

Fit to Drive

7th International Traffic Expert Congress
25th – 26th April 2013
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Performance Characteristics of Older Drivers

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Who is the “older driver”?

- According to social and scientific conventions: > 65 years
- Statements to „older drivers“ refer solely to the „average“ of the age group
- Especially in higher age an increased intra- und interindividual variability of performance characteristics can be found
 - ➔ There are „young old people“ and „old young people“
- Chronological age is a mean indicator for the characterisation of elderly people



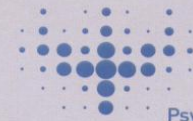
Advantages and disadvantages of older drivers

Advantages:

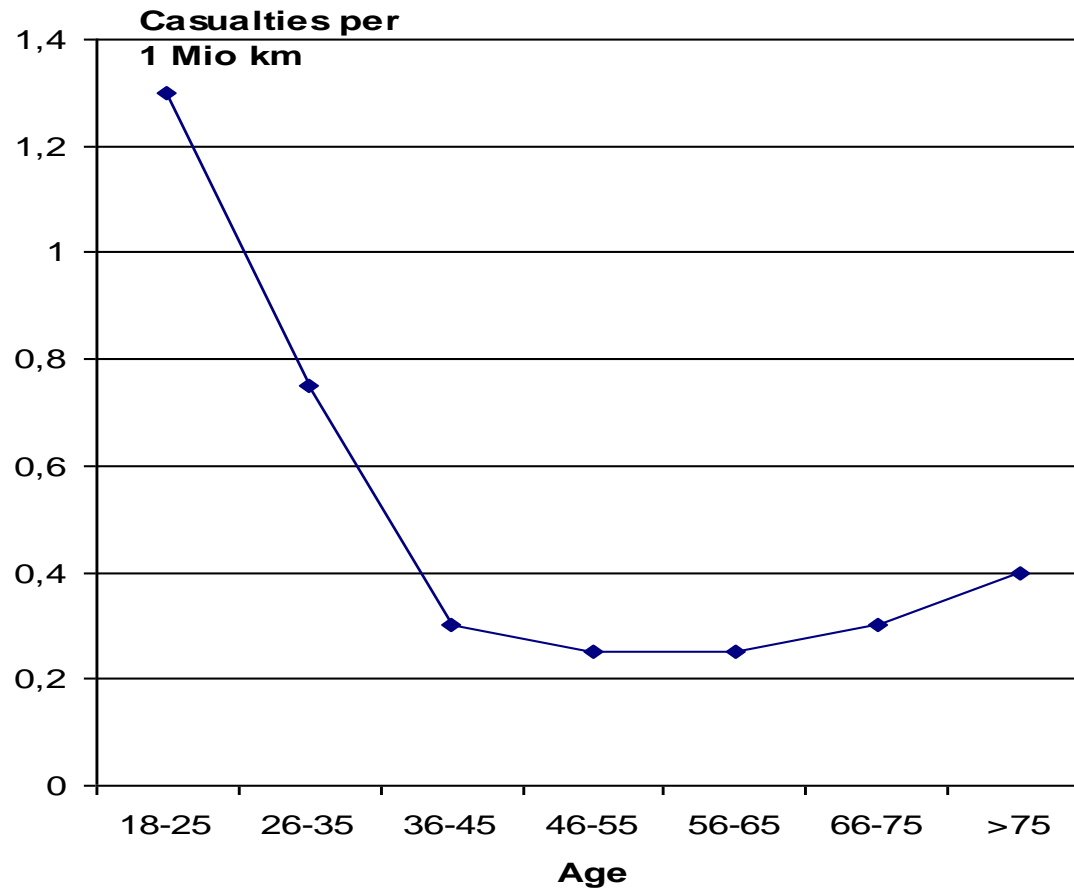
- Driving experience
- Adaptation-oriented development of personality
- Compliance to rules, e.g. velocity, alcohol

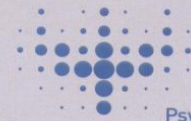
Disadvantages:

- Increase of diseases
- Decreasing psychophysical performance:
perception, sensory-motor reactions, information-processing



Accident risk of drivers - related to km travelled





Systematic biases in accident records

- **Frailty bias**

Mortality risk of older car passengers is 2-5 times higher than that of younger car passengers

Estimated number of reported cases is higher

- **Low mileage bias**

Drivers with low exposure reveal a higher accident risk – regardless of age. Older drivers are over-represented in the group of low mileage drivers

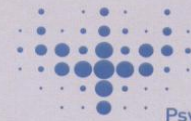
- **Context bias**

Low mileage drivers are more frequently exposed to complex situations



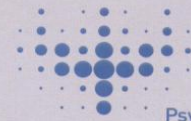
Compensatory strategies

- **Strategical level**, e.g.
 - Avoidance of trips in states of unfavorable conditions
 - Time of day, dense traffic, bad visibility and weather conditions
- **Navigation level**, e.g.
 - Choice of familiar routes and destinations
- **Guidance level**, e.g.
 - Choice of “easier” lanes
 - Avoidance of dangerous manoeuvres
- **Control level**, e.g.
 - Velocity, headways



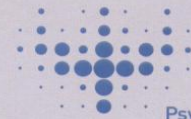
Evaluation of age-based population screenings

- Hakamies-Blomquist et al. (1996): Comp. Sweden-Finland
- Lange & McKnight (1996): Comp. between US-states
- Rock (1998): Before-After-Study Illinois (USA)
- Grabowski et al. (2004): Comp. between US-states
- Langford et al. (2004a): Comp. Melbourne – Sydney
- Langford et al. (2004b): Comp. of 6 Australian federal states
- Langford et al. (2008): Australia
- Mitchell (2008): Comparison of 7 EU-countries
- SWOV (2011): Comparison of European countries
- Siren & Meng (2012): Before-After-Study Denmark



Conclusions (1)

- An age-based population screening does not produce any safety effects
- An age-based population screening may even have negative effects on overall road safety
- Sustainable mobility is of utmost importance for health, well-being and quality of life of older people
- More important than screenings is searching for suitable alternatives to driving
- Preferable are low-threshold screenings/evaluations which are individual and due to given safety-related occasions



Conclusions (2)

- Preventive measures are necessary to reduce safety and mobility problems of older traffic participants
- Urban and regional planning processes should be adapted to the needs of older pedestrians, cyclists and car drivers
- Improvement of alternative transport modes
- Development and implementation of driver assistant systems (ADAS) with age-adapted HMI-design
- Low-threshold interventions should be connected with preventive offers of support and training measures to improve knowledge, attitudes and individual driving skills

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