The complexity of old age: What are the transport equity issues?

Deborah Mifsud[1*] and Karen Lucas[2]

[1]Institute for Climate Change and Sustainable Development, University of Malta.
*Corresponding author. Email: deborah.mifsud@um.edu.mt
[2]Institute for Transport Studies, University of Leeds.

This is a Short-Term Scientific Mission (STSM) Report written in part fulfilment of TU 1209 TEA (Transport Equity Analysis: assessment and integration of equity criteria in transportation planning) COST Action. Ms Deborah Mifsud completed this STSM under the supervision of Prof Karen Lucas at the Institute for Transport Studies at the University of Leeds between the 21st September and 9th October 2015.

To cite this report: Mifsud, D. & Lucas, K. (2015) *The Complexity of old age: What are the transport equity issues?* STSM Report, TU 1209 TEA COST Action.

Introduction

The age structure of populations is changing in different ways in different parts of the world. This has significant consequences for numerous public policy sectors and for local and global economies. The transport domain is particularly affected because of the ways in which these changing age structures have an influence on how and where people choose to live and to carry out their daily activities. In particular, older people are choosing to work until later in life and are generally more mobile and active than previous generations. This literature review starts with basic statistics on the increase in the elderly population in Europe, and outlines the corresponding projections. Focusing on Malta and the UK, this report shows the increase in the number of elderly driving licence holders throughout the past years. It also acknowledges some socio-economic issues related to the risk-of-poverty rate and material deprivation in later life.

A discussion on the capability approach and its application to the transport sector in ageing societies follows. The ways how lack of capabilities can result in inequities in old age are also discussed. Congruently, this report highlights the importance of transport for older people's quality of life and the typical barriers that they suffer from when travelling. Eventually a discussion on the complexity of "old age" follows, with a specific focus on mobility during retirement age, and the equity (or inequity) effects of driving licence renewal programs and concessionary fares. The report concludes with an overview of different transport policies concerning mobility in later life and outlines several suggestions on how policies should start dealing with the problems that older people usually face within the transport environment. Ultimately a table summarising all the discussion is presented in order to guide potential transport equity assessments in later life. This can serve as guidance for future policies in ageing societies. This report gives specific emphasis to the UK and to Malta.

Elderly people in Malta and in the UK: Transport and Socio-economic issues

According to the UN Projections, Europe is currently the continent with the highest old age dependency ratio. Between 2004 and 2014, the percentage of older people (65+) increased from 16.4% to 18.5% within the EU28. Within this same period, the percentage of elderly people in Malta increased from 13% to 17.9% whilst in the UK it increased from 15.9% to 17.5%. The old age dependency ratio in Malta and in the UK in 2011 was of 23.7 and 25.6 respectively (NSO, 2014a). Such figures are projected to increase in 2060. Whilst in other continents the "very-old-age dependency ratio" is projected to remain below 14%, in the European Union and European Area this is expected to be between 20% and 25% (European Commission, 2014).

Specific socio-economic characteristics are usually associated with old age, and these are important determinants for elderly people's transport needs, choices and mobility patterns. It should be highlighted that in both Malta and in the UK, the percentage of people above the age of 65 years who were at risk of poverty or social exclusion between 2003 and 2014 was actually higher than the average EU figures (Figure 1). Based on the Eurostat definition, this refers to people who are either at risk of poverty, or severely materially deprived or living in

a household with a very low work intensity[1]. Eurostat statistics (hlth_dpe010) also show that in 2013, the percentage of elderly people (65+) in Malta that were at risk of poverty or social exclusion due to severe activity limitation (25.3%) was higher than the EU27 average (20.7%). The same could not be stated for the UK since this figure was of 18.8%. Activity limitation factors can impede elderly people's mobility and the corresponding independence in various ways. Additionally, in Malta in 2014, the median equivilised net income (Euros) for elderly people was lower than the EU 27 average. Whilst the net income for the EU27 was of €15,249, in the UK it was of €18,369 and in Malta it was of €10,319 (ilc_di03). It is also interesting to note that the employment rate among the elderly people (65+) in Malta is much lower than that in the UK. In the third quarter of 2015, the employment rate of the Maltese elderly people was of 4.8% whilst that in the UK was of 10.4% (lfsq_ergan). Nonetheless, in 2014 the income inequality for older people (ratio of total income received by 20% of the population with the highest income to that received by 20% of the population with the lowest income) was the lowest for Malta (3.2). In the UK it was 4.2 and the EU27 average was 4.1 (tespn080). Additionally, in 2014 both in Malta and in the UK, the overcrowding rate, which is one indicator that measures the housing conditions, was much lower than the EU27 average. Whilst the latter was of 6.6%, in Malta and in the UK it was of 1.4% and 1.7% respectively. This shows that with regard to this indicator the elderly population in both Malta and in the UK live in good housing conditions. As shall be discussed later on, all these different socio-economic impacts can have different repercussions on the elderly people's quality of life and mobility autonomy.
Despite some of the prior discussed economic drawbacks, Eurostat statistics show that the health status of older people is continuously improving. Between 2005 and 2010 the healthy life years at 65 for the Maltese and British people were higher than the EU27 average. For females, the latter was of 8.8 years. For Malta and the UK the average was of 11.3 and 11.5 years respectively. For males, whilst the EU 27 average between 2005 and 2010 was of 8.6 years, the average for Malta and the UK was of 10.9 and 10.5 years respectively. An increase throughout the years was also evident particularly in Malta, because in 2013 the healthy life years at 65 were of 12.7 and 12.8 years for females and males respectively. In the UK the increase was more minimal since in 2013 the healthy life years at 65 were of 10.7 years for females and 10.6 years for males (tsdph220).

One main consequence of such improvements in health status is the increase in the number of people that are continuing to drive as they get older. This is resulting in an upsurge in the driving licence holders within the European context. For example, although Malta and the UK have a different geographical context, both countries experienced a high increase in elderly drivers in past years. In Malta, between 2009 and 2013 there was an increase of 9,549 driving licence holders within the 60+ age group. This represented an increase of 24%, which was the highest across all demographic groups above 18 years of age. In 2013, older people represented 21% of all the drivers in Malta (NSO, 2014b). In Great Britain, between 2002 and 2013, the percentage of elderly drivers between 60 and 69 years increased from 70% to 79%, whilst that for people above the age of 70 increased from 44% to 58% (Department for Transport, 2013).

[1] At-risk-of-poverty refers to the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income after social transfer. Material deprivation refers to a state of economic strain, defined as the enforced inability (rather than the choice not to do so) to pay several expenses such as a meal involving meat, adequate heating of a dwelling, durable goods as the telephone or car etc. The indicator of persons living in a household with a very low work intensity refers to the number of persons in a household with a work intensity below a threshold set at 0.20 (Quoted and adapted from Eurostat Glossary).

As shall be explained later on in this report, car use is fundamental for elderly people. In fact, access to a car is one of the nine items that are adopted by the Social Protection Committee when measuring the Material Deprivation Index (EU Statistics on Income and Living Conditions). Figure 2 shows that on average between 2007 and 2013, the percentage of households with one adult above the age of 65 in the EU27 that could not afford a personal car was approximately of 8.8%. In Malta the average figures were lower than this, with an average of 5.5% between 2005 and 2014. One possible reason for this could be that Malta has a car-dependent society and transport is the second item after food on which households spend most money on. On the other hand in the UK, figures increased exponentially after 2012. Certainly, whether older people can afford a car or not has equity (or inequities) implications on their mobility freedom. Thus, it is very important to analyse the needs that older people have and the respective capabilities in achieving such needs. This will be explained in the next sections through an overview of the Capability Approach and its application within the transport sector.

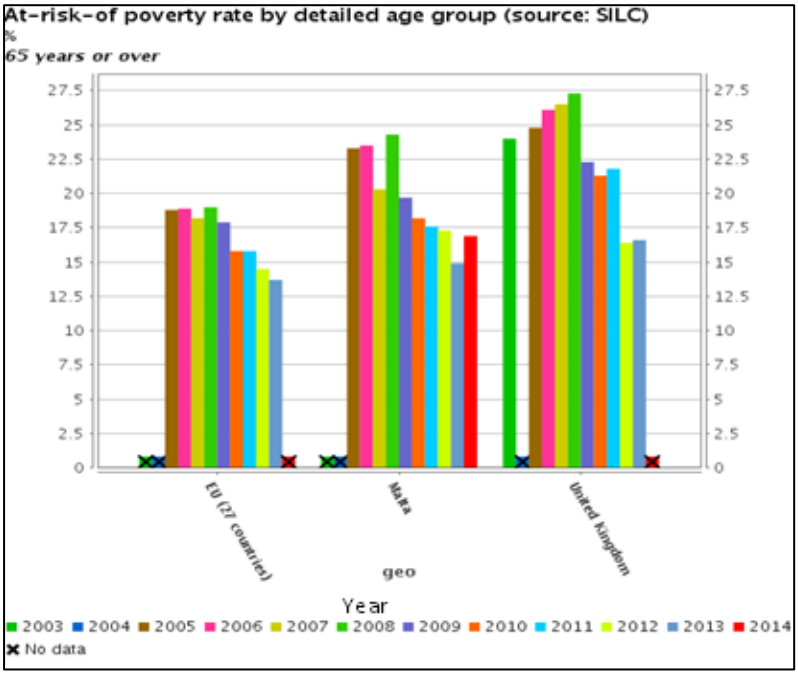

Figure 1: Elderly people (65+) at risk-of-poverty-rate for Malta and UK between 2003 and 2014 compared with EU27 (Eurostat, 2015a [code: (ilc_peps01])

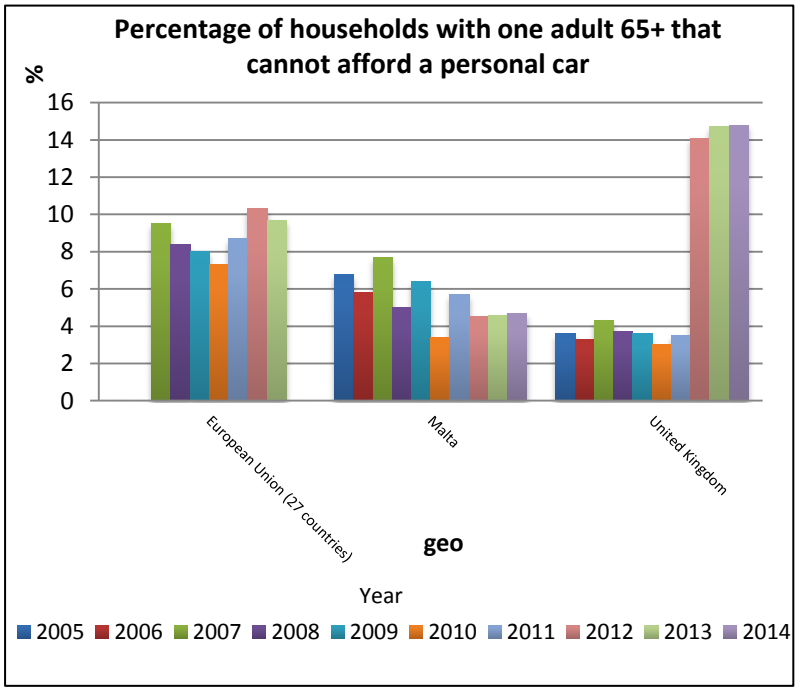

Figure 2: Households in Malta and the UK with one adult 65+ that cannot afford a personal car compared with EU 27 between 2005 and 2014 (Adapted from Eurostat, 2015b [code: ilc_mddu05])

Needs and Capabilities

The Theory of Human Need, by Doyal and Gough (1991), discusses that needs are the costs of 'being a human' and if such needs are not fulfilled, a person functions poorly within society. Doyal and Gough (1991) highlight that every person should possess physical health and autonomy, and need to participate in the societal setting in which s/he lives. Correspondingly, Maslow (1954)'s Hierarchy of Needs explains that people are motivated by a variety of needs, which are organised in a hierarchical manner. For example, Alfonzo (2005) applies this hierarchical structure to the hierarchy of walking needs. She states that walking needs evolve from the basic ones, such as the feasibility related to personal limits, to the higher-order ones such as the needs related to urban form (including accessibility, safety, comfort and pleasurability respectively). Following such theory, she states that if the most basic needs of walking such as safety are not met, normally an individual would not consider other higher-order needs such as comfort or pleasurability. This means that possibly a comfortable and pleasurable environment does not encourage individuals to walk if lower basic needs (e.g. personal feasibility) are not met. Yet, like Maslow (1954), Alfonzo (2005) explains that an individual may still decide to progress to higher-order needs even if lower-order needs are just partially satisfied. The needs' levels within the hierarchy may not always follow the same order and people may be motivated by several needs simultaneously (e.g. the walking environment can be accessible, comfortable and safe).

These theories are highly related to the *Capability Approach* (Sen, 1985). This theory focuses on the individual's capabilities to achieve good well-being. The main concepts are those of ***Functionings*** and ***Capability***, i.e. what is the individual capable to do with the resources available? Sen (1985) explains that for example a bike is a transport resource, however it depends on the characteristics of those who use it in whether it will serve as a transport mode or not. For example, it is a useless characteristic for a person with leg impairments. A person's capability represents the effective freedom of an individual to choose between different functioning combinations that s/he values.

Figure 3 outlines the main relationships of the Capability Approach. In this example, the bicycle, as a resource is identified as an important input. However, its ***value*** depends on whether the individual is able to convert it into a ***valuable functioning*** (bicycling). This depends on different factors such as health and the road environment. The capability is the set of valuable functionings that an individual has real access to, whilst the achieved functionings are those that they actually select. For example a person can choose the bus from different functionings of mobility (e.g. walking, bicycling etc.). Utility is both the final output and a functioning itself. Such choice has an impact on the subjective well-being and a reciprocal relationship with the functionings achieved.

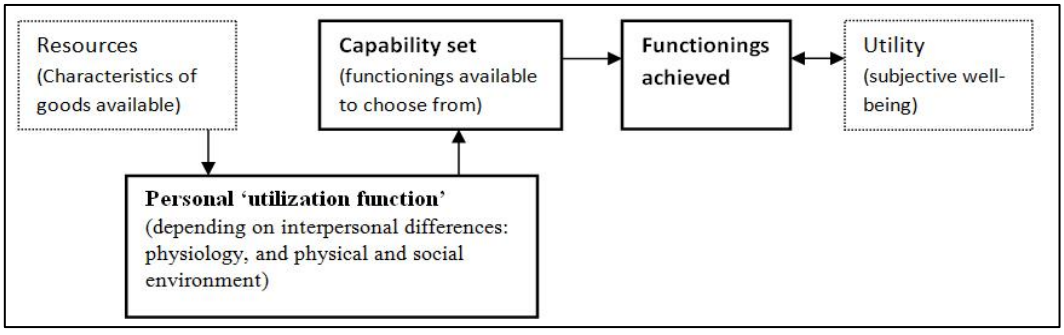

Figure 3: Key components of Capability Approach (http://www.iep.utm.edu/sen-cap/)

The Capability Approach in the Transport Sector

It can be postulated that transport, therefore, has the ability to either make societies more socially included or else create disparities (Beyazit, 2010). Thus, Beyazit (2010) uses the Capability Approach to highlight the areas in transport studies that need to be discussed with regard to social justice. Table 1 describes how she incorporates the Capability Approach with transport studies.

Capability Approach Concept	Transport
Functionings	Accessing needs and wants, travelling for leisure, travelling for social interaction
Capabilities	Mobility (being physically, socially and financially able to move from one place to another and interact within the society or with different societies)
Opportunities	Transport system (availability and accessibility of desired transport means)
Values	Environmental concerns, time, money, quality of service, reaching job market, necessity of social interaction
Freedom	Economically and socially being free to make choices. For example, having freedom to change behaviour after some policy implications (i.e. carbon taxing)
Choices	Mode of travel, location choices, choice of travel reason, choice of time of travel

Table 1: The Engagement of the Capability Approach with Transport (Beyazit, 2010)

With regard to old age, two studies that used the Capability Approach to better understand the mobility opportunities in later life are those of Nordbakke (2013) and Ryan et al. (2015). Nordbakke (2013) defines mobility as the ability to choose where and when to travel and in which outside-activities to participate. Using the case study of older women in Oslo, mobility opportunities are primarily analysed through the importance of choice and individual action. This study shows that in some situations, such as during night travel, a car is a prerequisite for accessing the desired activities. Thus those having car access have a higher opportunity for mobility than those relying on other transport services. Yet, the study also shows that good contextual resources, such as proximity to activities and good access to public transport are essential for the women's capabilities for mobility in urban areas. Combined with this, individual resources such as knowledge, competence and control of time are other essential capabilities for mobility. Together with spatial issues, Norbakke (2013) also stresses the importance of temporal attributes (e.g. fear to access services using public transport during the night). Thus, through the use of the Capability framework, Norbakke (2013) shows that individual resources, contextual conditions, temporal factors and individual strategies are interconnected. Such interrelationship can provide "a pool of capabilities for mobility" for older women since different resources or strategies can be used to increase mobility opportunities.

Ryan et al. (2015) use the Capability Approach differently from Norbakke (2013). They analyse the relationship between mobility resources and the perceived possibility to use public transport as the primary mode of transport in old age (younger-old people) in Stockholm, Sweden. Through such a framework, the perceived possibility for an older person to use public transport as a primary mode of transport is seen as an element of mobility

capability. Hence, individuals with an equal amount of resources can have different capabilities and well-being. The individual's use of public transport is then seen as an element of the individual's mobility functioning. So eventually, the use of public transport together with other modes of transport becomes a contributing factor to an individual's well-being.

Why is transport important for the older people?

The Capability Framework shows that transport can affect older persons' lives in different manners. Various studies highlight the positive effect that good transport systems have on older persons' quality of life, well-being and social inclusion (e.g. Banister and Bowling, 2004; Spinney et al., 2009; Siren and Hakamies-Blomqvist, 2009; Ziegler and Schwanen, 2011).

Yet, several barriers, including health and age-related issues can make mobility of older people more difficult. Although government policies highlight social inclusion, the decline in public transport in certain areas usually makes older people more dependent on private transport to access the necessary activities. Thus, using Paisley, rural Renfrewshire, and inner and outer London as case studies, Gilhooly et al. (2002) highlight the need for policies that encourage public transport use, especially among the elderly 'baby-boomers'. They show that for men the relationship between driving and quality of life is actually stronger than that for women. This shows the higher dependence that men have on private transport and the corresponding inequities that women face with regard to the lack of mobility opportunities.

The driving licence importance for fulfilling mobility needs in later life is clearly visible in Haustein and Siren (2014)'s study. Based on three groups of Danish seniors (drivers, never-drivers and ex-drivers), the study shows that the two unlicensed groups have more unmet mobility needs than the drivers. Haustein and Siren (2014) show that better access to alternative modes of transport cannot always compensate for mobility problems caused by the lack of driving. Actually, through focus groups with Finnish elderly participants, Siren and Hakamies-Blomqvist (2009) highlight that the most important mobility aspects for well-being in old age are achieved through the adaptation process for mobility restrictions. Their study shows that physical limitations are highly linked with mobility restrictions and that independent mobility is linked to how an older person performs lifestyles. Correspondingly, using elderly people from the County Durham (England), Ziegler and Schwawen (2011) show that although mobility and well-being influence each other in different ways, a key driver for good well-being is actually one's willingness to connect to the world.

This means that transport is a fundamental asset for older people's quality of life since lack of access to transport leads to several consequences, such as feelings of uselessness, loneliness, reduced independence and depression. These can all contribute to poorer health conditions and risks (Marottoli et al. 1997). In actual fact, when analysing car use in the British Society through a qualitative approach (focus groups), Lucas and Psaila (2009) show that older people (especially those over 75 years) can feel devastated if their independent mobility to activities and hobbies is reduced without the use of the car. Thus, as Engels and Liu (2011) discuss, limited access to private and public transport is a major contributor to social isolation and exclusion for certain groups in society (including the older people).

Barriers and lack of needs being satisfied

Several studies tend to agree on the main barriers that elderly people encounter within the road environment. Some of these barriers include bad weather conditions, fear of falling,

topography difficulties, fear of crime, fear of accidents, lack of comfort, lack of accessibility to board buses, overcrowded public transport vehicles, unreliable public transport services and inadequately designed transport infrastructure (Hovbrandt et al, 2007; Mifsud and Attard, 2013). Lucas and Psaila (2009) show that some older people fear travelling long distances, even when they are driving themselves. So, fears on public transport services can actually be worse (due to other factors such as lack of knowledge on schedules and routes). This makes the role of public transport even more important. However as Gilhooly et al. (2002) show a high percentage of elderly people feel that their needs are not being considered enough by public transport operators. Engels and Liu (2011) stress that more research on older people who are excluded because of difficulties linked with travelling outside home is needed. Using Melbourne as a case study, this study shows that a public transport system that cannot sufficiently service the entire municipality, increases social exclusion for non-car driving elderly.

Correspondingly, using nationally representative data from Norway, Nordbakke and Schwanen (2014) analyse the link between transport and wellbeing in terms of how elderly feel that their needs for out-of-home activity participation are unsatisfied. Factors as driving license ownership, evaluation of public transport supply, actual participation in out-of-home activities, self-perceived health, outlook on life, residential location and social networks all explain the differences in the extent of unmet activity needs amongst the elderly people. They show that the level of unmet needs is shaped by the complementation of objective and subjective indicators of individual-level resources and abilities for mobility, together with contextual conditions for mobility. Nordbakke and Schwanen (2014) also show that although issues as poor health and problems with walking are important factors for unmet activity needs, the latter can also occur due to other reasons such as lack of time.

The heterogeneity of older people

The previously discussed sections clearly show that several studies have already discussed the needs of older people within the transport context and have identified the respective problems that they face if such needs are not met. However a key concept that should be considered is that ageing is very complex and dynamic process. Differences can exist in various ways such as through the socio-economic status, health capabilities and knowledge. As a result of this, chronological age can be discriminative (Methorst, 2002).

In order to minimise such bias, different studies cluster older people using different criteria. For example, McComrick et al. (2009) develop a list of factors that can make the older people at a higher risk of depression. These include:

- Deteriorating health and/or physical mobility
- Relationship breakdown (even in mid-life)
- Living alone
- Lack of social contact with friends and family
- Isolation
- Ethnicity
- Poverty
- Aged 80+
- Dementia
- Living in residential or nursing car
- Low resilience and low preparation (e.g. sudden incidence of above factors)

With regard to transport research, different studies also cluster older people in order to better understand their travel needs and minimise the complexities associated with such heterogeneous group. For example, Hildebrand (2003) studies travel behaviour in old age trough six lifestyle groups based on socio-demographic variables: *Workers* (employed), *Mobile Widows* (mainly women who live alone or are the household heads), *Granny Flats* (elderly who live with their children), *Mobility Impaired* (older old elderly with different impairments), *Affluent Males* (youngest elderly males with highest income, driving licence and no disability) and *Disabled Drivers* (drivers with a disability that effect outside travel). Such clusters have statistically significant differences in travel behaviour and in activity engagement patterns.

Haustein (2012) analyses mobility behaviour in old age through an attitudinal-based segmentation where four clusters emerge: *Captive Car Users* (public transport use is different and do not like walking or cycling), *Affluent Mobiles* (most affluent with high car availability and social networks and a positive view for all other transport modes in order to be mobile), *Self-Determined Mobiles* (feel no pressure to be continuously mobile but have good access to all modes of transport with a specific positive attitude towards walking) and *Captive Public Transport Users* (use public transport because they have no access to a car). Once again, each group show different mobility patterns and differences in infrastructural, socio-demographic and attitudinal variables.

Additionally, Mandl et al. (2013) (based on findings from the EU Research project GOAL) define elderly people in five cohesive groups in order to identify current and future transport needs of older people. Such clusters differ in demographics, physical and mental health status, life satisfaction, activities and social networks, mobility behaviour, technology use and coping strategies after major life events. These include *Fit as fiddle* (active elderly), *Hole in Heart* (severe limitations in younger ages), *Happily Connected* (socially active with high life satisfaction), *Oldie but a Goodie* (quite old but independent) and *Care-full* (need most care as not able to manage daily activities on their own). Correspondingly, in order to better understand how the ageing baby boomers will affect future travel demand, Siren and Haustein (2013) categorise them according to their future expectations: *Flexibles* (expected to use all modes of transport and make use of delivery services), *Independents* (expected to use primarily individual modes of transport and travel themselves for services) and *Restricted Subjects* (expected to be restricted in their use of all modes of transport especially the car).

Given such complexity in old age, Haustein and Siren (2015) review different studies that previously clustered elderly people based on demographic, health and transport-related factors. Following such systematic comparison, the study comes up with four generic segments (Table 2).

Category	Main mobility pattern
Affluent-Mobile Drivers	Predominant car use, high activity engagement
Car-dependant seniors	Predominant car use, low activity engagement
Mobile Multimodal segment	Use of all modes; high/medium activity engagement
Transport service dependent seniors	Walking, public transport and car users as passenger; low activity engagement

Table 2: Four generic clusters old people within the transport environment and their mobility characteristics (Haustein and Siren, 2015)

Subsequently, Haustein and Siren (2015) develop a theoretical model that shows how different determinants work together (directly and indirectly) to form the four mobility

patterns. Rather than the chronological age per se, they show that the variables associated with age are actually what determine mobility behaviour such as:

- Decrease in functionality and health;
- Specific life event e.g. widowhood;
- Living in a single person household and,
- Retirement

This previous research thus supports the need to analyse mobility in later life through the Capability Approach, as the different capabilities that elderly people have in turning a resource to a functioning are fundamental.

Mobility during Retirement Age

The differences in pension schemes and mobility during the retirement phase are two issues that can make older people's mobility behaviour even more complex. Several countries within the EU have recently had pension reforms. For example in Malta, after December 2006, pension age was to be gradually raised to 65 years. However a number of provisos applied. The retirement age is different for people born in different years. For example, for persons born on or before December 1951, pension age is 61 years while for females, pension age is 60 years. In the case of people born during calendar 1952-1955, pension age is 62 years. In the UK, women's state pension age (SPA) is increasing to 65 (men's SPA) by 2018. Thus both will be further increased to 66 from 2018-2020 and to 67 from 2026-2028 (European Commission, 2014).

Although pension schemes are basically related to chronological age, more importantly is to analyse the effects of retirement on older persons' quality of life and well-being. Berg et al. (2014) analyse mobility patterns throughout the retirement process in Sweden. They show that the retirement transition is a period when new mobility patterns are considered and practiced, because what used to be a daily routine has now to be planned on a daily basis. The study shows that individual, social and geographical contexts create certain constraints on mobility. However it also shows that these constraints can be overcome by resources that enable elderly people to move. Both resources and constraints vary between individuals and from time to time. Additionally, since the 'baby boomers' tend to have a higher travel activity than the older cohorts, Siren and Haustein (2015a) analyse how retirement affects baby boomers' travel and the corresponding future demand. Three groups are analysed in a longitudinal study based on their employment status (still working, early retirees and recent retirees). The main tendency is that car use and distance travelled tend to decrease as a consequence of retirement. Nevertheless car use for leisure activities tends to increase. This study also shows that although generally retirement is associated with a reduction in car use, changes in older persons' lifestyles such as boomer women's changing professional roles and informal car-giving, are more likely to make this transition different from that observed for previous generations.

A very important phenomena that usually occurs after (or during) the retirement phase is that of driving cessation. This is usually combined with a low quality of life and well-being, which can further lead to social isolation and health decline (Siren et al., 2004). Elderly people who have stopped driving are usually at a higher risk since in many cases they suffer from other issues as poor vision (Dunbar et al., 2004). Driving cessation occurs as a result of multiple correlated factors. For example, using focus groups, Friedland and Rudman (2009) analyse the interpersonal factors that affect the process of driving self-regulation in old age. Interpersonal factors are expressed through family connections and physicians' comments.

Similarly, Kostyniuk et al. (2009) explain that family support is very important in the driving cessation process, since such decision is rarely taken by the elderly people themselves. Indeed, Rosenbloom (2010) discusses the resistance that older drivers (especially men) typically put to driving cessation. In fact, Lucas and Psaila (2009) show that although some older people (especially females) can feel fragile whilst driving, others feel really bad when relatives start doubting their trust in their driving abilities.

The variances in Driving-Renewal Programmes

One potential way of keeping older drivers safe is through driving-renewal programmes. Yet there are several complexities and inequities linked with such a practice. Although chronological age is a weak predictor of driving performance, screening policies are usually based on such age. Siren and Haustein (2015b) compare different driving-renewal policies within the European Union in order to assess whether they are evidenced-based or age-based. Such analysis is done through the validity for Category B, the medical requirements needed to renew the licence and the respective age limit.

Although in January 2013, an EU directive was to be implemented in all Member States so as to have a unifying driving licence policy (a validity period of 10 to 15 years), there are several variations between the institutional practices regarding the management of old drivers. The validity period for older drivers' licence tend to be shorter than the 10-15 years EU Directive policy. Validity usually shortens after 60, 65 and 70 years. After 70 years, the driving licence should usually be renewed after 3 years. It should be noted that Austria, Belgium, Bulgaria, France, Germany, Malta, Poland, Romania and Sweden do not have an age accelerated renewal (Siren and Haustein, 2015b).

Upon renewal, most countries within the EU require a proof of fitness to drive i.e. a medical assessment. Most countries require a statement from a General Practitioner whilst others require further detail, such as a 'Dementia Test' in Denmark, and a physical and physiological assessment in Portugal, Romania, Slovakia, and Spain. In Malta, it is not specified who should do the medical assessment and in the UK it is self-reported. In countries where there is no obligatory medical proof linked with renewal, the driver himself, family members or a physician should report any illness or health condition that can affect driving (Siren and Haustein, 2015b).

The age at which the proof for fitness is carried out also varies. In some countries (Greece, Hungary, Estonia, Lithuania, Poland, Romania and Spain), the proof for fitness is not age-related. Yet, in most countries this varies between 50 and 70 years. Both in Malta and in the UK a medical statement for the first time is required at the age of 70. Siren and Haustein (2015b) actually show that there is no significant relationship between age-based screening and safety benefits, and that the number of benefits does not offset the disadvantages. Thus such policies usually tend to limit mobility and worsen safety of older persons.

The importance of Concessionary Fares in Public Transport Systems

An important practice that targets an increase in travel and an improvement in social inclusion is the policy of concessionary fares for specific groups of people using public transport. This section will give an overview of the concessionary fares for older people in the UK and in Malta.

Across England, as from the 1st April 2008, elderly persons (60+) are provided with free bus travel on local buses between 09:30 and 23:00 on weekdays, and all day during weekends and

Bank Holidays. Due to further changes to the state pension age by the Coalition Government, by October 2020 the age of eligibility for the statutory concession will rise to 66 (Butcher, 2015). Mackett (2014) analyses whether the initial objectives of Britain's concessionary fares ((a) an increase in public transport patronage among elderly people (b) an improvement in the access to services and (c) an increase in social inclusion) were achieved or not. He shows that although most objectives were actually met, uncertainties exist with respect to each one of them. Firstly, although bus usage among elderly people increased, it is still unclear whether there was a greater increase in the lower-income group. This is particularly relevant since wealthy elderly people tend to have low bus use. Secondly, although it is evident that most pass holders use the bus for shopping purposes, it is unclear whether concessionary fares improved access to services (namely health and shopping services). Thirdly, the impact of concessionary fares on well-being is slightly more complex to analyse. As a result, Mackett (2014) outlines other studies that have dealt with well-being from different perspectives. Some of these studies are summarised in Table 3.

Study	Case Study	Benefit on well-being due to concessionary fares
Andrews (2011)	SW England	Meet and lessen loneliness and boredom – fewer trips if they had to pay
		Improved quality of life in general
		Help in the transition from being a driver to not being one (particularly for those that have not stopped driving yet)
Whitley and Prince (2005)	Inner-city London	Visit family and friends, and attend community activities – can maintain social and economic involvement in society
		Residents with mental disorders (anxiety/depressive symptoms) can better access services and support outside the neighbourhood that can improve some of their symptoms and prevent deterioration
Rye and Mykura (2009)	Edinburgh	Improved quality of life
Hirst and Harrop (2011)	Manchester	Engage in new pursuits and visit new places
Andrews et al. (2012)	England	Increase in "buspass tourism"
Webb et al. (2012)	England	Less likely to be obese and less likely to becomes obese than those that do not use the bus
Coronini-Cronberg et al. (2012)	England	More likely to walk and cycle and to use buses
Transport Scotland (2009)	Scotland	More active lifestyles and mental health benefits
Hill et al. (2009)	Central England	Some car drivers increase their bus use after being eligible for concessionary fares – ease to continue to be mobile

Table 3: Review of studies showing the benefits of concessionary fares on older persons' well-being (Mackett, 2014)

Furthermore, Jones et al. (2013) analyse the impact of concessionary fares on two groups in London that are at high risk of transport exclusion i.e. young people (12-18 years) and elderly people (60+). Similarly to Mackett (2014) they acknowledge the fact that concessionary fares are one way of reducing "transport exclusion" since the individual can have a better sense of belonging to the community. However they also show that the enactment of entitlements to space and seats on buses carries potential threats to wellbeing since it can stress social differences and personal vulnerabilities. Focusing on concessionary free travel in Scotland, Rye and Makura (2009) show that excluded groups are highly reliant on public transport and thus an increased targeting of subsides and concessions to socially excluded groups is important. It can hence be stated that there is some evidence that concessionary fares can help to improve social inclusion in older persons' life (Rye and Carreno, 2008). Nonetheless this should be supported with improvements in service provision as well as with an increase in the availability of specialised transport systems.

Rye and Mykura (2009) also make reference to Mykura (2003)'s study in which he shows that the majority of respondents perceive an improved quality of life with free concessionary fares. When this was analysed vis-à-vis income groups (City of Edinburgh Council, 2001), there was a strong link between improved quality of life and lower-income people. Similarly, those with a higher social need gained a greater quality of life improvement than those with a lower social need. This is mainly because higher income groups are not deeply affected by concessionary fares. Correspondingly, when analysing the impact of replacing the half-fare concession by free travel in April 2006 (using the Salisbury area, a rural region in England as a case study), Baker and White (2010) show that although there was a considerable increase in bus use amongst elderly people that previously did not have a pass, trips remain considerably low. This study shows that the trend is that growth in trip rates is mainly found amongst those already holding a half-fare pass while new users display lower trip rates.

With regard to Malta, concessionary fares for older people also start at the age of 60 years. This is the official age for the "*Kartanzjan*" Holders, which represents the Maltese 60+ Identity Card Holders. A radical public transport reform took place in Malta in July 2011, which saw ARRIVA as the new public transport operators (replacing a monopoly held by the Public Transport Association made up of all bus owners/drivers). The new network was intended to allow for multiple interchange points to shorten journey time and distance. This was aided by the introduction of integrated ticketing and a proposed one-zone fare system which do not require, as was the case before, to buy a ticket every time one boards the bus (Attard, 2012). After July 2011, the concessionary fare for elderly people was that of €0.30 for two-hour travel and €0.50 for one day travel. In this manner, fares for older people became cheaper and more feasible, as with the old public transport system the price was of €0.23 for every trip conducted.

Since January 2015, a new public transport operator (Autobuses de León) took over and as from July 2015 smart cards were introduced. Presently, for older people, a concessionary fare of 25c is deducted with every journey up to a maximum of 50c every day or €2 every week. Once such fares are reached, older people do not pay for other journeys made during the day or week respectively. Such fare changes were very positively perceived by both frequent bus users as well as by those older people that never use public transport (or use it infrequently) (Mifsud, 2013). In fact, within this same study, fare issues were neither amongst the main barriers that older people encounter when using public transport, nor amongst the reasons why non-bus users prefer other modes of transport. Nonetheless, to date no studies have been

carried out to analyse whether such concessionary fare changes increased public transport usage amongst elderly people in Malta.

What equity (or inequity) issues are related to concessionary fares?

Although different studies show that concessionary fares offer several benefits to older persons, there are also some equity implications linked with such fares. For example Mackett (2014) raises the question of whether with regard to the UK, the Government's expenditure (£1 billion) to provide free off-peak bus travel is the best way to improve the older people's lives. Despite the previously discussed benefits of concessionary fares, Mackett (2014) explains that such impacts could have happened anyway and although many people can have a free pass, their access to a bus may still be limited. Actually, Rye and Mykura (2009) show that for a significant part of the elderly population, concession fares are still of very limited use since they face several other barriers to bus use rather than just cost issues.

The policy of concessionary travel passes for older people do not just affect older people and bus operators, but also the rest of the population as tax payers and travellers. Although uncertainties exist on the evidence of whether the initial scheme's objectives were actually met (Rye and Carreno, 2008; Rye and Mykura, 2009; Mackett, 2014), Mackett (2014) discusses that if the £1 billion were not being spent on the scheme, probably neither older persons nor the bus services would be benefiting from such money. Thus, from this perspective it is always a successful scheme, from which older persons are benefiting and the bus services are kept running

With regard to the inequities between different groups of elderly people, the main question that emerges from research is that whether wealthy older people need the same concessionary fares as the lower-income people. In fact, Baker and White (2010) explain that although the highest benefit could be received by elderly people living in rural areas (where bus fares were previously higher), concessionary fares mean a higher public expenditure since all people above the age of 60 benefit irrespective of their income. Rye and Mykura (2009) argue that due to wealthier pensioners, the average pass-holder is now younger and more likely to own a car. Butcher (2015) shows that there were debates on whether bus passes should be means tested for wealthier pensioners. Correspondingly, Mackett (2014) suggests that one possible way to save money on the scheme is to introduce means testing. In this manner, only low-income people would have the pass. Yet he acknowledges that the higher income people are those that make fewer trips by bus. Thus this would not result in high savings since the reduction in trips would be minimal.

Jones et al. (2013) discuss that the effectiveness and the equality impacts of free bus travel schemes depend on their ability to shape the meaning of access and entitlement for its users. This study shows that where entitlement is analysed in terms of rights, concessionary fares can improve well-being. Yet when it is linked with needs and vulnerabilities, there are risks of social marginalisation rather than inclusion. Thus Jones et al. (2013) suggest that policy-makers should communicate a given entitlement with specific attention. In this manner the general public can better understand the reason for the entitlement. Furthermore, Rye and Mykura (2009) discuss that in order to minimise transport-related social exclusion, available funds should be split between users and providers. This poses the question on whether social exclusion is best addressed through improvements in the transport system or through the direct provision of subsidies to users.

Diversity in transport policies for older people

The previous sections evidently demonstrate the need for transport to be seen as a more than simply a way of catering for elderly travel demands and more a quality of life issue. However, it was also discussed that certain transport policies can actually result in furthering social inequities through the transport system. So, one important way to achieve improved quality of life into old age (whenever that is) can be is through appropriate transport policies that specifically aim to support mobility for improved accessibility within ageing societies.

Mobility services are demonstrably one of the most important policy areas for the physical accessibility of older people to key activities. Mercado et al. (2010) use the case study of Ontario (Canada) to highlight that policies should not just focus on the "disabled" elderly but should consider a diversity of needs, dealing with lifestyles, preferences, resources, health and physical abilities. The authors insist that, since to date, the ageing population was not considered on a long-term basis in transport policies, a clearer recognition of population ageing in Ontario's transport policy should be developed. When comparing transport policy in ageing societies within six countries from the developed world, Mercado et al. (2007) show that countries such as Japan, that specifically analyse the needs of the elderly people and not just group them in one whole body, tend to serve the general public in a better manner.

Similarly to Mercado et al. (2010), Marin-Lamellet and Haustein (2015) stress that in transport policies, old age and disability should be differentiated. Based on other studies, they identify 29 good practice examples which are grouped under six categories[2]:

1. Personal Transport Schemes (door-to-door paratransit or escorting services)
2. User Training Schemes (e.g. for use of information systems, ticketing etc.)
3. Information provision and travel planning (e.g. information available to organise a trip, number of stairs, potential slope of footpath etc.)
4. Pricing and incentives measures (e.g. reduction of public transport fares according to age, tickets suited to needs etc.)
5. Policies for older drivers (e.g. retraining courses, refresher courses etc.)
6. Health Issues (e.g. promotion of mobility as a way for healthy ageing and social inclusion)

Marin-Lamellet and Haustein (2015) analyse how each of the different programmes applies to the different groups of older people. For example, personal transport schemes (e.g. *Birmingham Shop mobility* in the UK) are most suitable for captive car and public transport users. *Birmingham Shop mobility* is a service that helps people with mobility difficulties to visit Birmingham by providing a hired loan of an electric powered scooter, an electric wheelchair or a manual wheelchair. On the other hand, information provision and travel planning schemes (e.g. *London underground direct enquiries* in the UK) are most relevant to affluent mobile and self-determined mobiles due to their positive relationship with technology. The London underground direct enquiry is a website that provides information for specific users including older people.

[2] CONSOL Project grouped the practices in such categories

Organisational and policy factors (e.g. urban planning and transport regulation) can also help in minimising mobility limitations (Yeom et al., 2008). For example, social policy that provides reimbursement for mobility and aid devices may enhance the level of mobility (Yeom et al., 2008). As previously discussed in the case of driving-renewal programmes, age-based policies can narrow the array of lifestyles available (Siren and Hakamies-Blomqvist, 2009). Correspondingly, Marin-Lamellet and Haustein (2015) make reference to some effective policies such as the *Driver 65+* in Norway (Ulleberg et al., 2012). This is a voluntary practice which teaches topics as right of way, roundabouts, road markings, traffic signs, light usage and parking. Drivers that took the refresher course before turning 75 were found to be at a 35% lower risk of being involved in multiple vehicle crashes compared to those who did not.

Unfortunately in Malta to date there are no specific transport policies that target mobility of elderly people. In 2013, Malta launched *The National Strategic Policy for Active Ageing 2014-2020* (National Commission for Active Ageing, 2013). Although independent living in old age is one of the main domains of this policy, it does not specifically target the transport sector. Thus, given the significant projected increase of elderly people in Malta, more national policies dealing with this population segment's transport necessities are definitely needed.

What should be done next in policies to encourage a mobility justice in later life?

Since the range of capabilities for mobility vary between individuals, in order to fully tackle the mobility-related well-being, a holistic overview should be given to the opportunities for mobility and the inequities that result from a lack of mobility options (Norbakke, 2013). This means that policies should follow a segmented capabilities approach to target a typology of elderly people based upon their self-determined abilities and hierarchy of activity needs. This is also because for example the young-old do not have the same functional limitations as the old-old, and may represent a high level of functional capacity (Ryan et al., 2015). Thus, policy measures aiming at improving independent mobility in old age should consider individual resources merged with the quality of transport systems, as well as with different spatial and temporal attributes of activities (Nordbakke, 2013). Only cross-sectorial approaches can help to surpass the realm of transport planning (Nordbakke and Schwanen, 2014).

Policies that are seeking to raise wellbeing should primarily work on retaining older people's ability to drive and to use alternative modes of transport (OECD, 2001; Siren and Hakamies-Blomqvist, 2004; Nordbakke and Schwanen, 2014). This is a significant issue for two reasons. Firstly, as Gilhooly et al. (2002) show, most of the young elderly drivers usually express a desire to continue driving in old age. So this shows a gap between the driving desires of future older generations and the policies aiming to reduce car use. Once there are barriers in public transport usage, it is difficult to persuade older people to use such mode of transport. Secondly, prolonging the older persons' driving career also means reducing their exposure to unprotected modes of transport (namely walking) (Siren and Haustein, 2015b). Apart from focusing on car availability, transport and social policies should also make sure that ownership and usage of private transport in later life remains financially feasible (Nordbakke and Schwanen, 2014).

Marin-Lamellet and Haustein (2015) show that most practices dealing with an increase in safety and mobility opportunities, primarily attract groups who are already users of the respective mode of transport. Nonetheless they do not efficiently succeed in increasing mobility options, for example in helping older women to continue driving. Thus they suggest that policies should be targeted and adapted directly to the segments that would benefit the most from them. The study also highlights that to date there is a lack of awareness programs that inform elderly people about the potential benefits of driving assistance systems. Mercado et al. (2010) suggest that governments should invest in education-based driving interventions such as the American Association of Retired Person (AARP) Driver Safety Program *(55 ALIVE)*. This teaches defensive driving techniques to people aged 50 years and over. They also claim that a de-licensing program that limits certain driving privileges after a series of exams can be beneficial (for example driving during day time only). Since the reduction or termination of driving have several negative consequences on elderly people, reasons for taking away the driving licence should be reliably justified for unsafe drivers (Siren and Haustein, 2015b). The latter study highlights that most policies are still age-based and not evidence-based. So, modern research evidence still has to be linked with driving licence practices.

Although projections show that more elderly people will tend to remain car drivers, there will still be a high percentage of older people suffering from post-driving cessation problems. Thus it is important that at an early stage, elderly people are supported in the safe use of alternative modes of transport. This will reduce the feelings of restricted mobility that are usually associated with post-driving cessation (Siren and Huastein, 2015b). A case in point is that older people should be educated and trained to use alternative modes of transport before they actually stop driving (Musselwhilte, 2010 in Haustein and Siren, 2015). Simultaneously, policies should also target public transport improvement, aiming at lowering distance to stops and improving the connectivity that such mode of transport offers to destinations (Nordbakke and Schwanen, 2014). Rather than just public transport, other compensatory services (e.g. taxi vouchers) should also be provided (Siren and Haustein, 2015b). However, in order for such approaches to be successful, integrity between car and public transport operators is very important. For example, Gilhooly et al. (2002) show that whilst car manufacturers are thinking seriously about ageing societies and are working to make driving safer for elderly people, public transport operators think of older people as an inconvenience and as a cause of overcrowding due to demands for access. Thus such results completely contrast with the policy intentions to increase the number of older people using public transport.

Within the same argument, Rosenbloom (2010) shows that focused policy action can allow baby boomers (in the UK and US) to drive safely for a longer period, and allows them to voluntarily stop driving whey they need to without suffering from mobility reduction. She explains that although policy options can be too late for older drivers already facing problems, they may be well available for baby boomers if they begin to advocate for such options at a younger age. Some of the suggestions that Rosenbloom (2010) makes based on different policy literature are listed below:

- Training methods for older drivers that allow them to continue driving safely for a longer period;
- Tools and techniques that can make the driving task less demanding, reduce crash risk and improve crash outcome;
- Variety of IT and related technologies that facilitate the driving task;
- Improvements in conventional public transport systems to better meet the needs of elderly people, offering reasonable alternatives before they are forced to stop driving;

- Newer public transport services more responsive to older persons' travel patterns as they age;
- Improvement in pedestrian facilities using new design concepts and safer materials (e.g. to improve fall outcomes) to increase recreational walking and public transport use;
- Accessibility improvements and universal design concepts and,
- Improvements in community transport providers, paratransit services and volunteer driver networks to better meet the needs of elderly as they lose the ability to drive or to use public transport

Focusing on the Dutch case study, Methorst (2002) insists that in order for policies to be effective for vulnerable road users, they should follow four criteria: focus on accessibility and mobility and not just the number of people killed, follow the design for all principle without stigmatisation, target optimal conditions (not adapting to problems), and consider public acceptance by seeing the repercussions on the non-vulnerable rod users. Correspondingly, Yeom et al. (2008) stress that mobility limitations should be seen from a preventive approach on the basis of multidimensional risk factors, and not just from a rehabilitation approach**.** Similarly to what was discussed for elderly drivers, Oxley et al. (2004) highlight that for policies to be operative for older pedestrians and cyclists, they should be linked with behaviour and educational programs. These can help for the development of measures that avoid falling, increase drivers' awareness and improve vehicle designs (e.g. frontal design). As OECD (2001) discuss, policies targeting elderly populations should support lifelong mobility and work for safer vehicles, safer roads and infrastructure, appropriate land uses practices and most of all involve elderly people and their relatives in policy development.

The main determinants affecting mobility in old age are not just transport related, but include several personal and social factors. As Nordbakke and Schwanen (2014) explain, since transport-related factors are not enough to explain the diversity in unmet activity needs in old age, older persons' mobility should not be tackled by just transport planners, but also through other stakeholders as health and social care professionals, urban planners and leisure activities' operators. For example, Marin-Lamellet and Haustein (2015) discuss the success of transport-related health initiatives for elderly people, such as the promotion of walking in Donastia San Sebastián (Spain) and the priority of cycling and footpaths in Odense (Denmark). Such initiatives could only be successful through an efficient integrity between the respective stakeholders. This therefore calls for more research on the complexity between social, environmental and mobility factors at an individual and community level.

Conclusion: The need for a Transport Equity Assessment

This report gave an overview of the complexities of old age and the different transport equity issues that are interlinked with such complexities. It has highlighted the need for policies to begin to focus on people's capabilities in later life rather than simply focusing on their chronological age. This is mainly because age-based policies can be highly discriminative and thus lead to inequity repercussions on older people. Actually this study showed that although driving-renewal programs and concessionary fares are important for elderly people, they both have inequity implications. Thus this report concludes with a table (Table 4) that briefs up all the discussion so as to highlight the need for potential Transport Equity Assessments in later life. It lists questions related to transport equity assets in old age and their respective gaps. In such manner, guidance for policies to start integrating the concept of equity within transport policies in ageing societies can be provided.

Transport Equity Question	Gap
Are policies targeting the capabilities and diversity of elderly people?	Most policies are still considering older people as one homogeneous group with the same capabilities (or incapabilities). Policies are still not differentiating enough old age from disability/physical limitations, and as a result rather than being evidence-based they are still being age-based. Although there are different studies that segment elderly people within the transport environment, these are not being taken in consideration by the policy agenda. Thus integrity between research and policy is needed to minimise inequities. Integrity is also needed between different stakeholders (not just transport-related) so that preventive approaches can be taken. Policies should consider diversity in lifestyles, preferences, resources, health, abilities etc.
How does the social class of elderly people affect their opportunities for mobility?	Lower-income elderly people, especially non-driving women are still suffering from inequities mainly through the lack of opportunities for transport resources to access the desired activities. A considerable percentage of older people are at-risk-of poverty and this may once again reflect in their transport options. Thus, often socially disadvantaged people are also transport-disadvantaged. This limits their capabilities of mobility and thus creates transport inequities.
Does the older-old population suffer from the same inequalities as the younger-old population?	Functional limitations are a very important determinant in making older people vulnerable. Yet different studies show that variables associated with age e.g. retirement or death of spouse can have a more significant impact.
Are concessionary fares being distributed equally? Do the younger-old need the same concessionary fares as the older-old?	There are still uncertainties on whether concessionary fares increase bus use among lower-income elderly people and whether it improves their access to services. Statistics are showing that the average pass holder is now younger and more likely to own a car. Hence, the use of concessionary fares can be quite limited
	The older-old people tend to travel less by bus due to additional functional limitations. In most cases they either do not travel or rely on lifts from family members/friends. So in this case their use of concessionary fares is also limited. Also, there are several other barriers related to public transport use which are not cost-related.
Do the higher-income elderly people require the same concessionary fares as the lower-income elderly people?	Higher-income elderly people tend to use less the bus than the lower-income people. High-income people are not really affected by concessionary fares. In fact, means-tests were suggested for such an issue where elderly people can be checked for the required financial resources to support themselves.
Are the diverse pension schemes in different countries creating inequities between older people?	Different countries have different pension schemes which make the “beginning of old age” diverse. This has inequity implications as once again a stereotype of who is an older person is being created. Pension schemes are also linked with mobility vulnerabilities during the retirement process.
Are the diverse driving-renewal programmes creating inequities between older people?	Most driving-renewal programs are still age-based. Studies show that such policies usually tend to limit mobility and worsen safety of older persons. Health assessments should not just be done to drivers, but to all older transport users. Driving should not be limited in later life. Older people should be educated at an earlier age about alternative modes of transport so that they can stop driving when they need without suffering from a significant mobility reduction
Are private and public transport operators both acknowledging the complexity of old age and the new mobility patterns?	Both private and public transport companies are starting to acknowledge such an issue. One example is that car manufacturers are incorporating different technological devices that can help elderly people whilst driving. Public transport operators are also working for an accessible and efficient system such as through low-floor buses and priority seats. However integrity still lacks between the two and this might result in inequities amongst older people that want to choose between the two modes of transport

Table 4: The need for a Transport Equity Assessment within Ageing Societies

References

- Alfonzo, M.A. (2005) To walk or not to walk? The Hierarchy of Walking Needs, *Environment and Behaviour*, 37 (6), 808-836.
- Andrews, G. (2011) *Just the ticket? Exploring the contribution of free bus fares policy to quality of later life*, Doctor of Philosophy Dissertation, Bristol: University of the West of England.
- Andrews, G., Parkhurst, G., Susilo, Y.O. & Shaw, J. (2012) The grey escape: investigating older people's use of the free bus pass. *Transportation Planning & Technology*, 35, 3–15.
- Attard, M. (2012) Reforming the urban public transport bus system in Malta: Approach and Acceptance, *Transportation Research Part A*, 46, 981-992.
- Baker, S. & White, P. (2010) Impacts of free concessionary travel: Case Study of English rural region, *Transport Policy*, 17, 20-26.
- Banister, D. & Bowling, A. (2004) Quality of life for the elderly: the transport dimension. *Transport policy*, 11**,** 105-115.
- Berg, J., Levin, L., Abramsson, M. & Hagberg, J.E. (2014) Mobility in the transition to retirement – the intertwining of transportation and everyday projects, *Journal of Transport Geography*, 38, 48-54.
- Beyazit, E. (2011) Evaluating Social Justice in Transport: Lessons to be Learned from the Capability Approach, *Transport Reviews*, (31) 1, 117-134.
- Butcher, L. (2015) *Concessionary Bus Fares*, Briefing Paper SNO1499, House of Commons Library.
- City of Edinburgh Council (2001) *Edinburgh's Census 2001 – City Trends*, Edinburgh.
- Coronini-Cronberg, S., Millett, C., Laverty, A.A. & Webb, E. (2012) The impact of free older persons' bus pass on active travel and regular walking in England, *American Journal of Public Health*, 102, 2141–2148.
- Department for Transport (2013) *Full car driving licence holders by age and gender: Great Britain, 1975/76 to 2012*, National Travel Survey Table NTS0201.
- Doyal, L. & Gough, I. (1991) *A theory of human need, New York:* Palgrave Macmillan.
- Dunbar, G., Holland, C.A. & Maylor, E.A. (2004) *Older Pedestrians: A Critical Review of the Literature*, London: Department for Transport.
- Engels, B. and Liu, G.J. (2011) Social exclusion, location and transport disadvantage amongst non-driving seniors in a Melbourne municipality, Australia. *Journal of Transport Geography*. 19, 984 - 996.
- European Commission (2014) The 2015 Ageing Report: Underlying Assumptions and Projection Methodologies, *European Economy*, Belgium: Directorate General for Economic and Financial Affairs Unit Communication and inter institutional relations.
- Eurostat (2015a) *People at risk of poverty or social exclusion by age and sex* (ilc_peps01), Eurostat Database, Living Conditions and Welfare (livcon), Income and Living Conditions (ilc), People at risk of poverty or social exclusion (Europe 2020 strategy (ilc_pe)).
- Eurostat (2015b) *Share of persons who cannot afford a personal* car (source: SILC) (ilc_mddu05), Eurostat Database, Living Conditions and Welfare (livcon), Material Deprivation (ilc_md), Durables (ilcmddu).
- Friedland, J. & Rudman, D.L. (2009) From Confrontation to Collaboration: Making a Place for Dialogue on Seniors' Driving, *Topics in Geriatric Rehabilitation*, 25 (1), 12-23.

- Gilhooly, M.L.M et al. (2002) *Transport and Ageing: Extending Quality of Life for Older People Via Public and Private Transport*, ESRC Award Reference Number L480 25 40 25.
- Haustein, S. & Siren, A. (2014) Seniors' unmet mobility needs – how important is a driving licence? *Journal of Transport Geography*, 41, 45-52.
- Haustein, S. & Siren, A. (2015) Older People's Mobility: Segments, Factors, Trends, *Transport Reviews: A Transnational Transdisciplinary Journal*, 35 (4), 466-487.
- Haustein, S. (2012) Mobility behaviour of the elderly: an attitude-based segmentation approach for a heterogeneous target group. *Transportation*, 39 (6), 1079-1103.
- Hildebrand, E.D. (2003) Dimensions in elderly travel behaviour: A simplified activity-based model using lifestyle clusters, *Transportation*, 30, 285 – 306.
- Hill, K., Sutton, L. & Cox, L. (2009) *Managing Resources in Later Life: Older People's Experience of Change and Continuity*, Joseph Rowntree Foundation.
- Hirst, E. & Harrop, B. (2011) *Getting Out and About: Investigating the Impact of Concessionary Fares on Older People's Lives*. Transport Action Group, Manchester.
- Hovbrandt, P., Stahl, A., Iwarsson, S., Horstmann, V. & Carlsson, G. (2007) Very old people's use of the pedestrian environment: functional limitations, frequency of activity and environmental demands, *Eur J Ageing*, 4, 201-211.
- Jones, A., Goodman, A., Roberts, H., Steinbach, R. & Green, J. (2013) Entitlement to concessionary public transport and wellbeing: A qualitative study of young people and older citizens in London, UK, *Social Science & Medicine*, 91, 202-209.
- Kostyniuk, L.P., Connell, C.M. & Robing, D.K. (2009) *Driving Reduction and Cessation: Transitioning to Not Driving*, Report No. M-CASTL 2009-02, Transportation Research Institute, University of Michigan.
- Lucas, K. & Psaila, A. (2009) *The Car in British Society: Trends and Future Challenges, Car Dependence Revisited, Working Paper 6: Focus Group Exercises*, RAC Foundation. **In:** Lucas, K. & Jones, P. (2009) *The Car in British Society*, RAC Foundation.
- Mackett, R. (2014) Has the policy concessionary bus travel for older people in Britain been successful? *Case Studies on Transport Policy*, 2, 81-88.
- Mandl,B., Millonig, A. & Friedl, A. (2013) The variety of the Golden Agers: Identifying profiles of older people for mobility research. *Transportation Research Board Annual Meeting 2013*, Paper #13-3850.
- Marin-Lamellet, C. & Haustein, S. (2015) Managing the safe mobility of older road users: How to cope with their diversity? *Journal of Transport & Health*, 2, 22-31.
- Marottoli, R.A., Mendes de Leon, C.F., Glass, T.A., & Williams, C.S. (1997) Driving cessation and increased depressive symptoms: Prospective evidence from the New Haven EPESE. *Journal of the American Geriatrics Society*, 45 (2), 202-206.
- Maslow, A. H. (1954) *Motivation and personality*. New York: Harper & Brothers.
- McCormick, J., Sachrajda, A., Mcdowell, E., Cherti, M. & Clifton, J. (2009) *Getting On: Well-Being in Later Life*, London: Institute for Public Policy Research (IPPR).
- Mercado, R., Páez, A. & Newbold, K.B. (2010) Transport policy and the provision of mobility options in an aging society: a case study of Ontario, Canada, *Journal of Transport Geography*, 18, 649-661.
- Mercado, R., Páez, A., Scott, D.M., Newbold, K.B. & Kanaroglou, P. (2007) Transport Policy in Aging Societies: An International Comparison and Implications for Canada, *The Open Transportation Journal*, 1, 1-13.
- Methorst, R. (2002) *Vulnerable Road Users: New Approach Needed?* Czech Republic: 15th ICTCT Workshop, Theoretical Issues and Strategies.

- Mifsud, D. & Attard, M. (2013) The role of Public Transport in addressing Sustainable Mobility for the Elderly Population in Malta, *Xjenza Online - Journal of Malta Chamber of Scientists*, 47-54.
- Mifsud, D. (2013) The role of Public Transport in addressing Sustainable Mobility for the Elderly Population in Malta, Unpublished MSc dissertation, University of Malta.
- Musselwhite, C. (2010) The role of education and training in helping older people to travel after the cessation of driving, *International Journal of Education and Ageing*, 1(2), 197–212.
- Mykura, W. (2003) *Concessionary fares – an effective tool in travel behaviour change?* Unpublished Honours Dissertation, Edinburgh: Napier University.
- National Commission for Active Ageing (2013) *National Strategic Policy for Active Ageing Malta 2014-2020*, Valletta, Malta.
- National Statistics Office (NSO) (2014a) *Census of Population and Housing 2011*, Valletta, Malta.
- National Statistics Office (NSO) (2014b) *Transport Statistics 2014*, Valletta, Malta.
- Nordbakke, S. & Schwanen, T. (2014) Transport, unmet activity needs and well-being in later life: exploring the links, *Transportation*.
- Nordbakke, S. (2013) Capabilities for mobility among urban older women: barriers, strategies and options, *Journal of Transport Geography*, 26, 166-174.
- OECD (2001) *Ageing and Transport: Mobility Needs and Safety Issues – Highlights*.
- Oxley, J., Corben., B., Fildes, B. & O'Hare, M. (2004) *Older vulnerable road users – Measures to reduce crash and injury risk*, Report No. 218, Monash University Accident Research Centre.
- Rosenbloom, S. (2010) How adult children in the UK and the US view the driving cessation of their parents: Is a policy window opening? *Journal of Transport Geography*, 18, 634-641.
- Ryan, J., Wretstrand, A. & Schmidt, S.M. (2015) Exploring public transport as an element of older persons' mobility: A Capability Approach perspective, *Journal of Transport Geography*, 48, 105-114.
- Rye, T. & Carreno, M. (2008) Concessionary fares and bus operator reimbursement in Scotland and Wales: No better or no worse off? *Transport Policy*, 15, 242-250.
- Rye, T. & Mykura, W. (2009) Concessionary bus fares for older people in Scotland – are they achieving their objectives, *Journal of Transport Geography*, 17, 451–456.
- Salmi, L.R., Leproust,S., Helmer,C. & Lagarde, E. (2014) Assessing fitness to drive in the elderly and those with medical conditions: guidelines should specify methods and evidence. *Injury Prevention*.
- Sen, A. (1985) *Commodities and Capabilities*, Amsterdam, New York: North-Holland.
- Siren A. & Haustein, S. (2015a) How do baby boomers' mobility patterns change with retirement? *Ageing and Society*.
- Siren A. & Haustein, S. (2015b) Driving licences and medical screening in old age: Review of literature and European licensing policies, *Journal of Transport & Health*, 2, 68-78.
- Siren, A. & Hakamies-Blomqvist, L. (2009) Mobility and Well-Being in Old Age, *Topics in Geriatric Rehabilitation*, 25 (1), 3-11.
- Siren, A. & Haustein, S. (2013) Baby boomers' mobility patterns and preferences: What are the implications for future transport? *Transport Policy*, 29, 136-144.
- Siren, A., Hakamies-Blomqvist, L. & Lindeman, M. (2004). Driving Cessation and Health in Older Women, *Journal of Applied Gerontology*, 23 (1), 58 – 69.

- Spinney, J.E.L, Scott, D.M. & Newbold, K.B. (2009) Transport Mobility Benefits and quality of life: A time-use perspective of elderly Canadians, Transport *Policy*, 16, 1-11.
- Transport Scotland (2009) *Evaluation of National Concessionary Travel in Scotland*, Halcrow Group Limited, Transport Research Series, Transport Scotland.
- Ulleberg, P., Bjornskau, T. & Fostervold, K.I. (2012) *Don't wait until it's too late: evaluation of a refresher course for older drivers*. Groningen: Presentation at the 5th ICTTP.
- Webb, E., Netuveli, G. & Millett, C. (2012) Free bus passes, use of public transport and obesity among older people in England, *Journal of Epidemiology and Community Health*, 66, 176–180.
- Whitley, R. & Prince, M. (2005) Fear of crime, mobility and mental health in inner-city London, UK, *Soc. Sci. Med*, 61, 1678–1688.
- Yeom, H. A., Fleury, J. & Keller, C. (2008) Risk Factors for Mobility Limitation in Community-Dwelling Older Adults: A Social Ecological Perspective, *Geriatric Nursing*, 29 (2), 133-140.
- Ziegler, F. & Schwanen, T. (2011) 'I like to go out to be energised by different people': an exploratory analysis of mobility and wellbeing in later life, *Ageing & Society*, 31, 758-781.

Websites:

(http://www.iep.utm.edu/sen-cap/)