

Elderly Car Drivers in Denmark

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Abstract

Elderly drivers represent the fastest growing segment of the driving population. The Danes are as most populations in Europe undergoing an ageing process. National data from Statistics Denmark reported that in 2030 one fifth of the population would be more than 70 years old. The share of elderly people is increasing as a result of the general extension in the expected lifetime and a long-term reduction in the fertility. Adding this with the fact that more people than prior generations hold a driving license and that car driving is still increasing, generates a need to investigate whether the road traffic system is suitable for the elderly car drivers.

The aim of the study is to investigate the current situation in Denmark for elderly car drivers. This paper presents two types of findings carried out by the Danish Transport Research Institute: The findings of a literature study review about elderly drivers and their mobility, and the findings of a questionnaire concerning approaches taken by the Danish municipalities and counties in order to comply with the needs of the elderly drivers.

The literature study finds that drivers reduce both their mileage and number of trips, as they grow older. It also shows that the elderly drivers in general are capable drivers. Elderly people suffer from various kinds of impairments and this can influence both their mobility and driving abilities. The study also reveals that compensation strategies for car driving are widely used, and it points out the importance of keeping the elderly mobile since a lack of mobility can result in a negative socio-economic spiral.

The analysis of the questionnaire shows that very few municipalities and counties have taken action in order to meet the needs of the elderly drivers. The most common action is financing a course to refresh the driving skills of the elderly drivers. The municipalities and counties frequently respond that they work towards increasing the safety for all citizens and therefore not targeting the elderly drivers.

Background

The Danes are as most populations in Europe undergoing an ageing process. The group of elderly people represents one of the fastest growing segments. National data from Statistics Denmark reports that by 2030 one fifth of the population will be older than 70 years. The share of elderly people is increasing as a result of the general extension in the expected lifetime and a long-term reduction in the fertility. The increase in the elderly affects both the size and homogeneity of the driving population.

Additionally the amount of driven kilometres in private cars is still rising. During the last decade there have been an almost ongoing increase in the amount of driven kilometres by private cars. In the period 1991-2001 car driving has increased by 26% to 36343 million driven kilometres per year by private cars.

The combination of these factors indicates a need to investigate whether the road traffic system is suitable for the elderly car drivers. Therefore the aim of the study is to explore the current situation for elderly car drivers in Denmark: What are their strengths and defects? Are they involved in particular types of accidents? How does age affect driving skills? How do the Danish municipalities and counties take the larger share of elderly drivers into account?

This investigation is a part of PhD project on vulnerable road users in urbanized areas, targeting the elderly drivers. The literature study and questionnaire is carried out as an introduction to the topic elderly drivers and their needs. The investigation will be fully presented in a working paper later this year.

Results

The Literature study

The group of elderly persons is a large and inhomogeneous group and it consists of many subgroups depending on their sex, health status, economy and family type [Ståhl,1986; Hakamies-Blomqvist, 2001]. These parameters also characterize the group of elderly drivers. A glance at the elderly persons mobility pattern in the period 1992-1999 shows that neither the number of trips or amount of driven kilometres by car has changed much. The number of trips for the age group 60-69 is stable around 2 trips/day and 1.6 trips/day for the age group 70-74. However there has been an increase in the daily transportation per person for all age groups, especially for the age group of the 70-74 years old, see figure 1.

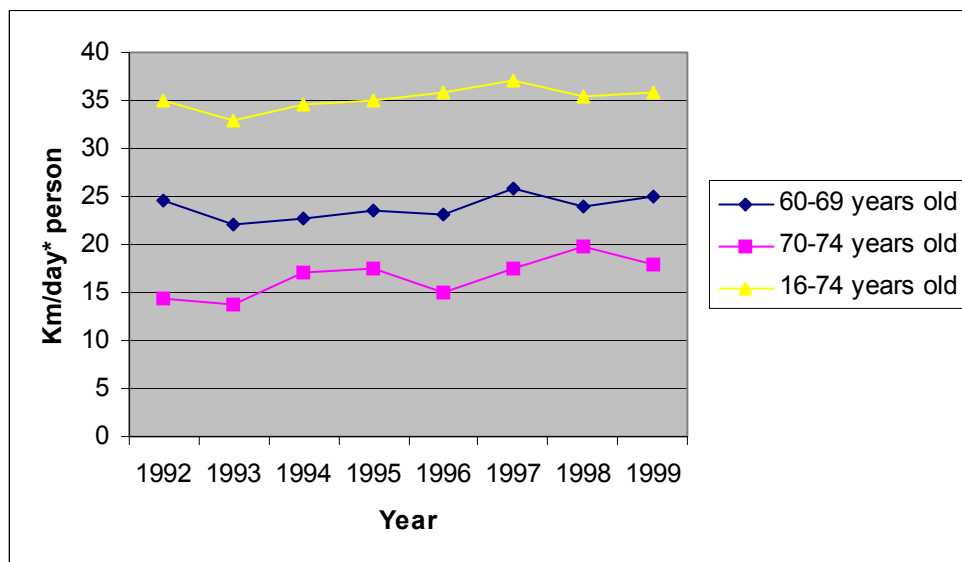


Figure 1. The development of driven kilometres per day per person [Vejdirektoratet, 1996; 1999; 2001].

An analysis of the accident types for elderly drivers shows that they often take place in crossings and intersections. Especially left turns seem to be complicated for the elderly drivers, but also identifying safety gap in traffic stream and responding to traffic signs is difficult. On the other side the analysis also shows that elderly car drivers have a better traffic culture, they are less represented in drunk driving, overtaking and speeding.

A closer analysis illustrates that elderly are in a higher risk group to be killed, see figure 2. For the age group of 65 – 74 years there is a declivity for the period 1993-2002, the declivity is valid for private cars, cycles and pedestrians. A man was killed twice as often as a woman in this period. For the age group 75 years old and older there has also been a declivity for the period, this goes in particular for the number of killed pedestrians. Again men have higher risk, they are killed 1½ times as often as women.

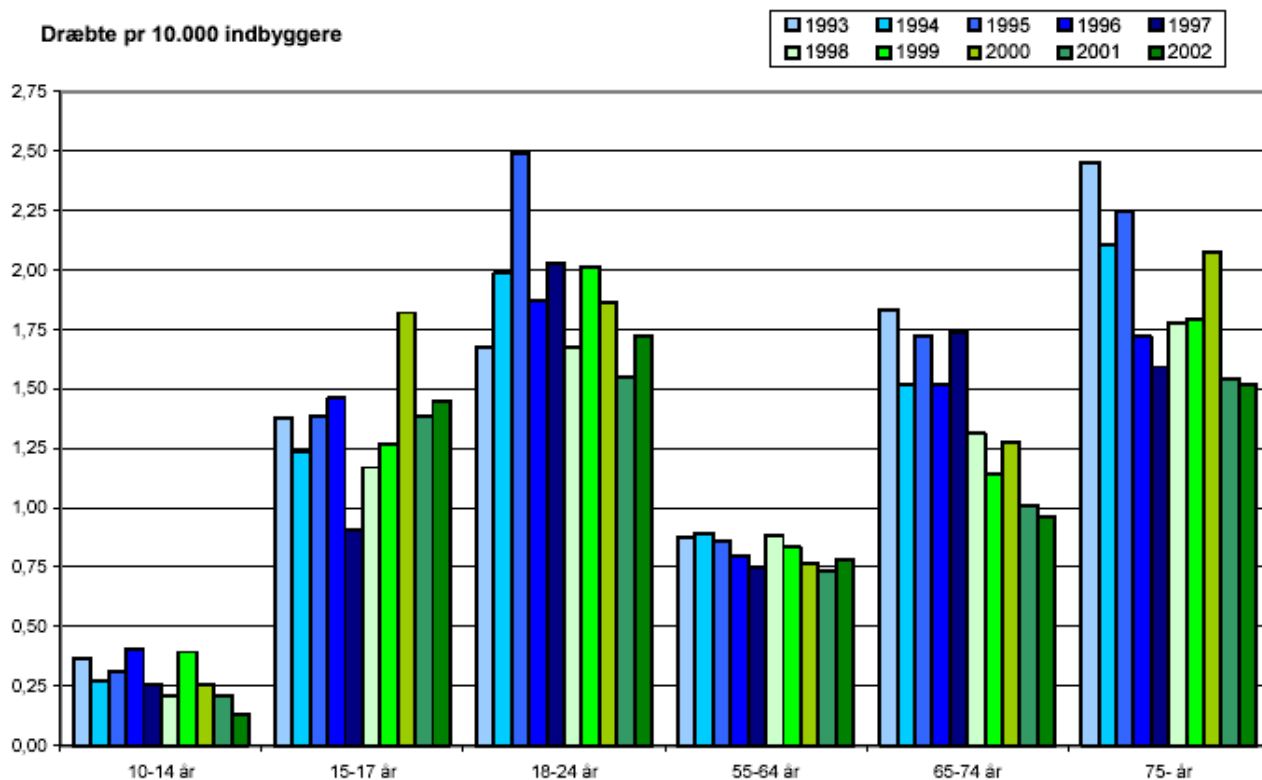


Figure 2. Killed road users per 10,000 inhabitants in Denmark in the period 1993-2002 [Hemdorff, 2003].

An important finding from the literature study is that many elderly car drivers are not risky but at risk [OECD, 2001]. First, elderly people are frailer which makes them extra vulnerable to personal injury or death in the event of an accident. For an elderly person it is therefore safer to travel by car than by foot, bike or public transport. Secondly, elderly drivers tend to be safer than it is commonly believed. Some drivers can have sensorial, physical or cognitive impairments that can affect their driving and mobility. These impairments cover age related deteriorations on vision, audition and balance over cardiovascular diseases, arthritis and diabetes to different kinds of dementia. These illnesses are regarded as dangerous in connection to car driving [Hakamies-Blomqvist et al., 1999]. Furthermore the non-verbal memory, the ability to coordinate, motility and time to react also deteriorates with age. To meet these impairments many elderly drivers use one or several compensation strategies, as avoiding driving during bad weather and road conditions, avoiding busy roadways and rush hours, being more cautious in their driving behaviour, or just reducing their number of trips or driven mileage. [Ramund, 1996; Hakamies-Blomqvist, 2001; Holland, 2001]

It is important to keep the elderly mobile, as people with reduced mobility tends to get isolated and/or depressed which can lead to greater socio-economic expenses in terms of health care [Hakamies-Blomqvist, 2003].

Furthermore the literature study reveals that the population of license holders is undergoing a change. The Danish legislation allows driving license at the age of 18, and requires a renewal every fourth years after the age of 70. To achieve a driving license requires both education and examination in theory and practice at driving. In order to renew the license a medical examination has to be undertaken to test the physical and cognitive abilities to drive. Throughout the last 10 years the group of elderly license holders between 60-74 years of age have grown 13% in numbers, approximately 77% of all persons in this age group hold a license. The homogeneity of the group is also altering, since more women now hold a license and is expected to hold on to it. This tendency will continue many years forward. The gap between the sexes will be reduced, but will not even out. This is partly due to the fact that today still more men than women acquire a driving license and partly that women older than 70 years old easier give up their license [Vejdirektoratet, 2002].

Technical support and aids for the elderly drivers is present today or on its way; car and IT companies are developing different tools to comply with the elderly drivers impairments. The new technology is eg: Night vision enhancement, Intelligent Speed Adaptation, rear obstacle warning and front/back collision warning. As goes for the infrastructure Staplin et al 2001 has made guidelines in "Highway design Handbook for older drivers and pedestrians".

The Questionnaire

The purpose of the questionnaire was to discover if and how the official Denmark is dealing with the present and expected increased amount of elderly drivers in their traffic and safety planning. The questionnaire consisted of 39 questions. The overall response rate was 63%: 10 out of 14 counties and 171 of 275 municipalities¹ participated in the survey, all counties were represented by at least 3 municipalities. Against this it should be urged that many of the respondents replied that they had insufficient resources to participate in the survey and 8 declined to participate according to this reason.

The analysis of the questionnaire shows that very few municipalities and counties have taken action in order to meet the needs of the elderly drivers. The majority of the respondents explain that they are not doing anything specific for the elderly road users; they are taking them into consideration equal to other groups of road users.

One of the most common actions taken by the respondents is to support a course that refreshes the driving skills of elderly drivers. 21%² of the respondents are currently involved in one and additional 3% is either planning or has stopped their involvement. There are several courses that refresh the driving skills of elderly drivers. The DaneAge Association and the Danish Union of Driving Instructors in collaboration with The Danish Road Safety Council arrange the most common course. This course is composed by 6 lections of theory, 3 lections of driving lessons on a driving technical facility and 1 driving lesson in the driver's own car and environment. The counties, the municipalities, local Road Safety Councils, the local police department and local groups of the DaneAge Association often subsidize the course one way or the other.

¹ One municipality replied twice, but with return address from two different departments.

² Six counties enter into this calculation, so the total share of municipalities exceeds the 21%.

Another approach used by the respondents is giving away free booklets with advices on how to behave in the traffic system as pedestrians, cyclists and/or car drivers.

One in four respondents have an elderly council or group that is consulted and heard in hearings etc. One municipality have elderly persons to point out locations where they feel insecure due to the traffic situation and afterwards tries to implement it in a traffic safety plan.

Last, the questionnaire gives some ideas of the many ways the counties and municipalities provide possibilities for transport for the elderly without a car: Service busses, reduced prices on public transport, special cab fares, car pooling. Some is available for all some is targeted specific groups.

Methods

This study consists of two findings, a literature study and a questionnaire survey. The literature study was conducted during 2002 and 2003 and the questionnaire survey was carried out at the end of 2002.

The literature study was conducted through a scanning of different keywords. The main focus was on elderly car drivers, car users, behaviour, driving licence, elderly and car accidents. These searches for literature were primarily carried out in the databases and libraries of the Danish Transport Research Institute and Lund University. The searches regarding the development in traffic and population data were extracted from Statistics Denmark and the Danish Road Directorate. The literature study contains information on both Danish and foreign research investigations and studies.

The questionnaire consists of 39 questions and was sent to all the 275 municipalities and 14 counties in Denmark, addressed to their department of traffic and planning. The questionnaire was intended as an explorative way to get information from the official Denmark on different approaches to the elderly road users (especially car drivers).

The questionnaire was conducted as a tryout for an email based survey. All questionnaires were emailed except from two municipalities that at the time did not have an email address for the town hall. These two questionnaires were mailed. The email consisted of a covering letter presenting the study and was attached with a Microsoft Excel file containing the questionnaire and a short instruction on how to fill in and return it. The design of the questionnaire was a matrix with 6 different themes crossed with 5 choices of replies: Yes, No, Don't know, We plan to do it and elaboration. The six themes stretched out from information and education over aspects of planning and technical solutions to different types of transportation targeting the elderly and other initiatives.

The overall response rate on the questionnaire ended up on 63%, after a reminder was sent out. The last questionnaire was returned in March 2003.

Discussion and Conclusion

The literature study shows that there exists a lot of material on elderly car drivers; there is especially a lot of research on the abilities and disabilities of the elderly car drivers and reasons to cease

driving. Little research has been made on the elderly car drivers' mobility pattern; where do the elderly travel, how frequent and how do they decide their route of travel.

There is an ongoing discussion among experts on how to calculate the risk for an accident for the elderly drivers, is it dependent on the mileage, exposure or number of accidents. There is little research on how and where the elderly drivers experience risk or feel at risk. Additionally, there are many descriptions of the elderly drivers' accident pattern, but not much on why or how they occur.

The structure of the questionnaire was too complex and not enough focused; it was addressing too many topics and had too many possibilities for additional answers. Some of the questions were too diffuse and imprecise, and a lot of the participants had difficulties answering them. This produced the phenomenon "As you ask you will be replied", so some of the results are too diffuse to interpret. This is mainly due to the mix of elaboration and additional information.

Inversely many of the additional possibilities within the questionnaire gave the respondents good opportunity to point out all the different actions they bring into play. This manufactures a realistic and reliable picture of the counties and municipalities having a diverse and faltering strategy to meet the needs of the elderly drivers. There might be a need of providing information from a central place to the municipalities on what is doable to meet the elderly road users' needs.

The response rate of the questionnaire is high especially considering that the distribution through email and use of an excel-based questionnaire is a new method and it can be experienced as difficult for many people. The high response rate and the profound answers also indicate that elderly road-users are a topic many professional partners take both seriously and into consideration in the planning of the city.

Presently there is need for further investigations of the elderly drivers' mobility pattern and connection to the accident pattern since the future population will consist of a larger part of elderly drivers and the car will remain and increase its position as a prevalent mean of transport.

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