

Fact sheet: Prevention of Road Traffic Injuries among Elderly

Elderly Safety-Focus on Accidental Injuries

Accidental Injuries among Elderly People

Road traffic accidents comprise 20% of the total burden of injury among elderly.

Evidence based good practices show that it is possible to reduce injuries in elderly people by relatively cost effective methods. Integrated strategies including alternative public transport options, new technology in vehicle design and regulations. Road infrastructure and maintenance measures, such as those below have been advocated as major contributors to the reduction of injuries among the elderly:

- ◆ Reducing risk for pedestrians at crossings
- ◆ Ensuring local continuity of walking route and reduced physical effort
- ◆ Reducing waiting time and appropriate traffic gaps for safe crossing
- ◆ Ensuring adequate mutual visibility of pedestrians and drivers



"invite elderly to a safer and better life"

FACTS

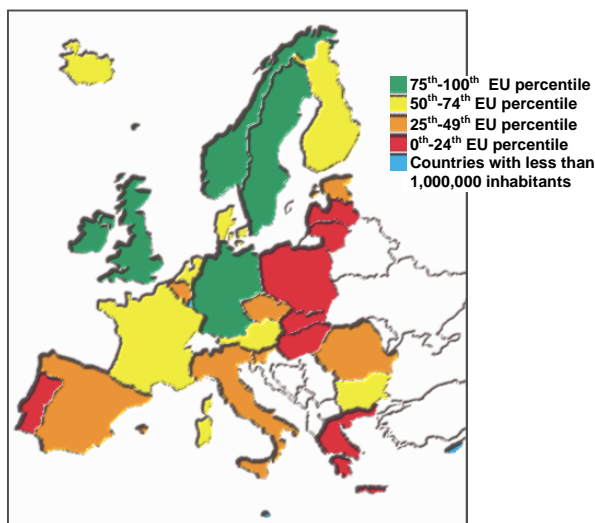
All injuries

- ◆ Senior citizens in the EU-27 and the EEA account for an appalling toll of about 105,000 fatal injury cases per year out of which 85,000 are categorized as unintentional and 20,000 as intentional¹⁻³
- ◆ Elderly people are involved in 40% of fatal injuries in the EU¹
- ◆ In the EU-27 there is a 4-fold variability in the frequency of injury death among elderly. Hungary has the highest mortality rate followed by the Czech Republic, France, Finland and Denmark whereas Bulgaria, Greece, Spain, UK and Germany have the lowest rates⁴
- ◆ Deaths due to injuries are only to tip of the iceberg. In the EU every day 15,000 elderly sustain an injury severe enough to seek medical care, out of whom 5,500 are ending up in a hospital and 275 eventually die, whereas several hundreds never get back home as they enter a nursing home.
- ◆ The proportion of elderly people in the EU population is steadily increasing, which will have immediate impact on the burden of injuries in this age group

Road Traffic Injuries among elderly

- ◆ Road traffic injuries are the second leading cause of injury death among people 65 and older⁴ accounting for 20% of all types of injuries. There are nearly 11,000 deaths from road traffic injuries among elderly in the EU-27 Region^{4,5}
- ◆ An approximately 5-fold variation of the mortality rates due to road traffic injuries in our area of the world is noted with Malta, UK and Sweden having the lowest rates (< 8) and Portugal, Lithuania and Greece the highest (> 20). This discrepancy shows the high potential for prevention
- ◆ A large proportion of the EU-27 and EEA countries seem to enjoy during the last decade decreasing annual rates from road traffic injuries of about 3%⁶

Geographic distribution of EU-27 and EEA mortality rate due to road traffic injuries (circa 2003) among elderly⁴

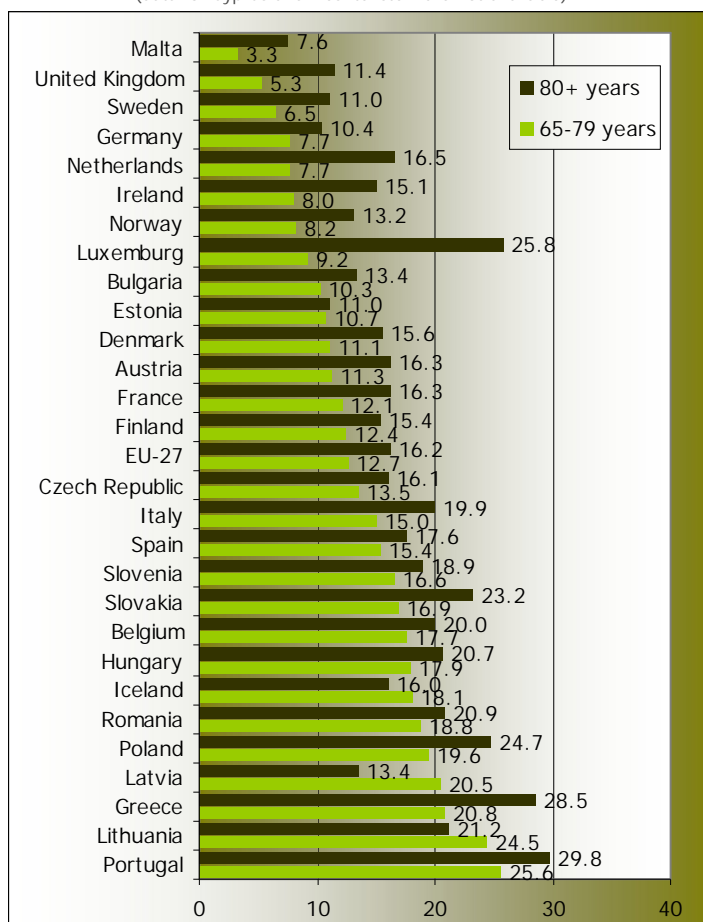


Source: WHO mortality database last available 3 years average for each country (circa 2002-2004) adjusted by CEREPRI

Mortality data

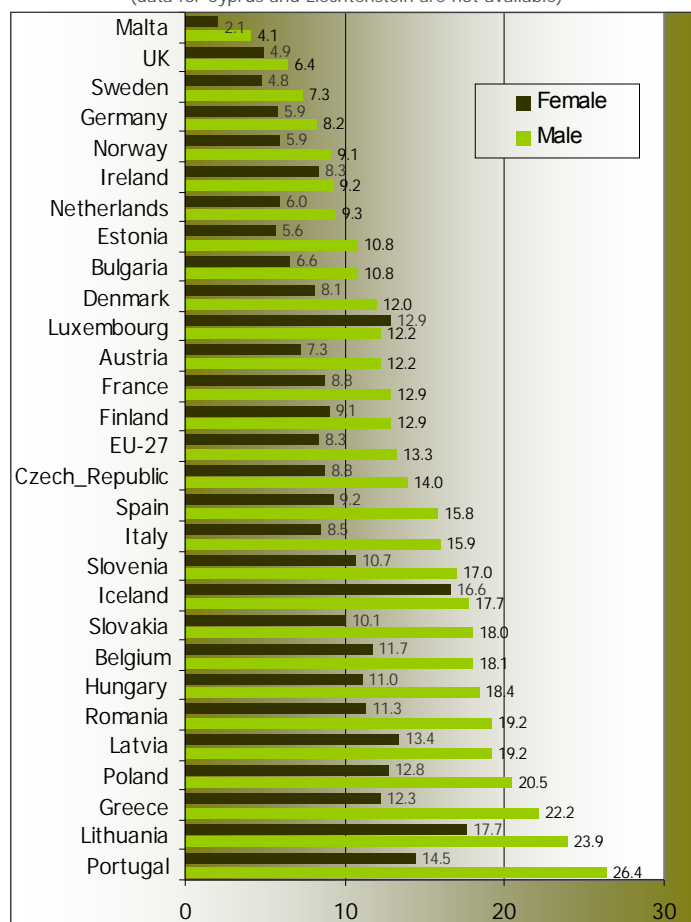
Age adjusted mortality rate due to road traffic injuries per 100,000 among elderly in the EU-27 and EEA by age group⁴

(data for Cyprus and Liechtenstein are not available)



Age adjusted mortality rate due to road traffic injuries per 100,000 among elderly in the EU-27 and the EEA by gender⁴

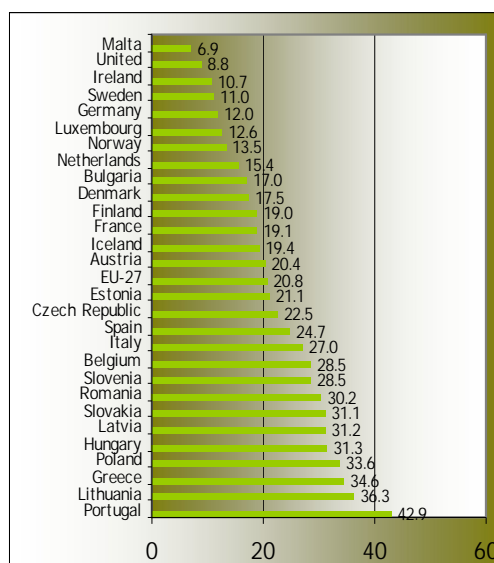
(data for Cyprus and Liechtenstein are not available)



Source: WHO mortality database last available 3 years average for each country (circa 2002-2004) adjusted by CEREPRI

Age adjusted mortality rate due to road traffic injuries per 100,000 among elderly in the EU-27 and EEA⁴

(data for Cyprus and Liechtenstein are not available)



Source: WHO mortality database last available 3 years average for each country (circa 2002-2004) adjusted by CEREPRI

Mortality data

- ◆ Each year ~1 out of 10 elderly will be treated by a medical doctor due to an injury, amounting to a total of 8 million injuries in the EU-27 and EEA²
- ◆ ~90% of the transport injuries involve motor vehicles¹
- ◆ Most traffic fatalities involving older drivers occur more frequently during daytime and on weekdays⁴
- ◆ With the exception of teen drivers, older drivers who are injured in motor vehicle crashes are more likely to die from their injuries⁵
- ◆ Per distance traveled, the risk of dying is higher among elderly car drivers and passengers, pedestrians and bicyclists over 70 years. The age-related accident risk is most evident for pedestrians; the latter represent 30% among those over 70 years involved in traffic injuries
- ◆ Mortality due to motor vehicle traffic accidents varies between the EU-27 and EEA countries by a factor of 5
- ◆ Mortality rate due to road traffic injuries among male elderly is 1.6 times higher than among female³
- ◆ It is worth noting, however, that injury risk is higher among female than among male drivers, probably because of their poorer driving experience⁷
- ◆ People aged > 80 years have higher road traffic mortality rates compared to elderly 65-79 years old³

PROPORTIONAL INDICATORS DERIVED FROM EMERGENCY DEPARTMENTS

- ◆ During the three year period (2001-2003) 2,100 road traffic injuries among elderly were recorded by the National Data Administrator of Denmark, whereas during the nine year period 1996-2004, the respective figure recorded by the Emergency Department Injury Surveillance System in Greece amounted to 3,771 injuries among elderly.

Distribution of road traffic injuries among elderly by place in 3 MS⁴

Type of road user	Age		65-84		85+		Total	
	DK	GR	DK	GR	DK	GR	DK	GR
Pedestrian	8.3	37.2	11.8	70.2	8.6	38.7		
Bicyclists	56.1	5.6	48.4	3.9	55.6	5.5		
Motorized two wheelers	6.1	23.6	5.2	4.5	6.0	22.7		
Car occupant	21.6	21.6	20.9	11.2	21.5	21.1		
Other	7.9	12.0	13.7	10.1	8.3	11.9		

- ◆ Data from Emergency Departments in Denmark and Greece show that vulnerable road users comprise more than 2/3 of all road traffic victims (pedestrians=9% vs. 39%, motorbike riders=6% vs. 23%, bicyclists=56% vs. 6% respectively). Once the injury happens, vulnerable road users are more likely to be hospitalized for a lengthier period compared to car occupants or to home and leisure accident victims.⁶
- ◆ Accident and Emergency Departments in two member states, namely Denmark and Greece show considerable variation with respect to the type of vulnerable road traffic user. Indeed, bicyclists are prevailing among the Danish vulnerable road users (56% vs. 6%) whereas pedestrians (GR=39% vs. DK=9%) and motorized two wheelers (GR=23% vs. DK=6%) prevail among the Greek vulnerable road users
- ◆ Given the time exposure patterns, it is of interest to note that among the very old (85+) elderly in Greece, the above respected discrepancy widens and pedestrians in Greece comprise more than 70% of the road traffic victims.

OUTCOME

- ◆ Traffic injuries are more severe among elderly because senior citizens are more fragile
- ◆ Worldwide, 1,2 million deaths are attributed per year to road traffic crashes. The economic cost of road crashes and injuries is estimated to be 1% of gross national product (GNP) in low-income countries, 1.5% in middle-income countries and 2% in high-income countries. The global cost is estimated to be US\$ 518 billion per year. Low-income and middle-income countries account for US\$ 65 billion, more than they receive in development assistance⁸
- ◆ Road traffic injuries place a heavy burden, not only on global and national economies but also on household finances. Many families are driven deeply into poverty by the loss of breadwinners and the added burden of caring for members disabled by road traffic injuries
- ◆ Lifetime costs, both direct and indirect, of traffic injuries are among the three most expensive, with fall injuries being the most expensive¹
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RISK FACTORS

The most important risk factors for road traffic injuries among elderly can be broadly classified in two categories: individual factors related to elderly people and external factors such as regulation and infrastructure. Research has revealed that:⁷

- ◆ Elderly drivers are more often found to be at fault for the accident
- ◆ Elderly drivers are over-represented in accidents at intersections and during lane change
- ◆ Failure to stop is more frequent in accidents with elderly drivers
- ◆ The crash involvement risk is higher for the elderly females than elderly males, and gender difference is most pronounced for intersection accidents
- ◆ Accidents involving elderly drivers are on the average more fatal than accidents involving younger drivers

Individual factors

- ◆ As a rule, road accidents where elderly are involved can be attributed to the poor perpetual, cognitive and motor capacities of the elderly⁷
- ◆ The cognitive functions comprise mainly attention functions, memory and the conscious processing of information
- ◆ Age-related changes affecting motor function of the elderly include slower and more restricted movements and increases of the reaction time:
 - ◆ For drivers, such changes may lead to losses in receiving information from the sides due to restrictions in head movements, deterioration of ability for quick and precise handling of pedals, steering-wheel, gear, and other equipment in the car
 - ◆ For pedestrians, such changes imply that they may need more time for crossing streets, and problems with detecting traffic hazards
- ◆ Certain diseases that affect sensory, cognitive, and motor functions are more prevalent among elderly. Given its negative influence on driver behavior and safety, research interest has focused on dementia and related health conditions, which prevail among elderly, primarily after the age of 80.
- ◆ Apart from the age-related increase in morbidity, there is also an age-related increase in the use of medicines, some of which may adversely affect driving performance and accident risk. Moreover, behavioral effects of certain drugs (e.g. benzodiazepines) are stronger among elderly

External Factors

External risk factors concerning the general population, the behavior of which can cause road traffic injuries among elderly, are either related to driver's fault (excessive and improper speed; driving while impaired by alcohol or drugs) or to inadequate regulation and infrastructure.^{6,9}

- ◆ Poor road planning and road construction which do not plan for the interaction of different road users, especially pedestrians
- ◆ Unsafe vehicle design
- ◆ Inadequate implementation of road safety measures
- ◆ Lack of sufficient protection provided by vehicles in the event of an impact
- ◆ Poor visibility of other users or an insufficient field of vision for the driver

PROTECTIVE FACTORS

Elderly drivers seem to be more conservative and cautious while in the road environment. It has been shown that 1. Older adults wear safety belts more often than any other age groups, 2. Older adult drivers tend to drive in safest conditions namely, they limit their driving during bad weather and at night; they drive fewer miles than younger drivers and are less likely to drink and drive compared to other adult drivers¹⁵

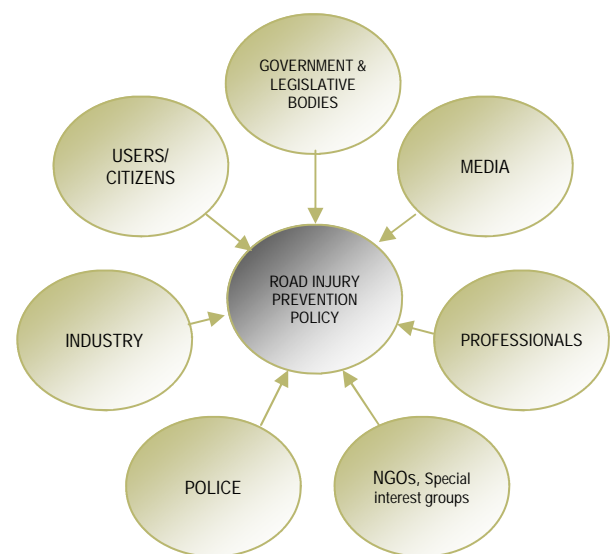
ROAD TRAFFIC INJURY PREVENTION

Evidence-based good practices reveal that road traffic injuries among elderly can be reduced by adopting the necessary measures. Given that elderly people are expected to comprise one fourth of the population in the European Region by 2030 and the fact that the proportion of elderly drivers is increasing, identification of new strategies that address their safety needs is essential. Prevention measures can be classified into three main categories, the combination of which optimizes effectiveness:¹

- ◆ Attitude modification, such as media campaigns, leaflets
- ◆ Behavior modification, such as training
- ◆ Structural modification, such as environmental changes, regulations

More specifically, an integrated strategy regarding road traffic injuries among elderly should include assessment of road infrastructure and its maintenance, public transport options, new technology, vehicle design and regulations. The development of road traffic injury prevention policies involves a wide range of participants representing a diverse group of interests, shown in the figure.

Key organizations influencing policy development



Source: WHO, World Report on road traffic injury prevention: summary, Geneva, 2004

Highly effective road traffic prevention measures:

Several preventive measures and good practices are highly effective for the reduction of road traffic injuries for all age groups including elderly.¹¹ These measures pertain to:

- ◆ *Engineering* (traffic calming and speed control; occupant restraints, such as seat belts; speed cameras; red light cameras and vehicular design, such as air bags and alcohol ignition interlock systems)
- ◆ *Legislation/regulation/enforcement* (minimum legal drinking age laws; alcohol sobriety checkpoints; lower blood alcohol concentration limit laws; mandatory bicycle and motorcycle helmet laws; enhanced enforcement programs for safety belt laws; administrative per license suspension laws; licensure suspension laws; night-time visibility-enforcement measures; daytime running lights; speed enforcement detection devices)
- ◆ *Infrastructure design standards, including:*
 - ◆ Traffic light management i.e. appropriate traffic gaps for safe crossing as well as conflict-free crossing at traffic lights
 - ◆ Reducing risk for pedestrians at crossings, where design must ensure that vehicle users behave as expected and the crossings are kept clear of obstacles
 - ◆ Ensuring local continuity of walking route and reduced physical effort with little gaps between pavement and road way
 - ◆ Minding adequate mutual visibility of pedestrians and drivers on the approaches to the crossing
 - ◆ Constructing safe crossing along roads with particular specifications (commercial streets, leisure or residential areas) through reduced width of roadway to cross or reduced speed of vehicles
 - ◆ Introducing new technologies, such as automatic systems that may also contribute to the improvement of pedestrians safety at junctions, such as detection of waiting pedestrians, automatic extension of pedestrian crossing times, accent illumination of pedestrian crossings, infrared detector for crossing pedestrians and electronic sender for disabled pedestrians
- ◆ *Education/Training* (community-wide health promotion campaigns/ distribution and education programs; skills training programs for pedestrians, motorcyclists and bicyclists; education on visibility-enhancement measures; visibility measures, such as headlight operation and color of helmet, clothing, and motorcycle)

TIPS FOR ELDERLY AND CARE GIVERS

Elderly similar to the general population could act preventively by¹:

- ◆ Using seat belt (relative laws for all drivers reduced fatalities by 11%)
- ◆ Using bicycle helmet (relative laws for bicycle drivers reduced fatalities by 22%)
- ◆ Reducing speed limits (relative measures reduced the number of accidents by 13%)
- ◆ Using motorcycle helmet (relative laws for motorcycle drivers reduced fatalities by 26%)
- ◆ Not driving under the influence of alcohol (relative laws reduced driver fatalities by 26%)
- ◆ Using reflector discs or tags when walking along roads during the evening and in the dark season

TIPS FOR POLICY MAKERS

Policy makers are in a large scale responsible for adopting safety measures. They should therefore:

- ◆ Develop a national road safety strategy.
- ◆ Allocate relative financial and human resources.
- ◆ Assess the problem, policies and institutional settings relating to road traffic injury prevention.
- ◆ Implement specific actions concerning the prevention of road traffic injuries and evaluate their impact. For example, set speed as the most important determinant for safety in road transport systems.
- ◆ Strengthen the role of the health sector as a champion of road safety

TIPS FOR PEDESTRIANS

Pedestrians could be protected by^{7,12,13}:

- ◆ Increased length of the pedestrian green phase in signalized crossings, and the use of systems that can detect pedestrians in the crossing and prolong the green phase if needed.
- ◆ More pedestrian crossings & particularly signalized crossings.
- ◆ Extended use of traffic islands, reducing the demand on pedestrians to observe traffic in both directions simultaneously.
- ◆ Extension of the sidewalk at pedestrian crossings, so that pedestrians standing at the curb are in line with the roadway side of parked cars, achieving in this shorter crossing distance and improved mutual visibility between pedestrians and motorists.
- ◆ Better pavements maintenance in crossing areas, reducing the need of pedestrians to watch out for potholes and other irregularities.
- ◆ More pedestrian areas and improvement of the walking surface

THE ROLE OF PARTNERS⁸

- ◆ *Industry* plays an important role and shares responsibility for road safety by designing and selling safer vehicles adequately equipped
- ◆ *Non-governmental organizations* can reinforce relative governmental strategies, act supportively by informing about the problem of road traffic injury, identifying effective solutions, challenging ineffective policies and forming coalitions to lobby for improved road safety
- ◆ *Mass Media* contribute significantly to awareness raising campaigns about road traffic injuries among elderly and inform the public at large and elderly themselves about the problem and the necessary measures

Recommendations²

Recommendation no. 1

That each member state in the EU and in the EEA should establish national action plans for prevention of injuries in elderly people. Targets should be defined in a way that it is possible to measure if the targets are met. Prevention measures should be taken, and annual reports should be available. An interministerial taskforce lead by the Ministry in charge may further facilitate co-ordinated action in the countries.

Recommendation no. 2

That each member state in the EU and EEA establish health based injury registration systems enabling sound and valid injury statistics to be produced. The European Commission should ensure that such systems are working. With such systems it will be possible to compare the statistics across the countries in Europe, in order to monitor the injury situation, and to find the factors involved in the injuries in order to design preventative measures.

Recommendation no. 3

That each member state in the EU and EEA report the fatalities in elderly people according to common coding rules, ensuring that it is possible to compare mortality statistics across Europe. That World Health Organisation should increase their efforts to create a common understanding of the coding system and to control the quality of the statistics.

Recommendation no. 4

That each member state in the EU and EEA, together with the European Parliament and European Council establish one day of the year as a Day for Elderly Safety. Such a common day across Europe might raise awareness on prevention of injuries in elderly people.

Recommendation no. 5

That each member state in the EU and EEA build capacity for conducting research on injuries in elderly people: to understand their causes; to develop preventative measures; to plan and implement interventions; and to evaluate interventions for cost-effectiveness.

Recommendation no. 6

That each member state in the EU and EEA develop networks at central and local levels to promote implementation of evidence-based best practices to reduce injuries in elderly people.

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