Ageing and Safe Mobility

Recommendations

The number and share of elderly road users will increase steadily in Europe in the next twenty years. The international interdisciplinary conference "Ageing and Safe Mobility" that was held at the Federal Highway Research Institute (BASt) in Bergisch Gladbach on 27th and 28th of November 2014 dealt with the challenges for mobility and safety caused by this increase.

The conference was organized by the Forum of European Road Safety Research Institutes (FERSI) in cooperation with five other continental research associations dealing with the road safety issues – ECTRI, EuroNCAP, ETRA, FEHRL and HUMANIST. Together these associations unite surface transport experts dealing with all components of the road safety.

About 150 participants came to Bergisch Gladbach. They represented fourteen EU Members, Japan, Norway, Russia, Serbia, South Korea, Switzerland and USA. Beside researchers, policemen, public administration officers, physicians, journalists and representatives of interest groups attended the conference. Mr. Szabolcs Schmidt, Head of the Unit Road Safety, represented the Directorate General Mobility and Transport of the European Commission.

Road safety experts discussed the latest available results of empiric studies implemented in different fields and scientific disciplines. Following a stern evaluation of submitted papers, the international Scientific Committee consisting from 28 high profile European road safety researchers selected 45 presentations. The topics reflected main components of road safety assurance: road users behavior, road infrastructure, vehicle technologies and traffic management systems.

The objective of the conference was to formulate recommendations for policy makers with regard to research results that could be implemented without delay and sufficiently contribute to road safety improvement over Europe.

The detailed recommendations are presented in this brochure below.

Recommendations

1. General objectives

A sustainable safe mobility of older people is a fundamental social matter.

Safe mobility of the elderly depends largely on the road environment and on personal characteristics. It is therefore important to adapt the road system to the needs of elderly and to maintain their personal ability to drive.

Active mobility, like walking and cycling, improves health and life quality. It is important to ensure that a modal shift from driving a car to public transport, bicycle and walking is safe. Only then promoting of the all-mode approach will be reasonable.

Older road users are characterized by their own risk potential (deficits, performance impairments) and safety potential (experience, attitudes, motives, ability to learn, compensation strategies). Road safety measures should be based primarily on the use of safety potentials.

2. Accident Involvement

An accident risk of older road users is relatively low. It increases in case of strong cognitive deficits that emerge due to certain illnesses (e.g. dementia), specific medication or multi-morbidity. Since the health status is an individual characteristic, general preventive measures won't be adequate.

The accident risk for older vulnerable road users (cyclists, pedestrians) is higher than the risk of elderly car drivers. Therefore it is important to implement corresponding targeted measures.

There is a misperception of the accident risk of older drivers in European countries due to media-bias, frailty-bias and mileage-bias. We shall improve the situation through appropriate information and education measures.

Due to demographic development, a statistical increase in accident involvement of older road users is expected.

3. Age-based obligatory aptitude testing

Multiple international studies confirm that there is no evidence of safety benefits from obligatory driving ability examinations for elderly drivers. Therefore speakers and participants of the conference explicitly decline an introduction of any age-based obligatory trials.

4. Target groups

The segment of elderly road users is highly heterogeneous with respect to road accident risk, individual characteristics, mobility needs, patterns and problems. Hence, it is important to develop and implement individual preventive measures for different target groups instead of general preventive measures.

Significant impaired driving is expected to occur due to certain neurological diseases (MCI, Alzheimer's disease, Parkinson disease). Measurement of the driving ability of the respective patients should be based on the assessment of driver attention, visual-spatial attention and visual information processing. Memory functions are not a central aspect of driving.

Older drivers who suffer from above diseases often assess their driving abilities not adequately. It is necessary to improve their perception of their individual risk of impaired driving and to support them in maintaining a driving ability.

5. Self-regulation

There is a need to improve self-regulation of older road users. Self-regulation can be influenced positively in following ways:

- **counselling and supporting physicians**: Special education can improve physicians competencies in this area. Screening tests can help them to inform their patients about possible cognitive or performance impairments due to illness or medication.
- **consulting by physicians**: Physicians can recommend a voluntary on-road-test (without formal consequences for the patient) in order to detect driving deficits at an early stage.
- **education and counselling by experts and agencies**: Development and implementation of educational programs. The focus should be made on safety, mobility/transport issues and on the transition from driving a car to using public transport or other modes.
- **implementing a labelling system for medicines** (based on the DRUID-classification): Simple symbols in package leaflets will easily inform patients about possible negative effects on driving fitness.
- **development and dissemination of self-screening tests** in order to raise awareness on cognitive and performance deficits and the need for behavioural adaptation.
- **individual communication and campaigns** in mass media, including internet contents disseminated via modern telecommunication devices:
  - » to raise awareness of age-related and illness-related deficits and propose adequate solutions; improving perception of the risks of impaired driving and inappropriate estimation of own abilities;
  - » to inform older people about mobility options, counselling offers, new technologies, changes in the infrastructure (e.g. better access to public transport), laws and rules.
- developing and implementing **technical feedback system** in vehicles to inform or warn older drivers in case of diverging from normal driving.

6. Training

The conference participants recommend to develop, implement and promote efficiency-proven cognitive trainings (e.g. visual search, attention, reasoning, speed-of-processing, inhibitory control, coordination of multiple tasks) and driver training using driver simulators or driving in real traffic situations. The use of these trainings should be voluntary.

Practical driver training for elderly drivers seems to have potential to improve safe mobility as it benefits from personalization in terms of needs and abilities.

7. Vehicle technology

Developing and broadly introducing the following Advanced Driver Assistance Systems (ADAS) is recommended: brake assistance, forward collision warning, lane departure warning, lane-change assistance, augmented reality-display, advisory system, etc. In-vehicle technology should also support older road users to be informed.

The conference participants recommend biking assistance systems with appropriate detection and warning systems. User trust in these technologies is a main prerequisite for marketing them successfully.

Studies show that older drivers are willing to use new technologies, as long as they are adapted to their requirements and needs. It is important that technologies should avoid an increase of workload and distraction and should not lead to accepting a higher driving risk.

Based on the fact that frailty is an important risk factor of older drivers being seriously injured or being killed in passenger cars it is recommended to consider the specific biomechanism of the elderly while developing dummies.

8. Infrastructure

When designing the traffic environment, it is necessary to consider the needs, perceived barriers and fears of older people. It is important to avoid complexity, to ensure visibility, to use adequate communication/information and to improve objective safety. Irrelevant stimuli with potential to distract the attention of the elderly should be avoided. Traffic environment should be designed in a way that all participants will benefit from it, regardless of age. It should be self-explaining, forgiving and traffic calming. In general it is necessary to keep the design of the traffic environment simple.

Transport system can be described by a numbers of quality criteria: affordable, available, comfortable, friendly, comprehensible, efficient, reliable, predictable, safe, secure, transparent and complementary. A design complying with these criteria will improve safe mobility of older road user.

9. Conceptual and methodological requirements

Future road safety assurance strategies should be focused on the interaction of human factors, infrastructure and vehicle technology. Human factors should be considered, when developing vehicle technologies and building infrastructure. The development and implementation of road safety measures should correspond with scenarios of future developments in given (national) traffic systems. Policy makers have to use competences and knowledge of national traffic research institutes. International cooperation is necessary aiming to benefit from experience accumulated over Europe.

It is impossible to predict driving performance by psychophysical fitness indicators only. Therefore the use of driving tests is reasonable.

It is absolutely necessary to evaluate benefits of the existing measures aiming to plan the following research activities and actions to be taken.

The following methodological research directions shall be considered as the tasks for the short to mid-term perspective:

- Developing and introducing common implementation rules with regard to road safety actions/measures.
- Assuring a validity of measurements/assessments of traits, states and changes.
- Going over just revealing differences between age groups to explaining, whether and which impact on road safety these differences have.
- Establishing criteria for making conclusions on meeting by drivers under trial minimum cognitive and performance driving ability requirements.