



# To drive or to use the bus? An exploratory study of older people in Malta



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## ABSTRACT

Older adults are becoming a larger portion of the world's population, and as a result, more attention is being given to their mobility and travel behaviour. Such studies are however lacking in certain contexts like in Malta, an island state in the Mediterranean Sea. Malta is facing a concurrent high population density, high motorisation rate and an ageing population. Nevertheless, older people's mobility is not adequately considered in transport policy. The aim of this paper is to have an exploratory understanding of mode choice in later life in Malta, and understand the key determinants that affect older people's decision to drive or to use the bus. Using descriptive statistics and two regression models, this paper shows how in Malta older males drive significantly more than females, and the latter use more public transport. As age increases, the percentage of drivers declines for both genders. On the other hand, whilst for females public transport use also declined with age, the pattern of usage amongst males fluctuated. The data also showed that public transport was mostly used by non-driving older people who could potentially be captive bus users. The determinants that predicted whether older people drove or not were (i) gender, (ii) age, (iii) their occupation status, and (iv) the presence of an assistive device. The significant predictors for older people's public transport use were (i) the number of cars available in the household, (ii) age, (iii) the district where they lived, (iv) their occupation status, (v) their participation in social activities and (vi) the presence of personal assistance. The two models revealed different predictors for mode choice however there were also several similarities. The paper concludes with a discussion, highlighting the importance and relevance of the results to transport policy-makers. It also provides suggestions for further research to examine older people's mobility and travel behaviour.

## 1. Introduction

Social changes are amongst the key factors that affect mobility, and one such phenomenon which is receiving increasing attention is population ageing (Rudinger et al., 2006). Between 2015 and 2030, people over the age of 60 are expected to increase from 901 million to 1.4 billion (UN, 2015). This has implications on different sectors of society, including transport. Travel behaviour of older people was analysed from different perspectives such as trip making, trip distance, travel patterns, trip chaining and transport deficiencies (e.g. Golob and Hensher, 2007; Kim, 2011; Mercado and Páez, 2009; O'Fallon and Sullivan, 2009; Páez et al., 2007). One factor which can influence such factors is mode choice, which is the focus of this paper.

Due to such an increase in ageing communities, it is important to study travel behaviour in later life because good mobility is linked with a good quality of life for older people (Musselwhite and Haddad, 2010). However, the natural process of ageing is associated with different physiological changes that can have significant consequences on

mobility (Shrestha et al., 2016). Actually, older people are usually considered as one of the transport-disadvantaged groups in society (Lucas et al., 2001). They can even suffer from social exclusion due to various difficulties associated with travelling to access services, particularly for non-drivers (Engels and Liu, 2011; Shergold and Parkhurst, 2012). Such situations are even worse when public transport does not adequately cater for their needs (Engels and Liu, 2011). Given such limitations, when compared with younger individuals, the overall mobility of older people is lower than that of younger individuals (Collia et al., 2003; Schwanen et al., 2001).

Despite this, travel in later life has increased significantly throughout the years. Older people have more active lifestyles and one key reason for this is the increasing number of older drivers (Rosenbloom, 2001). The importance of car use for older people is also evident from the negative implications associated with driving cessation. Older people who stop driving can suffer from a lower quality of life and health problems (Marottoli et al., 2000). Nonetheless, higher car use can also reflect negatively on the health status of older people

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due to the lack of physical movement (Kemperman and Timmermans, 2014). Moreover, it is widely acknowledged that the increase in car use has negative implications on the environment and is a significant and growing contributor to climate change (Gössling et al., 2016). Therefore, given the overall increase in the numbers of drivers, it is also important to motivate people to shift away from their car and use public transport for environmental reasons. This shows the importance for policy-makers to understand mode choice and its determinants so as to work towards a sustainable balance in the modes of transport that older people use.

An understanding of the context is critical to truly understand the factors which encourage older people to choose specific modes of transport. In contrast to the mounting studies dealing with older people's mobility, such knowledge is still lacking in certain contexts, particularly in island states like Malta. The main aim of this paper is to have an exploratory understanding of mode choice in later life in Malta, and understand the key determinants that affect older people's decision to drive and to use the bus. This will complement international efforts which are working to enhance knowledge for policy-makers to determine the best policies required to meet the mobility needs of older people.

This paper consists of six sections. This introduction is followed by a literature review focusing specifically on mode choice of older people and its determinants. Section three describes the case study of the research, and section four discusses the research methods. This is followed by the presentation of results in section five and a discussion in section six.

## 2. Mode choice in later life: private car vs public transport

Older people are the fastest growing segment of the driving population (Banister and Bowling, 2004). Studies in different contexts showed that the car is the main mode of transport that older people use for their travel (e.g. Collia et al., 2003; Mercado and Newbold, 2009; Schmöcker et al., 2008; Schwanen et al., 2001). This means that older people are making more trips per day and driving longer distances. For example, a driving licence and car access had a positive impact on trip frequencies of older people in Canada (Páez et al., 2007). In a study in Denmark, Norway and Sweden, Hjorthol et al. (2010) also showed that older people with no driving licence made fewer trips. Nonetheless, given the physiological changes associated with ageing, older people can face multiple obstacles when driving, particularly in dual-task situations (Leversen et al., 2013). Some common difficulties that they encounter are when turning (particularly towards the left), when judging the safety of a gap in conflicting traffic movements, when driving in intersections, when having to change high-speed lanes, when reading certain street names and signs, when following road markings and when driving in bad weather (Lyman et al., 2001; Chandraratna and Stamatiadis, 2003; Mayhew et al., 2006; Gelau et al., 2011; DaCoTA, 2012). Common ageing restrictions namely sensory, cognitive and medical problems usually predict the driving ability in later life (Anstey et al., 2005). Such health limitations also affect road safety of both the older people and of other vulnerable road users (Rogé et al., 2014).

Public transport is essential to keep people independent and mobile as they get older. This is because a lack of access to transport leads to inequities (Engels and Liu, 2011). Despite this, public transport use amongst older people can be quite low (Collia et al., 2003; Rye and Scotney, 2004). Older people may prefer the car even when public transport works efficiently due to the convenience associated with private transport (Li et al., 2012). Driving could also be a reflection of a lack in alternative options (Rosenbloom, 2001). However, there are also the public transport “captive users” (Beimborn et al., 2003) who are restricted to use public transport due to different reasons as lower income levels (Kim and Ulfarsson, 2004). Older public transport users can face several problems which discourage them from using such mode of transport (Fiedler, 2007). As a result, there are different requirements

that public transport has to meet in order to cater for the needs of older people. These are usually related to affordability, availability, accessibility and acceptability (Shrestha et al., 2016). For example, modern technologies that convey public transport information may not always be catering for the mobility needs of older people (Hounsell et al., 2016). Other common problems are related to access and accessibility issues, travel time, lack of comfort, lack of reliability and boarding constraints (Davey, 2007; Fiedler, 2007; Hess, 2009; Wrestrand et al., 2009; Zeitler et al., 2012; Mifsud and Attard, 2013; Sundling et al., 2015). In Malta, Mifsud and Attard (2013) showed that 72% of the older bus users encountered some sort of barrier when using public transport. This means that, in order to have a wider picture of how older people travel, it is also important to understand the determinants for public transport use. For example, Hess (2009) showed that in a pooled-analysis for Buffalo and San José (United States), living in single-households tended to positively affect public transport usage for older people. Thus, the provision of attractive and accessible public transport services is a crucial policy for addressing the transport needs of older people (Shrestha et al., 2016).

This means that although the mobility of older people is increasing, they still remain a vulnerable and disadvantaged group in the transport environment. It is thus important for transport policy-makers to better understand the determinants of how they travel in order to provide them with more independent mobility.

### 2.1. Determinants of mode choice for older people

The travel behaviour of old people can be quite complex (Hildebrand, 2003), and the multilevel conceptual ecological model can help to explain its determinants. Such a model, originating from the public health literature (Sallis et al., 2008) states that behaviour is affected by individual, social/cultural and environmental factors. Individual factors refer to the individual's skill to act and participate in the desired activities. Social and cultural factors refer to the relationships of individuals with the surrounding social and cultural environment, whilst environmental factors refer to the effects of the physical environment on behaviour (e.g. the accessibility to services). This means that behaviour is influenced by multilevel effects that can act simultaneously. As a result, this framework has been a key foundation for several studies analysing older people's mobility (e.g. Hough et al., 2008; Winters et al., 2015). Correspondingly, using previous literature, Mercado and Newbold (2009) summarised the key determinants of mode choice in later life as being age, gender, mobility tools, health, social issues and other factors such as financial status, education level and urban structure.

When analysing the transport mode determinants for older people's leisure trips in the Netherlands, Schwanen et al. (2001) showed that their choice was linked to personal factors (e.g. education level, age, household composition), car ownership and characteristics of the residential environment. For example, they showed that when older people owned a vehicle they used it irrespective of where they lived. The environment only affected modal choice when older people did not own a car, and public transport was not an actual alternative to the car. For shopping trips in London, Schmöcker et al. (2008) also showed a strong preference towards car use when a car was available in the household, and public transport modes were not preferred. Age and disability also affected public transport use. When analysing mode choice of older people in Washington State, Kim and Ulfarsson (2004) found that personal, household and neighbourhood characteristics were key determinants. For example, higher income levels resulted in older people driving and carpooling more whilst proximity to public transport increased its usage. The latter was a key determinant in several other studies, showing the importance of public transport accessibility for its usage (e.g. Beimborn et al., 2003; Schmöcker et al., 2008; Su et al., 2009).

Different studies showed that gender is a key determinant for mode

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