

Evaluation of free public transport for older people in Sweden

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ABSTRACT

Older citizens safe mobility is an issue as the number of older people is growing and expect to live longer than previous generations. To keep their independence and to allow them to take part in the society, transport accessibility is an issue to be solved. The present study developed a survey to evaluate a subsidised public transport card for older citizens in the western part of Sweden and how the physical health contributes to the use of public transport. A questionnaire was sent to 1500 older citizens in three municipalities to examine how this measure influenced their travel patterns and whether this is an efficient measure to increase their use of public transport. Results show a significant effect of the senior card which vary depending on the municipality and incomes. Some older citizens increased travelling with public transport (PT), they changed the time of the day for some activities and to some extent prioritized PT in another way than before they got the subsidised card. The senior card contributed to shift travel mode choice from private car to PT but also from cycling/walking to PT. To reach a sustainable safe mobility for older citizens, a discussion is on-going to find and target measures to this broad group of individuals. Health and environment goals need to be considered to reach the desired results.

Keywords: older, public transport, free senior card, car driving.

1. INTRODUCTION

The number of years people expects to live is increasing (European Commission 2011). In addition, the number of years with good health is increasingly fast. This new paradigm of “Ageing Society” or “Long healthy life” is having a significant impact and strain on our society (WHO. 2002). In the future, requirements from the transport system will be crucial firstly, to allow people to keep their independence, and secondly to allow them to take part in the society and to keep their social network (Owsley 2002). Keeping older people mobile in later life is decisive to sustain their autonomy, which has a significant impact on a social and economic perspective. Older citizen will drive more years in older age (Koppel and Berecki-Gisolf 2015), but they will also face specific problems while driving at old age. Therefore, society needs to be proactive and increase knowledge on how to early attract future older people to the public transport since they sooner or later will need it and be dependent on it (Fiedler 2007). Barriers need to be identify.

Several municipalities in Sweden and countries in Europe offer free public transport trips to older citizens

through some form of "Senior card" (Lavery and Millett 2015). Rules for obtaining such a card differ in different municipalities regarding age (65+ or 75+) and regarding the time of the day to use it. Monetary incentives to increase public transport use has been reported earlier to have several effects such as increase of daily motion and social interaction (Webb, Lavery et al. 2016). However, research is not unambiguous regarding those effects.

Our theoretical framework is based on the capability concept (Sen 2009), i.e. people ability to reach their goal and make things that they perceived as valuable. In aging, these opportunities are affected by health, genetics, personality, cognitive ability, family, friends, housing, etc. In terms of mobility aspects, human ability to travel is influenced by the transport system design, costs and their accessibility. In the present study, capability is used to study how the physical capability influence the willingness and the actual use of public transport. Physical ability is measured here by asking respondents how long they could walk outside without any help and how often they actually walked.

1.2. Objectives

The present study aims to evaluate the effect of subsidised public transport for older citizens in three municipalities in the western part of Sweden. The effects are studied based on how older use of public transport has changed due to the introduction of a senior card. A special focus is to examine the relationship between subsidised public transportation and physical capability.

2. METHOD

2.1. Participants

A random sample from the Swedish Population register (SPAR 2017) was done for 250 women and 250 men from each of the three municipalities. The only criterium was that citizen had to be older than 65 years old in 2017 to fulfil the senior card requirement. Two municipalities were chosen based on a broad range of public transport and one municipality with a limited range of public transport (Table 1).

Table 1 - Characteristics of the sample.

Municipality	Environment	Public transport density	Conditions for use of the Senior card	Sample
Göteborg	Urban	High	Low traffic hours (8:30-15 & 18-06), 65 years	250 men & 250 women
Mölnadal	Suburb	High	Low traffic hours (8:30-15 & 18-06), 65 years	250 men & 250 women
Svenljunga	Rural	Low	24h/everyday, 65 years + one-time fee of 15€	250 men & 250 women

2.2. Survey

A survey was designed to evaluate the senior card among older citizen. The survey was composed by 43 questions in total. The questions covered participants' background, health, travel habits, use of public transport and senior card, car driving, travel experience and everyday life satisfaction. The survey was sent by post on October 20, 2017. No reminder was sent. Completed questionnaires were scanned and the result was delivered to VTI for further analysis. No personal data was collected that could identify the respondents. Statistical analyses were done with SPSS® (version 22.0). A p-value of <0.05 was considered statistically significant. Pearson Chi-square tests were used for non-parametric data analysis.

2. RESULTS

The response rate was 43%, i.e. 648/1500 participants. 45 percent of men answered the survey respectively 42 percent of women. The mean age was 75 years [66-93]. About 1/3 lived alone and 63% lived in a relationship. Concerning their living conditions, 45% lived in a flat and 53% in their own house.

3.1. Senior card users

In total, 80% of the participants who received a senior card offer did accept it, 13% did not. Within the 80%, 64% do use the card all the time or very often. A significant difference in card usage was found between different municipalities where users are mostly found in urban and suburban areas ($\chi^2= 264$; $p<0.01$), se Figure 1.

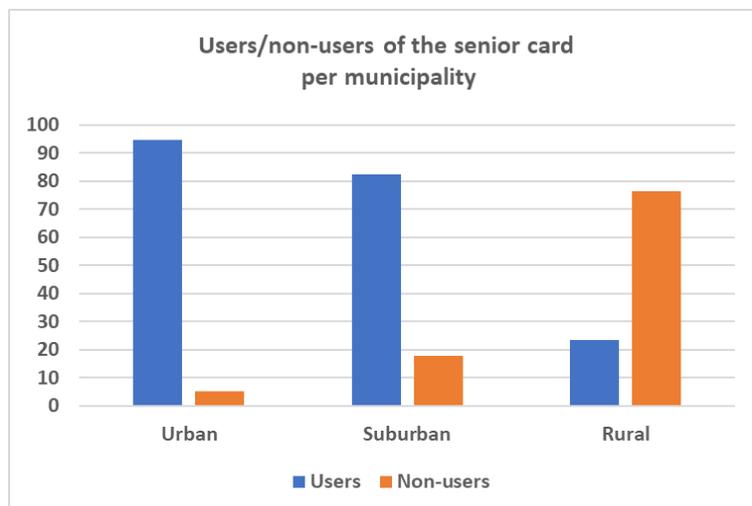


Figure 1: Percentage of users/non-users of the senior card per municipality.

3.2. Changes in travel patterns

There is a general effect in terms of PT use increase after the introduction of the senior card, 61% of users reported an increase of PT use after receiving the senior card (Figure 2). However, the effect is different depending on the municipality where they lived (Göteborg 67%, Mölndal 56% and Svenljunga 45%; $\chi^2= 19.1$;

p<0.01) and depending on the incomes where the less incomes the more use of PT ($\chi^2= 32.2$; $p<0.01$). About half of the users has adjusted the time slot to use PT to fit into the senior card traffic hours. Both municipality and incomes do have an effect where users living in an urban area and with lowest incomes adjust their time the most. About 1/3 users reported the card to be too limited in terms of geography and hours to satisfy their travel needs.

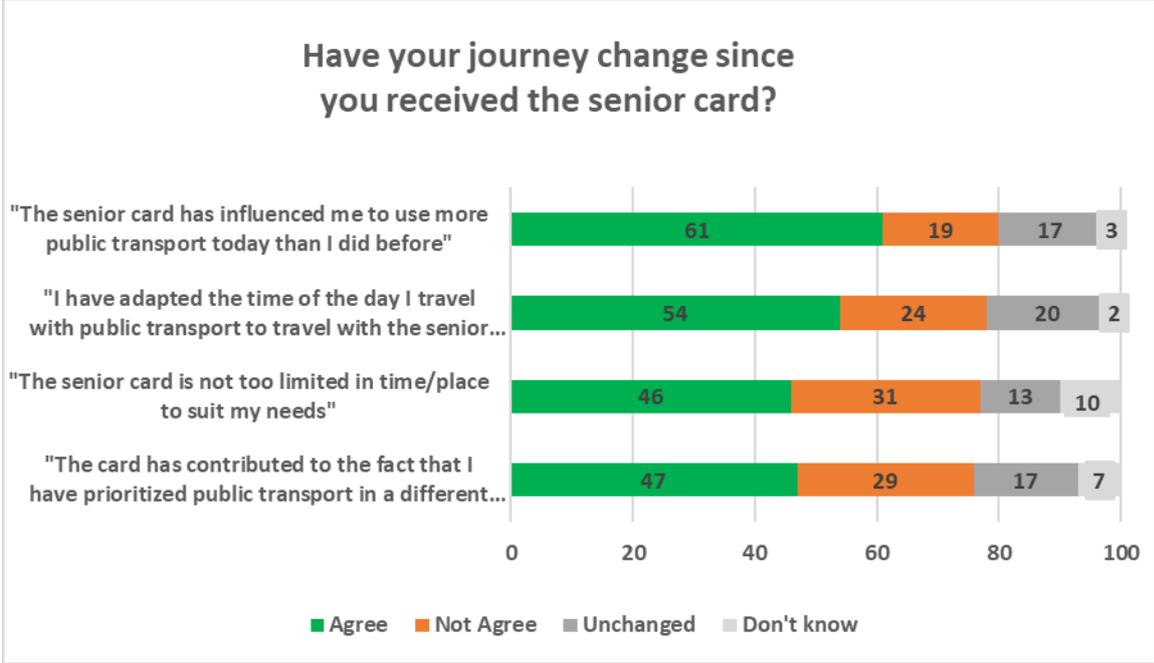
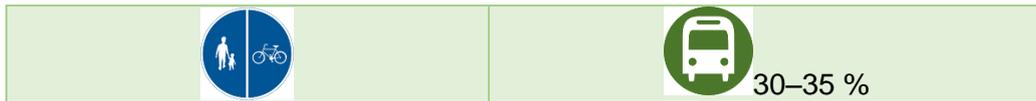


Figure 2: Distribution of answers to questions concerning the general effect of the senior card (%).

To examine whether the senior card contributes to a shift of transport mode, card users were asked how they travelled before and after the senior card introduction for their different activities. Overall, there is a consistency of the majority of transport mode before and after the senior card for most of the travels (Table 2). For travels done by PT before the senior card introduction, 97% of the travels in average are still done by means of PT after the introduction of the senior card. For travels done with a car before, a shift in favour to PT is observed for service, meet friends/family and associations activities. PT afterwards account for 24-35% of these trips. For travels done with a cycle or by walk before, a shift in favour to PT is observed for shopping, service and meet friends/family. The corresponding PT percentage is now 30-35%.

Table 2: Shift of transport mode after the introduction of the senior card.

Travels done by (bus/car/cycle) before the senior card	Travels done by public transport after the introduction of the senior card
	 97%
	 24 - 35%



3.3. Physical capability and transport

Physical capability and transport choice was studied by examining the relationship between the introduction of the senior card (i.e. if respondents have applied for it or not) and how long the respondents could walk outside without any help (i.e. from 0-200m to more than 1km). Respondents who started to use the senior card were significantly more able to walk long distances outdoors, compared to those who did not use the senior card ($\chi^2=8.4$; $p<0,05$). Moreover, respondents who used the senior card were more satisfied with their possibilities to travel with PT ($\chi^2=264$; $p<0,01$). In contrast, respondents who did not accept the senior card are the one who are driving almost every day.

3. DISCUSSION

The present study shows a significant effect of the senior card onto travels patterns of older drivers. These effects are varying depending on the municipality of living, the economical situations as well as the household composition. Majority of the senior card users reported to have increase their PT use, half of them reported an adjustment of their hours to use PT to fit the card requirements. These changes primarily concern people in urban and suburban areas, with lower incomes and for services and social activities. Regarding the travel pattern of the senior card users, a shift of 24-35% (depending on activities) of travels was observed from card to PT and 30-35% from cycle/walk to PT. Although, a significant relationship was found between respondents physical capability and the use of the senior card where the better the physical capacity the more use of the senior card.

The senior card seems to have contribute to decrease to some extend the number of travels done by car in favour of PT use. Earlier research has also showed a relationship between the use of (subsidised) PT and benefits in terms of increase physical activity (Coronini-Cronberg, Millett et al. 2012, Webb, Laverty et al. 2016, Rouxel, Webb et al. 2017). The shift from cycling and walking to PT is quite common when PT service becomes fully subsidised, not only for older age groups. Studies have shown that although the measure gives a major travel increase, free public transport might also contribute negative environmental and health effects due to supply increase and shift from bicycle and walking to public transport (Fernley 2013, Nilsson, Stjernborg et al. 2017).

In conclusion, the measure to sponsor PT travels for older citizens seems to have a rather positive effect regarding their mobility and their level of physical activity. However, the effect seems to be limited to older people who are rather fit physically and live in areas where there is a rather good availability of PT. A holistic approach is needed to cover a broader spectrum of older citizens and to insure that their needs are covered by the available public transport.

4. ACKNOWLEDGMENTS

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