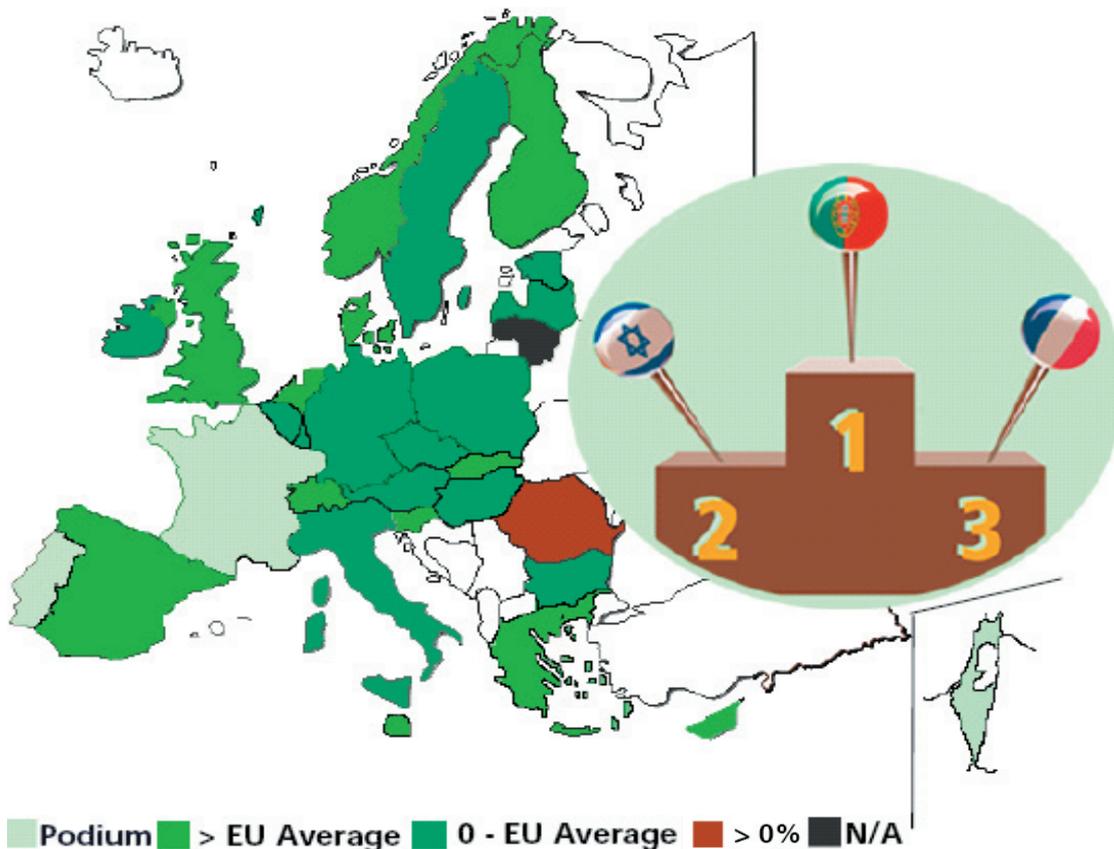




Reducing Older People’s Deaths on the Roads

At least 8,260 people 65 years old and over were killed in the EU27 in 2006. While older people account for one sixth of European population, every fifth person killed in road traffic is aged 65 or over. Moreover, due to population ageing, older people will represent an increasing share of the total population. This could have a negative impact on road safety development in the future. If the risk rates of older people and others decline at the same pace, by 2050 one death out of three is likely to be an elderly person. Providing safe mobility to senior citizens deserves special attention and requires a re-think of policies and strategies.

Portugal, Israel and France scored the best year-to-year reduction in older people’s deaths on the roads over the past decade.



Average yearly percentage change in road mortality of elderly over the period 1997-2006 Except SK (2003-2006), BG (2001-2006) and RO (2000-2006)

Per population, Malta, the UK and Sweden are the safest places for older people using the roads. Only in Latvia, Malta, Estonia, Spain, Lithuania and Slovenia do older people have a lower risk of dying on the road than the rest of the population. In The Netherlands, Israel and Switzerland people aged 65 and over have twice the risk of dying in road traffic that others have.

The Netherlands, Finland, Cyprus and Denmark are the countries which are likely to face the strongest pressure on the development of road deaths due to population ageing.

Improving older people's safety

Over the past decade, Portugal and Israel scored the highest average annual reduction of 8% and 7% respectively in elderly road mortality expressed as number of deaths among older people per 100,000 elderly population. France ranks third with an annual average reduction of over 6%.

A group of 11 countries composed of Cyprus, Denmark, Slovenia, Greece, Switzerland, Norway, Slovakia*, Finland, The Netherlands, Spain and UK follows with reductions above the EU average of 3.7%.

Denmark, Slovenia, Greece, Switzerland, Norway, Slovakia, Finland, The Netherlands, Spain and UK follows with reductions above the EU average of 3.7%.

Slowest progress has been recorded in Latvia and Bulgaria where it has been less than 2%. In Romania numbers of deaths of people aged 65 and over per 100,000 elderly population actually rose over the last six years.

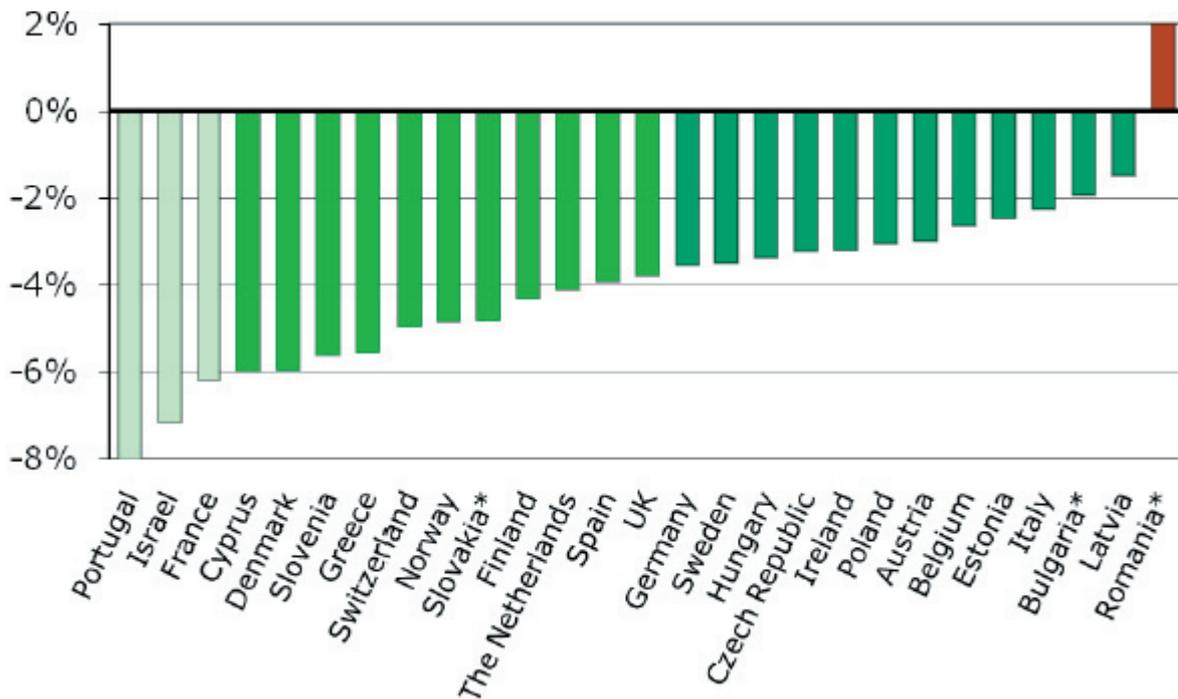


Fig. 1: Average yearly percentage change in road mortality of older people over the period 1997-2006

* SK (2003-2006) and BG (2001-2006), RO (2000-2006).

LU and MT are excluded from Fig.1 because the annual numbers of deaths in those countries are below 20 and thus subject to substantial random fluctuation. LT is excluded from Fig. 1 because numbers of elderly deaths are available only since 2004.

Who are the older people?

In this report an older person is a person aged 65 or more. While this definition is somewhat arbitrary, 65 is in many countries the age at which one can begin to receive state pension benefits.

However, by using rigid age boundaries we do not take into account the fact that ageing is a process that does not start at the same age for each and every individual, nor does it progress at the same pace. There can be large differences in driving skills between people of the same age, as well as in their physical and mental abilities. It is very well possible that some 80 year olds are in better shape than certain 40 year olds⁽¹⁾.

Older people as accident victims

This Flash looks at elderly people in general. As for other age groups, their level of safety is to a large extent determined by the transport mode they use.

⁽¹⁾ SWOV Fact Sheet (2008), The elderly in traffic

According to 2005 data provided by 18 countries to CARE, 38% of elderly people killed were pedestrians, 26% died when driving a car, 14% as car passengers, and 5% as motorcyclists or moped riders. Others, including pedal cyclists, accounted for 17%⁽²⁾.

The indicator

The road safety of elderly people is expressed here in terms of the number of road deaths among people aged 65 years and older divided by their population size (in 100,000 inhabitants). Road deaths by population give a good estimate of the overall impact of road risk on the age group. Unfortunately an estimation of time spent in traffic or the amount of travel among the senior population is available only for a very few countries. Exposure in traffic resulting from different mobility needs and patterns is therefore not taken into consideration when comparing countries.

We may measure the relative safety of older people by comparing their road mortality with that of the rest of the population, i.e. population of the age group 0-64. (Fig.2).

Numbers of deaths used in this report come from the national statistics supplied by the PIN Panel-list in each country. The CARE database was used to verify these. The full dataset is available in the background tables⁽³⁾. The number of older people killed in traffic is available in Bulgaria since 2000, in Lithuania since 2004, in Romania since 1999 and in Slovakia since 2002.

Numbers of inhabitants were retrieved from the EUROSTAT database and refer to the registered population in each country and age group on the 1st of January of the respective year.

The improvements in safety of older people are to a large extent a function of the overall improvements in road safety. Countries that have made the biggest improvements in road safety since 2001, namely France, Portugal, Switzerland and Denmark are among the best performers also in improving the safety of older people.

This suggests that reduction in the total number of deaths is boosting progress in reducing older people's deaths. The case of Portugal is emblematic: Portugal scored the best reduction both in overall deaths⁽⁴⁾ and in older people's deaths over the past decade.

“The reduction of elderly deaths followed the good reduction of the total number of

road deaths observed in Portugal over the past decade. The measures implemented so far did not target specifically the safety of elderly people. However, lots of efforts were put into improving pedestrian safety.

Our Road Safety Plan (2003-2010) includes a 60% reduction target for pedestrian deaths. Around 40% of the pedestrians killed are aged 65 or over. We run campaigns raising awareness about pedestrian vulnerability. Infrastructure improvement schemes were implemented in several urban and suburban areas, with greater care over the location and signing of pedestrian crossings.”

Joao Cardoso, LNEC, Portugal

Elderly contribution to the EU reduction target

It has been estimated that to reach the EU target of halving the number of road deaths between 2001 and 2010, a year-to-year reduction of at least 7.4% is needed (PIN Flash 6). Between 2001 and 2006, the annual average reduction of deaths among older people has been only 3%, while it has been 5% for the rest of the population⁽⁵⁾.

⁽²⁾ERSO, Traffic Safety Basic Fact (2007), Table 5 and Fig.4 www.erso.eu/safetynet/fixed/WP1/2007/BFS2007_SN-KfV-1-3-Elderly.pdf

⁽³⁾ www.etsc.be/PIN-publications

⁽⁴⁾ ERSO Annual Statistical Report (2007) (p.11), www.erso.eu

⁽⁵⁾ Estimates for EU27 except Lithuania and Slovakia (exact values: 3.2% and 4.8%)

Safety of older people compared to the rest of the population

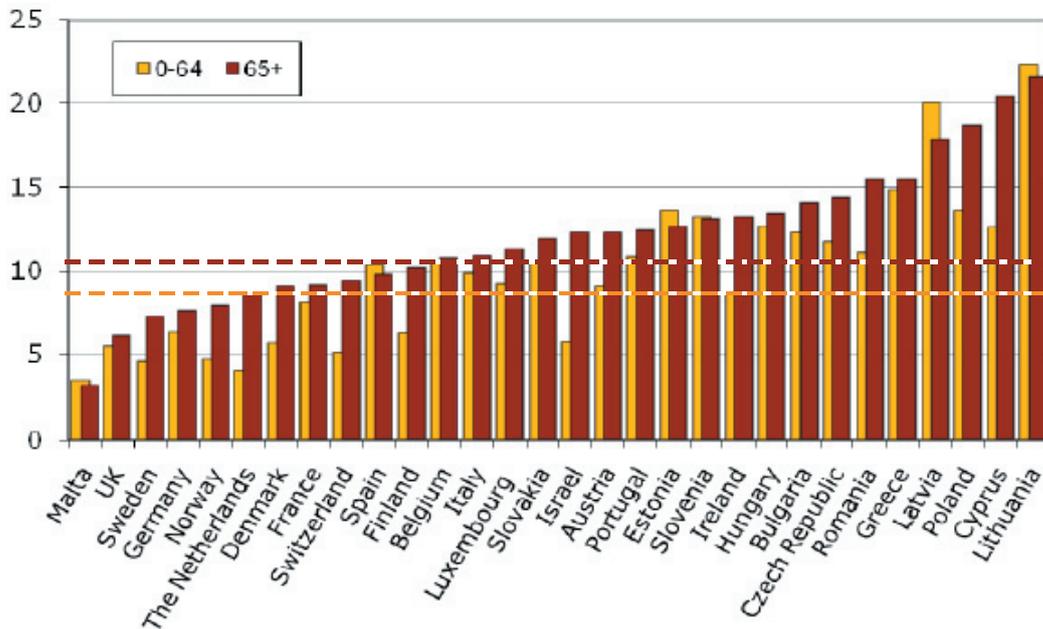


Fig.2: Elderly road mortality rate with the road mortality rate of the rest of the population (0-64) for comparison. Average values for years 2004, 2005 and 2006.

The risk of an older road user being killed in a road accident is on average 16 % higher than the corresponding risk for a younger road user. However, death rates vary greatly between Member States. Senior road users in Lithuania have on average 7 times the corresponding risk of being killed per population of their Maltese counterparts.

Some of the countries with good overall road safety records and a long tradition of safety such as The Netherlands, Israel, Switzerland, Norway, Finland, Denmark and Sweden have relative high ratios of road mortality between older people and the rest of the population (Fig. 3).

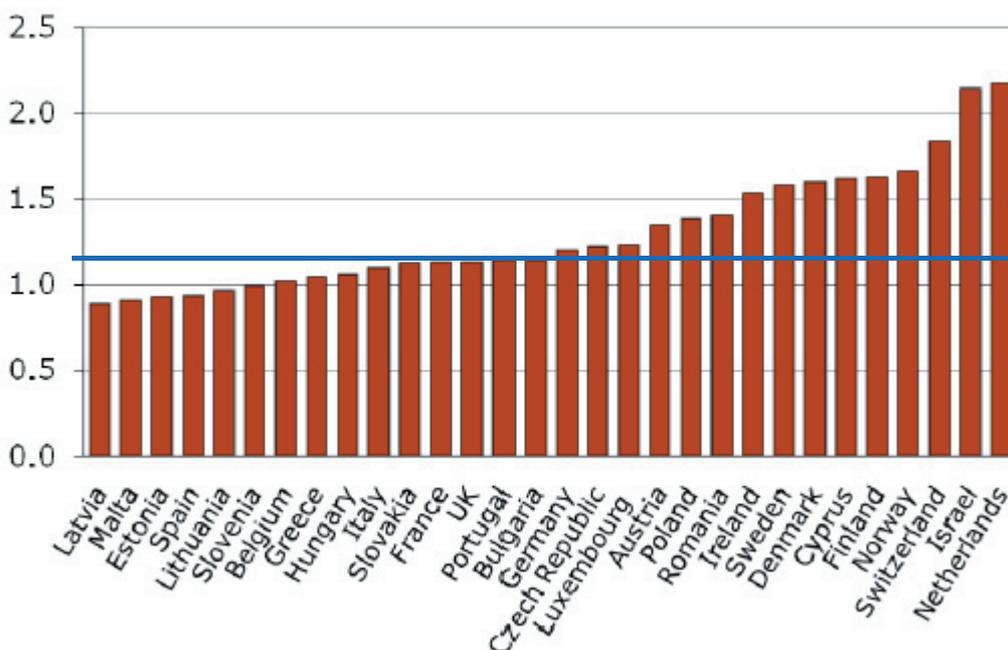


Fig.3: Ratio road mortality of elderly / road mortality of the rest of the population. Average values for years 2004, 2005 and 2006

In Israel, The Netherlands and Switzerland, the risk of an older person being killed in road traffic is twice as high as for younger road users.

Latvia, Malta, Estonia, Spain, Lithuania and Slovenia have a lower rate of road mortality among older people than in the rest of the population. Another group of countries, Belgium, Greece, Hungary, Italy, Slovakia, France, UK, Portugal and Bulgaria, have a ratio below the EU average of 1.2.

“Unfortunately, in Latvia, most older people have low-incomes. As a result, they are less mobile than other age groups. While 17% of all inhabitants are over 65, only around 8% of driving licence holders are elderly. This might partly explain the low ratio shown in Fig.3.

However, over 50% of elderly people killed in traffic were pedestrians. Pedestrians are particularly at risk in Latvia. We urgently need to implement the actions planned in the Road Safety Programme 2007-13 to improve the safety of pedestrians such as infrastructure improvements to protect pe-

destrians and cyclists from motorised traffic, better street lighting and signing around pedestrian crossings, better enforcement of violations by drivers and pedestrians near pedestrian crossings”.

Aldis Lama, Ministry of Transport, Latvia

“In the Netherlands, older people cycle a lot more than in other European countries. They are relatively fit and enjoy a high level of mobility. This can partly explain the bad ratio shown in Fig. 3. Nevertheless, the health effects of bicycle use are presumed to be very positive; thus bicycle use is promoted for this reason.”.

Divera Twisk, SWOV, The Netherlands

“We recently identified the problem of older people being particularly at risk compared to other European countries. We are now researching for possible remedies. We expect to come up with proposals later in 2008.”

Rob Methorst, Ministry of Transport, The Netherlands

Demographic changes and their impact on road deaths

The European population is undergoing major changes in its demographic structure with the proportion of older people growing at a fast rate. While the economic consequences of this trend are clear, the implications for traffic safety may be ambiguous.

Older people nowadays account for some 17% of the European population. Because of the decline in birth rates, the increase in life expectancy and the maturing of the baby-boom generation, 25% of the population will be over 64 in 2030 and 30% in 2050.

Assuming a constant mortality rate over time

(or the same pace of decrease in both mortality rates of 65+ and 0-64), it is possible to estimate the impact of the changes in the proportion of elderly in the total population on number of deaths on roads in future.

In the EU27 one road death out of five is aged 65 or over. In 2050 one road death out of three is likely to be an older person. This is illustrated in Fig. 4, which is fairly similar to a graph of the forecast proportion of older people in the entire European population. That is because for the EU as a whole the mortality rates of the older people and remaining populations are actually quite similar (10 and 9 respectively).

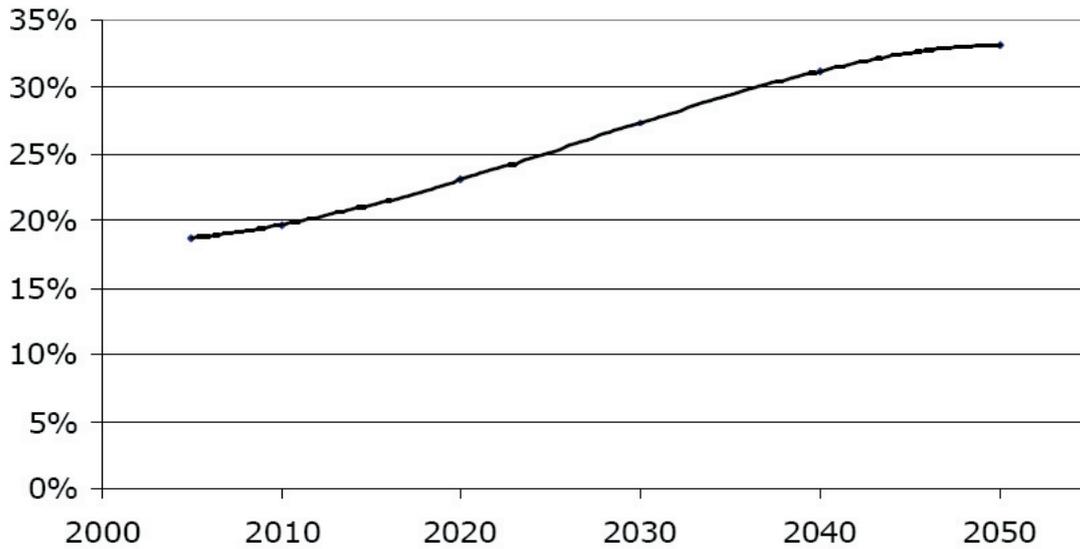


Fig.4: Expected % proportion of older people's deaths among all road deaths in Europe according to forecast population

The situation is however different for particular countries, as their respective mortality rates may differ considerably as shown earlier in Fig.2.

We may estimate the expected number of deaths based on the population forecast figures, employing the mortality rates determined for the two age groups for the period 2004-2006 and

assuming that these will remain constant.

In order to isolate the effect of population ageing from the change in the total population figures, we have undertaken a relevant adjustment based on the assumption of linearity between the number of deaths and the size of population.

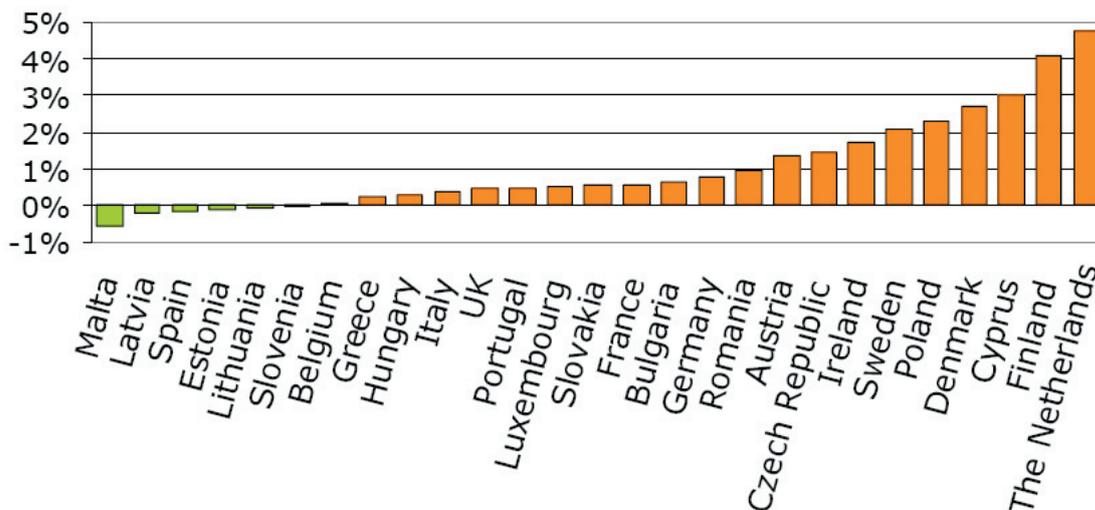


Fig.5 Expected effect of population ageing on annual number of road deaths in 2020 assuming constant mortality rates for the two age groups over the time

In 21 countries out of 27, the ageing of the population is likely to contribute to an increase of the number of road deaths. In these countries, the increase in the share of the population aged 65 years or older and having a relatively high road mortality rate will weigh negatively on the overall level of safety.

This effect is forecast to be greatest in The Netherlands, where the total number of road deaths

in 2020 can be expected to be almost 5% higher than in 2005 just due to an increased share of elderly people having a higher mortality rate than the rest of the population. In another 8 countries the effect is estimated to exceed 1%.

In only 6 countries, the population ageing phenomenon is likely to lead to a tiny reduction in road deaths of some decimal percentage points by 2020.

Background

Older people are more vulnerable to trauma than other age groups as the fatality risk from the same physical impact increases with age for all human beings after the age of 20 years. When a road accident occurs it affects an elderly person in a more serious manner.

It is therefore particularly important to prevent older people from getting involved in road accidents in the first place.

To bring this about, behaviour, vehicles and infrastructure should be improved.

Mobility context

The travel patterns of senior citizens have changed considerably over the past decades. The mobility needs of older people have increased and are expected to increase even more in the future. Older people will drive longer distances and more than in the previous generation, but also will spend more time exposed to motor traffic while walking and cycling, both of which are associated with high fatality risks.

To achieve safe mobility of older people, effective transportation alternatives to the car should be offered so that older people who no longer can or wish to drive can continue to travel. Governments are called upon to devote considerable effort to making it possible for people to choose other modes when they have problems driving and eventually for all their needs. (ECMT, 2002)

There are also increasing heterogeneities in terms of mobility needs among older people. The mobility context of many older people nowadays is not comparable to that of those living some decades ago. As for the needs to further distinguish different age groups among older people, the network The European Network for Safety among Elderly (EUNESE), working especially with safety issues for older people, has grouped older people into two age-groups 65-79 and 80+ and also pointed at gender aspects.

[http://www.eunese.org/csi/eunese.nsf/index1/home/\\$file/index.htm](http://www.eunese.org/csi/eunese.nsf/index1/home/$file/index.htm)

Behaviour

Older drivers have to deal with age-related limitations, but they are generally able to compensate for them. Ageing is accompanied by the narrowing of the visual field, poorer contrast sensitivity, increased time required to change focus, slower eye movement, problems with depth perception and slower decision making.

These impairments make older people more sensitive to complex traffic situations where a number of different tasks must be performed at the same time. To compensate for these functional limitations many older drivers try to avoid driving at night, in bad weather, in con-

gested areas and during peak periods. More particularly, mandatory age-based screening for keeping the drivers licence has not been shown to be effective in preventing accidents (OECD, 2001).

Older people are particularly in danger when walking or cycling in the road environment. Road safety provisions aiming at improving their visibility seem particularly effective. The data from the European In-Depth Pedestrian Database developed under the project APROSYS confirm findings of several UK pedestrian epidemiology studies according to which the chances that a pedestrian will receive fatal injuries from an accident increases with age.

Older drivers: At risk, but not risky

Older drivers have higher fatality rates. This is not so much due to a larger risk of being involved in a crash, but more so to their physical vulnerability. One thing that older drivers do have in common is their low annual mileage. This may have an influence on their crash rate, as drivers travelling fewer kilometres have increased crash rates per kilometre compared to those driving more kilometres. In addition, they generally drive less on motorways, instead they tend to drive on streets with intersections, which are less safe. Older people are not often involved in single vehicle accidents, but they are overrepresented in multi-vehicle crashes. Accidents involving older drivers typically occur at intersections, with the dominant accident type described as turning against oncoming traffic that has right-of-way on a main road.

Ragnhild Davidse (2007), *Assisting the older driver; Intersection design and in-car devices to improve the safety of older driver*

ERSO (2006), *Older drivers* http://www.erso.eu/knowledge/Fixed/07_old/olderdrivers.pdf

Getting the older people involved: the example of the Senior-OLA in Sweden

‘OLA’ is a systematic approach used by the Swedish Road Administration (SRA) to gather all stakeholders on a voluntary basis to tackle a specific road safety issue. The Senior-OLA involved the SRA, Pensioners organisations, the Swedish Society for Road Safety (NTF), driving schools, the Swedish association of local authorities and regions, the national public transport association and car manufacturers. At a first meeting (O – Objective facts) all stakeholders gather to agree upon the problems. During the second meeting (L – List of solutions), the actors discuss suggestions for action, both within their own organisation’s sphere of competence and within others organisations’ spheres of competence. At the third and last meeting (A – Addressed action plans), each stakeholder presents an action plan detailing the actions they commit to implement.

Under this Senior-OLA, NTF, pensioners’ organisations and elderly councils ran a project involving pensioners in a vast mapping of the traffic environment from an elderly perspective. In groups, pensioners observed and reported hazards in the infrastructure to NTF which passed the information further on to the responsible road operators. Most common faults reported were holes or dangerous objects in the pavements and too short crossing time at signalled crossings. Over 5 000 faults were reported. More than 3 000 older people took part in the work and 45% of the faults were treated by road operators immediately or within a couple of years.

For more information on Senior-OLA http://www.vv.se/templates/page3___19602.aspx (in English) http://www.vv.se/templates/page3___16248.aspx (in Swedish). Contact people: jorgen.persson@vv.se and Eva Andersson, eva.andersson@ntf.se, www.ntf.se

Vehicle

Cars and crash-tests are in general designed to meet the needs of a healthy adult. While there have been special protection systems developed to meet the special needs of children, the needs of older people have remained mainly unexplored.

However, with a growing number of older people, the car manufacturers have to start to develop vehicles which take the needs of older people into consideration. Safety requirements for older people usually

include designs to simplify the operation of cars and easily self-adjusting interiors to compensate for the changed body movement.

Operating a car is becoming a more and more sophisticated matter due to the increased rate of equipment of vehicles with modern technologies, which could have an adverse effect on road safety. Some of these technologies may pose a greater challenge for older drivers than for the younger generation. This issue should be kept in mind and addressed.

Measures to mitigate injury to elderly car occupants

- Smart seat belt load limiter
- Reduced restraint load (airbag, seat belt)
- Improved impact energy management (alternative seat belt design, knee Airbags)

Toyota Mobility Programme - Manufacturer's answer to the needs of the elderly

Toyota became the first car company to provide specially designed products to facilitate access to vehicles for disabled and less-able people in Japan and it currently offers different solutions (including manufacturing options) in over 30 vehicles, such as special seats, ramps and rear-lifts, as well as hand throttles and brakes.

In Europe, a pilot project of the Toyota Mobility Programme is currently underway following a comprehensive study phase. The key aim of the pilot project is to offer a range of mobility solutions to European customers, which integrate technologies into the vehicle rather than offer them as an add-on feature. So far the programme has introduced two passenger seats. Firstly, the Toyota Genuine Swivel Seat (picture on the left), a mechanical seat that can be swivelled outwards manually over the doorsill using a lever attached to the base. Secondly, the Toyota Genuine Lift-Up Seat (picture on the right), which combines the features of the Swivel Seat with a lift mechanism. Electrically-powered and operated with a switch on the side of the seat or with a remote control, it moves out of the car and can be lowered. The seats are fully designed and developed by Toyota and comply with all related EC directives, thereby meeting the European safety requirements.



<http://www.toyota-europe.com/cars/conversion/mobility/index.aspx>

Infrastructure

Most general road safety improvements in infrastructure design are also to the benefit of old road users. Some road designs are particularly beneficial for the older people road users. As drivers, older people need an infrastructure that is simple to take in and allows time for manoeuvring.

As senior drivers are more likely to be involved in intersection accidents than other drivers, particular attention should be given to junction design especially in urban and periurban areas. Scientific studies and road design manuals suggest replacing stop signs with full control by traffic signals, provision of roundabouts, physical provisions facilitating turning across op-

posing traffic and fully controlled opposed turn phases.

General infrastructure improvement for pedestrians would also highly benefit the safety of elderly users. Crossings have to be adapted to the needs of elderly people, since they are generally the slowest pedestrians. In-depth Finnish and Swedish studies and police reports suggest that safety of elderly people is further improved at sites where visibility, orientation and clarity is improved.

Breitman et al. (2007)

Hakamies-Blomqvist, Siren & Davidse, (2004) VTI-report 497A

Leden et al., (2006). Safe pedestrian crossings for children and elderly, Accident analysis and prevention, Vol.38 (2), pp. 289-294

OECD report “Ageing and Transport, Mobility needs and safety issues” summarises the following recommendations:

To Member States:

- Provide support for older people to continue driving safely
- Provide alternative transport options to the private car
- Develop safer infrastructure in general, especially for pedestrians
- Plan for land-use with older people’s mobility needs in mind
- Support and fund projects enabling life-long mobility
- Provide educational campaigns to promote mobility and safety for elderly people

To European Institutions:

- Support and fund projects enabling life-long mobility
- Involve elderly people in developing policy
- Stimulate development of safer vehicles for older people (encourage elderly-friendly design as well as evaluate the impact of new technologies on older drivers).

OECD/ECMT (2001), Ageing and Transport, Mobility needs and safety issues

Interview – the Nordic experience

The 2001 OECD Report “Ageing and Transport, Mobility needs and safety issues”, helped to dispel the myths and misconceptions about the safety of older road users. Recommendations included providing safe and sustainable mobility means for older people and supporting independent and healthy ageing. To help us better understand the safety and health aspects of older people’s mobility, ETSC has spoken with Liisa Hakamies-Blomqvist, co-chair of the OECD Report and Director of NordForsk, a Nordic research board.

ETSC: What are the main challenges for road safety and the current transport system posed by the ageing of the European population?

It goes without saying that the transport system should seek to prevent the older people from dying when using the roads. But this should not be done at the expense of mobility. The most

straightforward way of reducing road deaths of older people would be to keep them out of the road. However, this would have a dramatically adverse impact on their health and quality of life. If you limit the mobility of the older people, you will lower their chance to lead an active life. Road safety gains will be offset by increased health problems, loss of autonomy and increased need of public support.

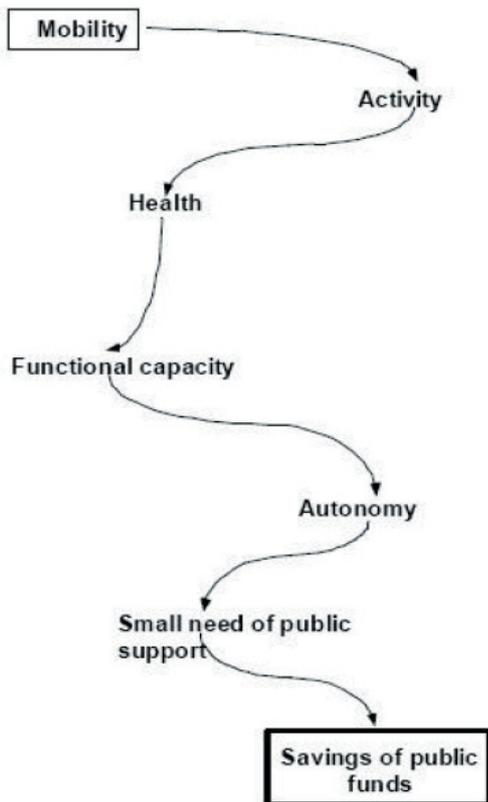


Fig. 6 The virtuous chain of greater mobility of older people.

To support healthy ageing, national, regional and local governments and community groups should join efforts towards the creation of an inclusive transport system that allows older people to be active traffic participants. This will, however, lead to their higher exposure to traffic hazards. We need to find a right balance between safety and mobility that is acceptable to the society.

» Towards the creation of an inclusive transport system that allows older people to be active traffic participants.

ETSC: The OECD Report lists a series of priority actions, among them support for older people to continue driving safely.

Elderly safety is a gender issue. Europe increasingly becomes a continent of older women due to life expectancy trends. Older women are more likely to give up driving their private cars, despite accident statistics showing that they are safer drivers than men. Unfortunately, however, elderly women are even more fragile than elderly men as vulnerable road users. This is why we recommended governments to encourage women to drive as much and as long as possible. Moreover, an increased share of older drivers in the driving population may have a beneficial effect by calming the traffic down.

Older people are very vulnerable as public transport users, cyclists and pedestrians. It is therefore of the utmost importance to improve pedestrian and cyclist safety in order to provide them with safe alternatives to private cars.

We also recommended improvements in vehicle design and transport infrastructure that would benefit the elderly in particular, as well as other road users.

ETSC: The OECD Report urged national governments to recognise the urgency of these emerging issues. Do you see this happening?

Older people are becoming an important segment of the population in European countries. We will hopefully each become an elderly person one day. The transport system should thus be calibrated to their needs instead of marginalising them. At the moment, we still tend to apply solutions in an unsystematic way, trying to adapt the system at the margin. But the challenges of the ageing society force politicians to rethink the whole concept of transportation system.



Dr in Psychology, Liisa Hakamies-Blomqvist was Scientific Director of the Swedish National Road and Transport Research Institute (VTI) from 1996 to 2005. She co-chaired the OECD expert group on Ageing and Transport and her pioneering work in this field is well known and appreciated worldwide. Liisa

is now Director of NordForsk.

NordForsk is a Nordic research board based in Oslo operating under the Nordic Council of Ministers for Education and Research. NordForsk is responsible for Nordic cooperation within research and researcher training. www.nordforsk.org

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ETSC is grateful for the financial support provided for the Road Safety Performance Index (PIN) by Toyota Motor Europe and the Swedish Road Administration. The contents of this publication are the sole responsibility of ETSC and do not necessarily reflect the views of sponsors or the organisations to which the PIN Panel and Steering Group members belong.