographic data, travel habits and levels of difficulty undertaking specific aspects of bus travel.

All focus groups were recorded and transcribed in full. These files were imported into NVivo (QSR International). Based on the concepts of the elements of the bus service, and the concepts of usability, safety and comfort, a theoretically driven thematic analysis was used (Braun and Clarke, 2006; Robson, 2011). The analysis was undertaken at a semantic and realistic level (Braun and Clarke, 2006), i.e., themes, subthemes and codes were identified within the explicit meaning of the data. Initial themes were based around (1) the problematic issues and (2) their impact on the passenger. These were derived initially from the theoretical perspectives, and then developed based on participant discussion.

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