DIFFERENT DRIVERS & VEHICLES. SAFETY FOR ALL

THE ADAPTATION OF CONCEPTS FROM NOVICE DRIVER ASSESSMENT TO OTHER DRIVER POPULATIONS

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AGENDA
1. Background: Road safety of elderly drivers
2. Concept: On-road feedback drive
3. Results from a pilot study
4. Conclusions

- Elderly drivers are less involved in road crashes than younger age groups in absolute terms (Ichikawa, Nakahara, & Taniguchi, 2015; Statistisches Bundesamt, 2017; Uhr et al., 2016)
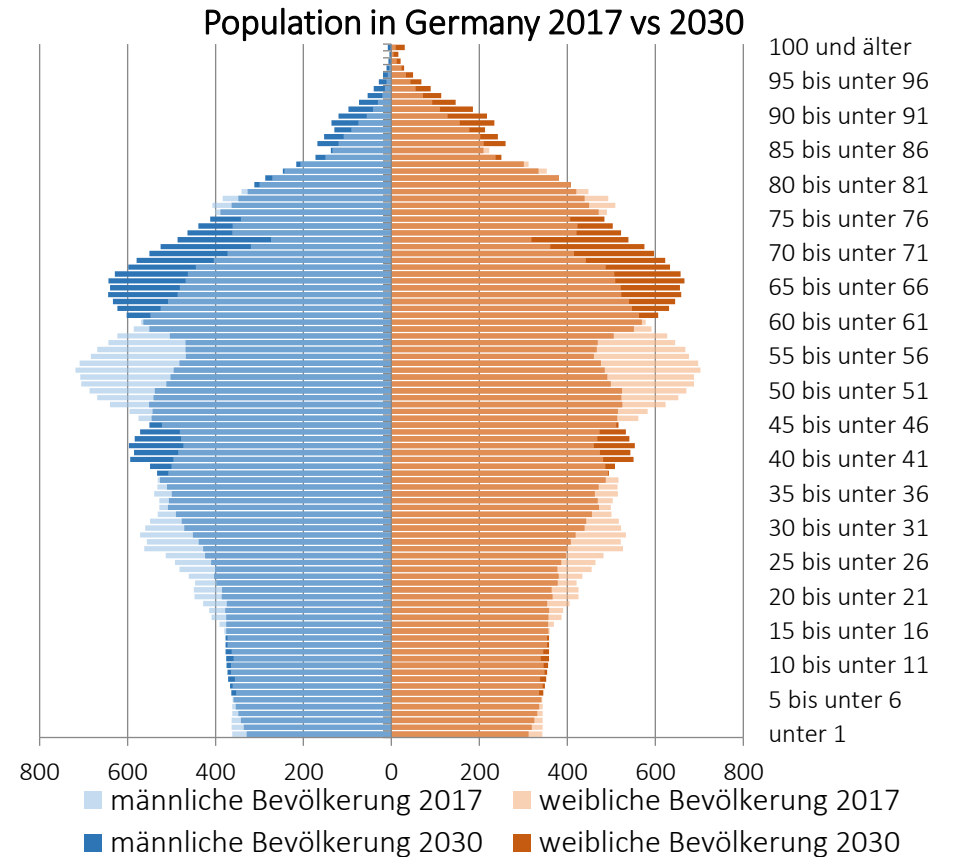
BUT:

- For crashes involving older drivers (≥ 75 years): in 75 % of crashes the elderly driver is at fault (Statistisches Bundesamt, 2017)

- Related to mileage / exposure: elderly drivers belong to high risk groups for road crashes (in addition to novice/young drivers), (e.g. Schade, 2008, Schlag, 2008)
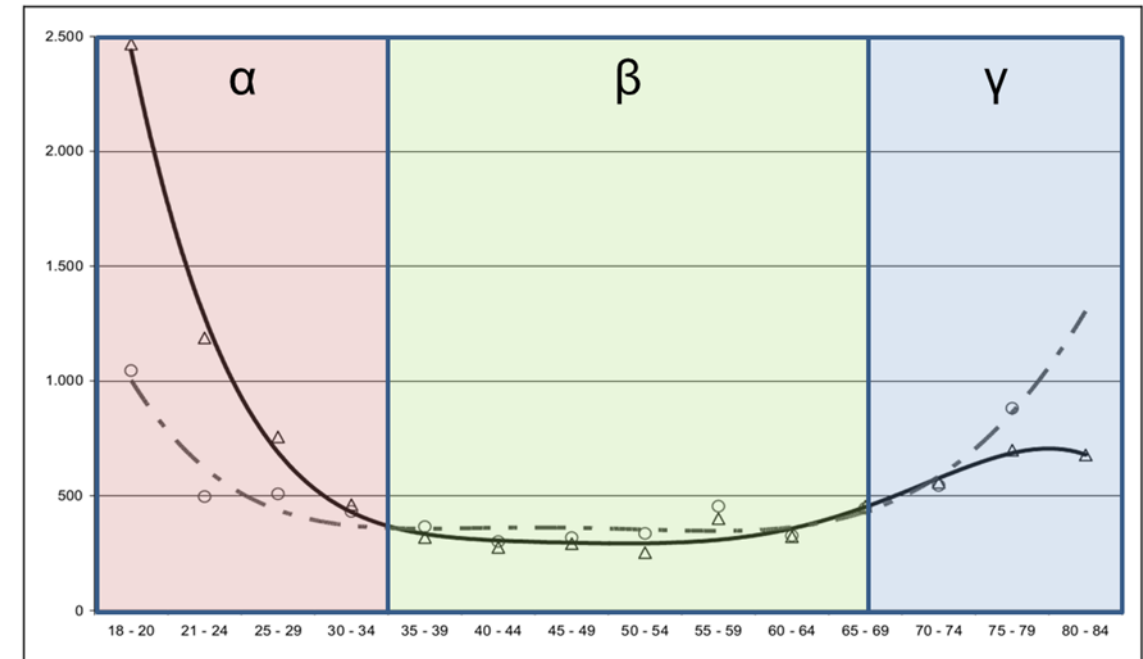
Registered car crashes per 1 billion person-kilometers (Schade, 2008)

- Given the demographic development and behavioural changes in mobility : safety issue is projected to increase further

- In Germany: no compulsory examination / test /check of fitness to drive for elderly drivers

- Several voluntary measures:
  - Vision test, psychometric tests,
  - Awareness raising and training programms
  - On-road drive with qualified feedback

Population in Germany 2017 vs 2030

100 und älter	
95 bis unter 96	
90 bis unter 91	
85 bis unter 86	
80 bis unter 81	
75 bis unter 76	
70 bis unter 71	
65 bis unter 66	
60 bis unter 61	
55 bis unter 56	
50 bis unter 51	
45 bis unter 46	
40 bis unter 41	
35 bis unter 36	
30 bis unter 31	
25 bis unter 26	
20 bis unter 21	
15 bis unter 16	
10 bis unter 11	
5 bis unter 6	
unter 1	

800 600 400 200 0 200 400 600 800

männliche Bevölkerung 2017   weibliche Bevölkerung 2017
männliche Bevölkerung 2030   weibliche Bevölkerung 2030

- What does it mean?
    - Standardised behavioural observation while driving under real circumstances
    - Observation of driving behaviour by experts with proven expertise
    - Detailed feedback about driving performance on related (sub-)competencies / specific traffic situations

- Why should it work?

    - Strengthen the motivation of self-regulation

    - Better insight / estimations into own skills by detailed feedback

    - Provide entry points for further recommendations (e.g. training, ADAS, medical checks, alternative means of transport)

Can we use / adapt methods from the driving licensing process to the concept of on-road feedback drive for elderly drivers?

- Excursion: Changes in the Pratical Driving Test in Germany 2021 - (Introduction "driving task catalogue")

- System of standardised observation categories for driving tests

- Digital tool for examiners to support the observation, assessment and feedback

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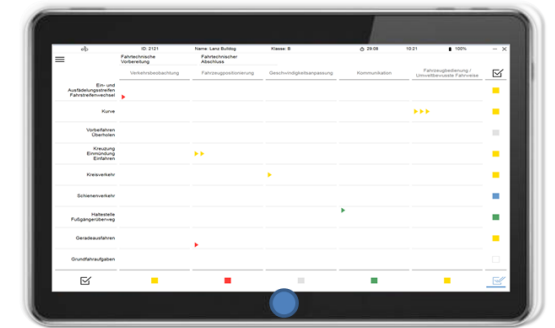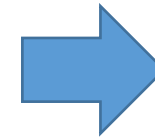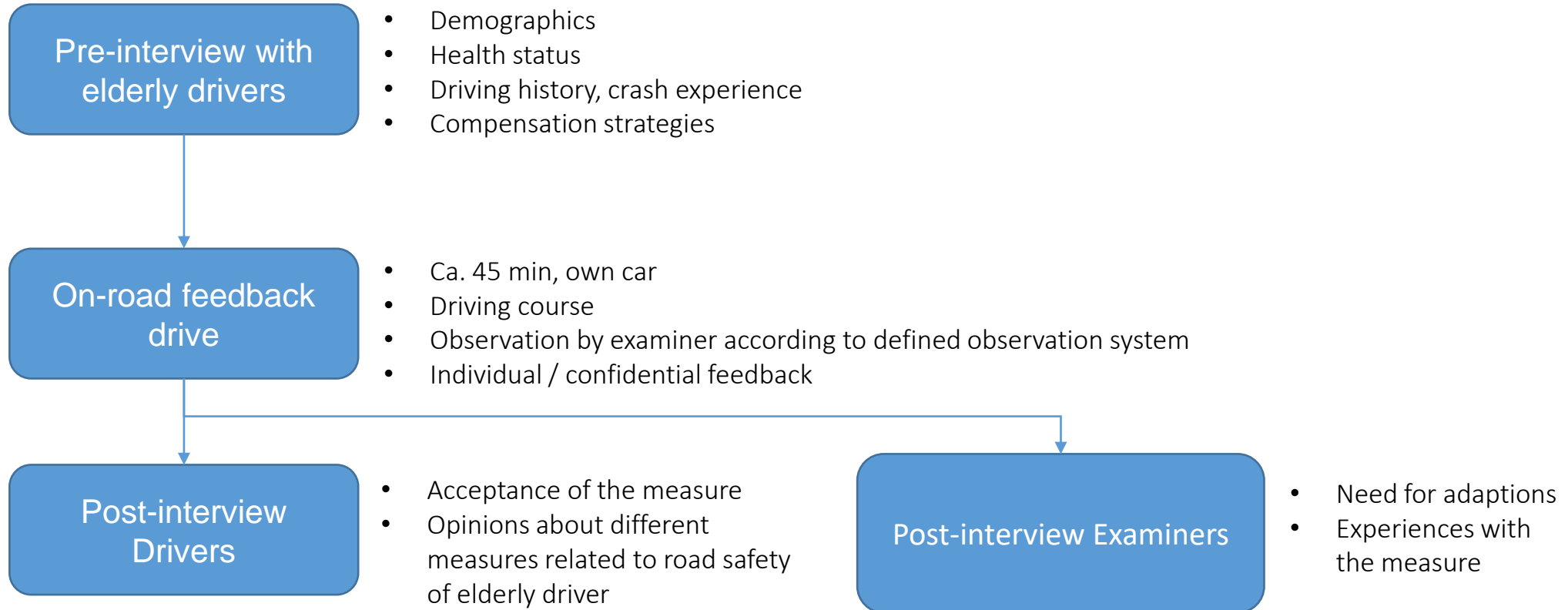- Digital tool for examiners to support the observation, assessment and feedback

Can we use / adapt methods from the driving licensing process to the concept of on-road feedback drive for elderly drivers?

Are we able to identify typical driving failures of elderly drivers?

What aspects has to be adapted according to the needs of this population?

How high is the degree of acceptance of this measure among the target group?

Pilot Study: Elderly drivers as target group

Pre-interview with elderly drivers

- Demographics
- Health status
- Driving history, crash experience
- Compensation strategies

On-road feedback drive

- Ca. 45 min, own car
- Driving course
- Observation by examiner according to defined observation system
- Individual / confidential feedback

Post-interview Drivers

- Acceptance of the measure
- Opinions about different measures related to road safety of elderly driver

Post-interview Examiners

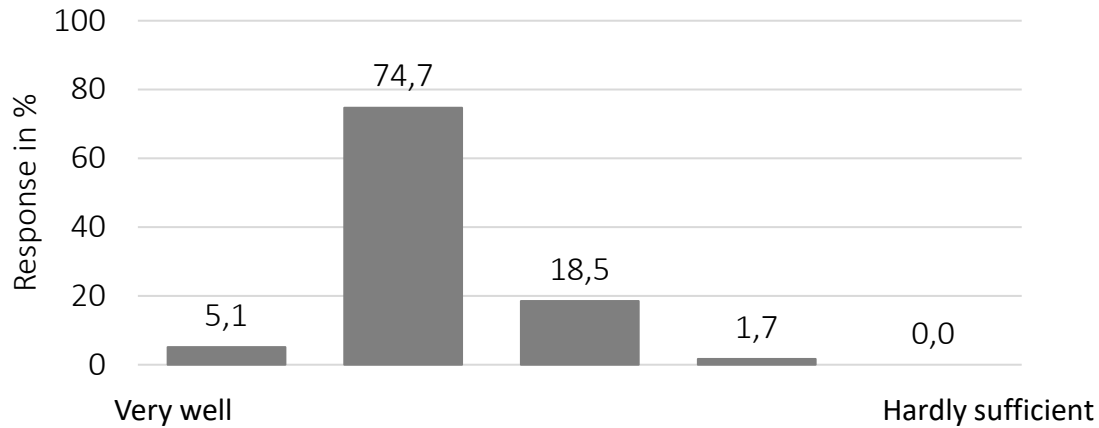- Need for adaptions
- Experiences with the measure

Sample:

- N = 188 (178) driver

- Age: M = 71.6 years (SD = 5.5), min = 65 years ; max = 89 years

- 26 % female; 74 % male

- Mean mileage: 8,948.9 km / year

Self-estimation vs. Expert estimate of driving competence

How do you generally assess the state of your driving skills (driving competence)?

How do you rate the level of your skills compared to others in your age group?
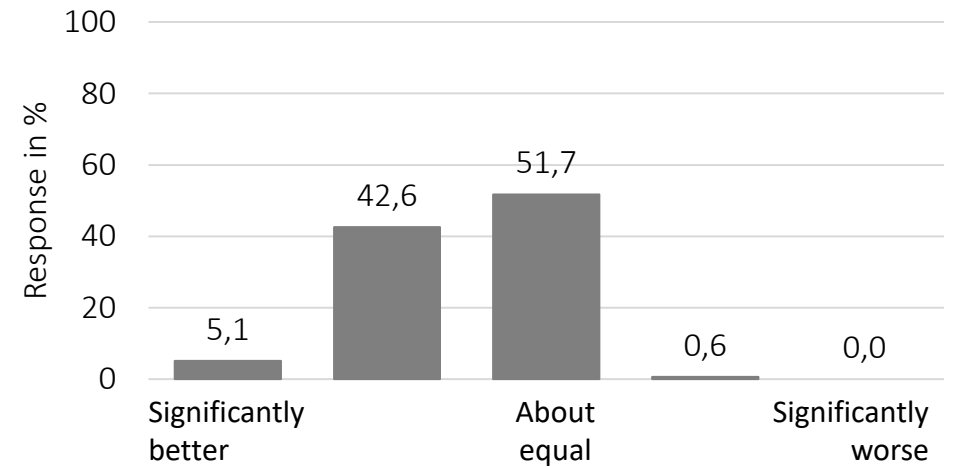
		Self-estimation					
		Very well	Well	moderately	sufficient	Hardly sufficient	Total
Expert	safe	9	124	32	1	0	166
estimate	unsafe	0	8	0	2	0	10
	Gesamt	9	132	32	3	0	176

- Identified problems while driving

Driving Tasks (Manouveres): dangerous situations →

- Lane Changing (48 %),
- Left turn manouveres (30 %)
- Crossing intersections in general

(Sub-)Competencies:

Serious mistakes:

- Traffic Observation & Visual Scanning (37 %)
- Speed adaptation (37 %)

While crossing intersection with „right-before-left" Rule

Dangerous situations:
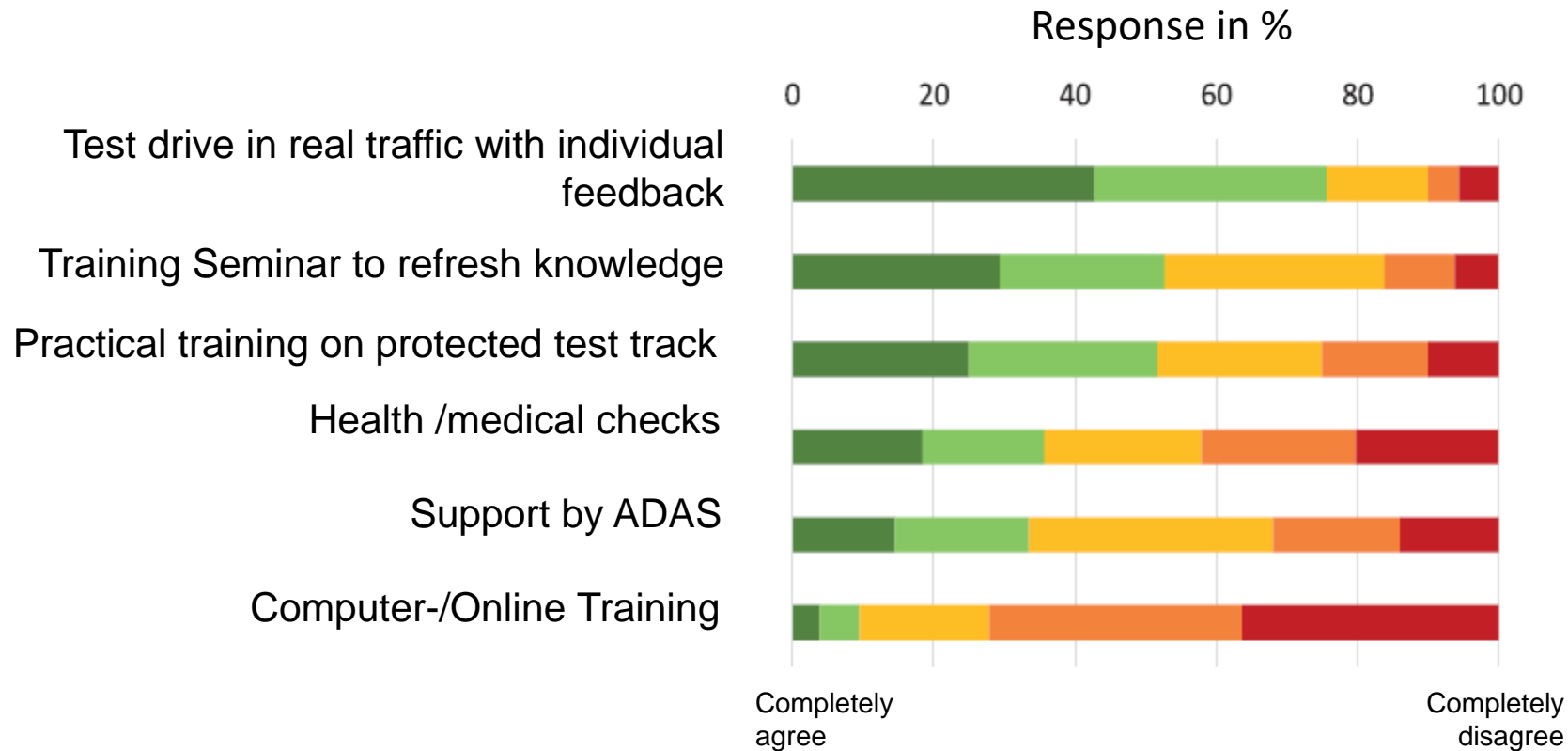
- Traffic Observation & Visual Scanning (44%) → While lane changing
- Car positioning (30%) → While crossing intersections

Pilot Study: Selected Results

- Acceptance of measures:

Response in %

Test drive in real traffic with individual feedback

Training Seminar to refresh knowledge

Practical training on protected test track

Health /medical checks

Support by ADAS

Computer-/Online Training

Completely agree — Completely disagree

- More than 90 % of the participants stated that they would participate in a feedback drive again

- About 66 %: would now drive more attentively and had recognised their own points of vulnerability

Conclusions

- Most participants drove safely and reliably. → calendrical age isn't a good predictor for unsafe driving performance, great variance

- Problems occurred mainly in complex traffic situations (with high demands on traffic observation/scanning skills) especially at junctions and when changing lanes.
  - In line with the literatur (e.g. Kennter-Mabiala et al., 2016)
  - Observation scheme (from the novice driver assessment) is sensitive for typical problems in driving of elderly

- Adaptions:
  - Very strict rule compliance (distances to curbside, minimal speed deviations) less important
  - (Switch: Focus from rule compliance to handling of complexity)
  - Feedback: not an examination with decision passed/missed → confidential and individual feedback about observed competence level referring to specific driving tasks

- High degree of acceptance

CAVEATS: Bias by Self-selection (voluntary sample)