# AN ETPG WHITE PAPER

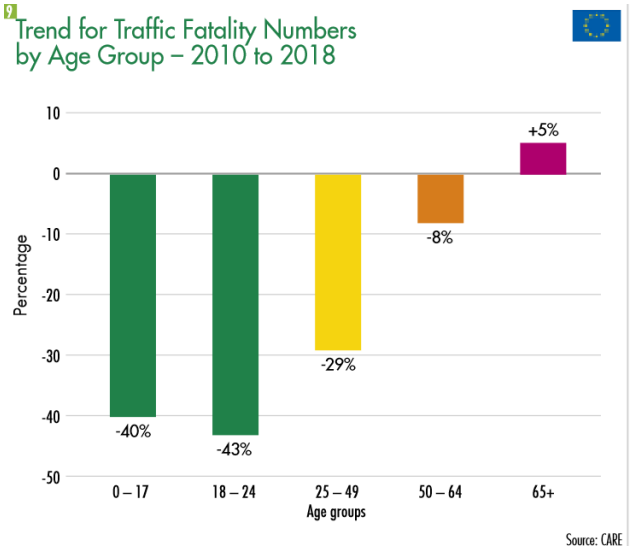
# WHAT CAN PSYCHOLOGICAL ASSESSMENTS CONTRIBUTE TO ELDERLY DRIVERS' SAFETY

This white paper was drafted for the European Test Publishers Group (ETPG) by Schuhfried GmbH

**Elderly drivers and crash risks - what do we know?**

Although the number of accidents on Austria's roads has fallen significantly by 7% in the first three quarters of the past ten years, it can be seen, that the number of senior citizens injured or killed has increased sharply by 22% in the same period. An all-time-high was recorded from January to September 2023 – in this period every seventh person involved in an accident was over the age of 65. In addition, over 65-year-olds also had more serious accidents: a quarter of seniors involved in accidents were seriously injured or killed, while this proportion was significantly lower for other age groups (Statistics Austria, 2024).

Austria is not a "special case." If you look at the EU-wide figures, an increase in fatalities among senior citizens has been clearly noticeable in recent decades. While the number of road traffic fatalities fell continuously between 2010 and 2018, there has been an increase of fatalities in the 65+ population, as the following charts shows.

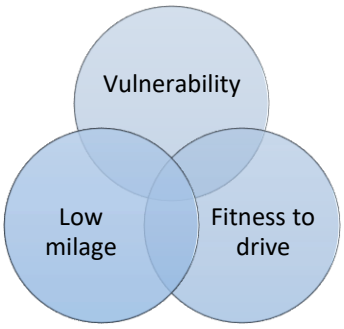


**Causes of accidents among older drivers**

18% of all accidents caused by passenger car drivers over the age of 65 were serious road traffic accidents (with more than one traffic unit involved), compared to 13% of accidents caused by car drivers in other age groups. In terms of the causes of accidents, failure to observe the priority (45%) and inattention/distraction (24%) dominated among car drivers over the age of 65, while inappropriate speeding (5%) and alcohol, drugs or medication (3%) were significantly less common than among other passenger car drivers (Statistics Austria, 2024). A further central problem for many older people is coping with complex traffic situations. Typical age-related causes of accidents are: failure to give way at junctions; wrong turns; turning or driving in and out of lanes, errors when changing lanes (Bundesanstalt für Straßenwesen, 2024).

It is a well known fact, that elderly drivers are counted as vulnerable road users since they are more likely to get seriously injured at a car crash. They form a high proportion of casualties as well as being at significantly greater risk for being involved in a car accident per kilometre travelled.

The reason for being seriously injured or killed by an accident can be attributed to three main factors:




*Vulnerability*: older road users are more likely severely injured or killed in crashes that would be less serious for younger people (Ang et al., 2017; Johannsen & Müller, 2013). Elderly drivers also show an increased likelihood of complications and fatal consequences after an accident.

*Low Mileage*: Seniors tend to drive less and to use more roads in urban areas, which results in a low mileage. Low mileage drivers have a higher risk per kilometre travelled because of lack of routine (Langford et al., 2006) and urban traffic is of higher risk compared to motorways due to the number of distractors, the traffic density, and the number of critical incidents.

*Fitness to drive:* the activity of driving a car can be regarded a very complex task that requires several cognitive and sensory functions at the same time (Sommer, Herle et al. 2008). It has to be kept in mind, age is a main risk factor for neurological diseases that impair cognitive functions, such as Alzheimer's dementia (Abbott 2011), other forms of dementia (Stephan, Sutin et al. 2018) or Parkinson's disease (Hindle 2010).

**Cognitive functions and traffic safety**

But beside the higher risk of developing neurological disease by age, Cognitive functions that are crucial for driving-relevant performance such as inhibitory control (Adrian, Moessinger et al. 2019), visual attention (Karthaus, Falkenstein 2016), fluid intelligence

(Aichele, Rabbitt et al. 2015) and reaction speed (Salvia, Petit et al. 2016) - are also in healthy older adults likely to decrease by naturally aging processes. Some literature therefore points to the need for comprehensive assessment of the fitness to drive of older adults (Anderson, Aksan et al. 2012).

These requirements mentioned above can be mapped well using psychological assessments. Psychological test procedures in the field of traffic psychology are designed in such a way that they can reliably assess the skills associated with these requirements, such as attention functions, gaining an overview, task switching or information processing speed. Considering the importance of these psychological functions, it can be seen as a failure that previous testing of older drivers has focused mainly on medical aspects and the relevant psychological dimensions have not been sufficiently taken into account.

**What can psychological assessment contribute to elderly drivers' safety?**

Psychological testing of older people should not automatically be perceived as a selection process. Rather, it should be seen as an instrument to support the maintenance of mobility.

By measuring various relevant dimensions, an actual status of the person can be determined. Based on this, suitable measures can be taken to maintain or restore fitness to drive. This is particularly important as maintaining mobility is closely linked to maintaining independence and mental well-being, especially in older people.

However, in order to be able to apply suitable measures to maintain mobility, a careful assessment of possible deficits is essential. For this reason, the processes used must also meet certain requirements. In addition to the obvious requirements of sufficient objectivity, reliability and validity, sufficient standardization and usability for older people are also required.

If these conditions are sufficiently met, psychological assessments can be seen as an important piece of the puzzle in the catalogue of measures to increase the road safety of older people.

The OECD issued 8 recommendations for research and development already back in 2001, with one point relating specifically to the further development of psychological assessment for elderly drivers. Following this idea we postulate the following action points to enhance elderly drivers' safety:

- Government funding for research and development in this specific area
- Realization of a reliable psychological assessment as part of an overall safety-package for senior drivers
- Regular evaluation of effectiveness of the measurements in cooperation with test publishers

**References**

Abbott, A. (2011): Dementia: A problem for our age. Nature, 475, S2–S4 https://doi.org/10.1038/475S2a

Adrian, J.; Moessinger, M.; Charles, A.; Postal, V. (2019): Exploring the contribution of executive functions to on-road driving performance during aging: A latent variable analysis. Accident Analysis & Prevention, 127, 96–109. https://doi.org/ 10.1016/j.aap.2019.02.010

Aichele, S., Rabbitt, P., & Ghisletta, P. (2015). Life span decrements in fluid intelligence and processing speed predict mortality risk. Psychology and Aging, 30(3), 598–612. https://doi.org/10.1037/pag0000035

Anderson, S.W.; Aksan, N.; Dawson, J.D.; Uc, E.Y.; Johnson, A.M.; Rizzo, M. (2012): Neuropsychological assessment of driving safety risk in older adults with and without neurologic disease. Journal of Clinical and Experimental Neuropsychology, 34, 9, 895–905. https://doi.org/ 10.1080/13803395.2011.630654

Ang, B. H., Chen, W. S., & Lee, S. W. H. (2017). Global burden of road traffic accidents in older adults: A systematic review and meta-regression analysis. Archives of Gerontology and Geriatrics, 72, 32–38. https://doi.org/10.1016/j.archger.2017.05.004

Bundesanstalt für Straßenwesen, (2024). Älterer Verkehrsteilnehmer. BASt - Fachthemen – Verhalten und Sicherheit - Ältere Verkehrsteilnehmer retrived 24.06.2024

DEKRA (2021). Road Safety Report. Old-Age Mobility dekra-evs-report-2021-en-0629.pdf (e-spirit.cloud). Retrived 14.06.2024

Hindle, J. V (2010): Ageing, neurodegeneration and Parkinson's disease. Age and Ageing, 39, 2, 156–161. https://doi.org/ 10.1093/ageing/afp223

Johannsen, H., & Müller, G. (2013). Accident and injury risks of elderly car occupants. Enhanced Safety of Vehicles (ESV), 1–10.

Karthaus, M.; Falkenstein, M. (2016): Functional changes and driving performance in older drivers: Assessment and interventions. Geriatrics, 1, 2, 12. https://doi.org/ 10.3390/geriatrics1020012

Langford, J., Methorst, R., & Hakamies-Blomqvist, L. (2006). Older drivers do not have a high crash risk - A replication of low mileage bias. Accident Analysis and Prevention, 38(3), 574–578. https://doi.org/ 10.1016/j.aap.2005.12.002

OECD (2001). Aging and Transport. Mobility needs and safety issues. Ageing and Transport - Mobility needs and safety issues (ssatp.org) retrieved 13.06.2024

Salvia, E.; Petit, C.; Champely, S.; Chomette, R.; Di Rienzo, F.; Collet, C. (2016): Effects of age and task load on drivers' response accuracy and reaction time when responding to traffic lights. Frontiers in Aging Neuroscience, 8

Sommer, M.; Herle, M.; Häusler, J.; Risser, R.; Schützhofer, B.; Chaloupka, C. (2008): Cognitive and personality determinants of fitness to drive. Transportation Research Part F: Traffic Psychology and Behaviour, 11, 5, 362–375. https://doi.org/10.1016/j.trf.2008.03.001

Statistics Austria. (2024). New record number of senior casualties in road traffic accidents. [Press release 13 256-022/249].

Stephan, Y.; Sutin, A.R.; Luchetti, M.; Terracciano, A. (2018): Subjective age and risk of incident dementia: Evidence from the National Health and Aging Trends survey. Journal of Psychiatric Research, 100, 1–4. https://doi.org/10.1016/j.jpsychires.2018.02.008

## ABOUT THE ETPG

The European Test Publishers Group (ETPG) is a group of psychological test publishers, all based in Europe. It was formed in 1991 to: *'help create an intellectual and commercial environment which values scientific measurement in psychological testing. It supports its members and works with test customers, users, developers, researchers, academics, and policy makers to achieve this.'*

ETPG's annual conference focuses on new developments in psychological testing, looking at ways our industry can meet changing needs. Our white papers on key testing topics contribute to scientific and professional conferences as well as relevant policy proposals. We welcome discussions on ideas will improve testing's impact on European society.

ETPG works with other associations (the European Federation of Psychological Associations [EFPA], the International Test Commission [ITC], the Association of Test Publishers [ATP] among others) to continually improve testing practices. Its annual conference is a major forum to discuss new test developments and the needs of European test users. ETPG gathers together individuals and companies with huge experience and knowledge in all aspects of psychological testing.

The ETPG's mission is to improve European Testing by:

- raising standards in test design and use;
- progressing creative developments in testing;
- promoting professional use of tests internationally;
- developing fair systems of copyright protection to the benefit of all parties;
- increasing and promoting the benefits of applied psychology to European citizens;
- developing links with test industries outside Europe to raise overall standards.

The group's values focus on:

- Innovating
- Social Engagement
- Being evidence-based
- Using scientific methods to develop products and services.
- Being open and transparent
- Adhering to professional standards