



# Validation and Impact Assessment: Detailed Approach and Results

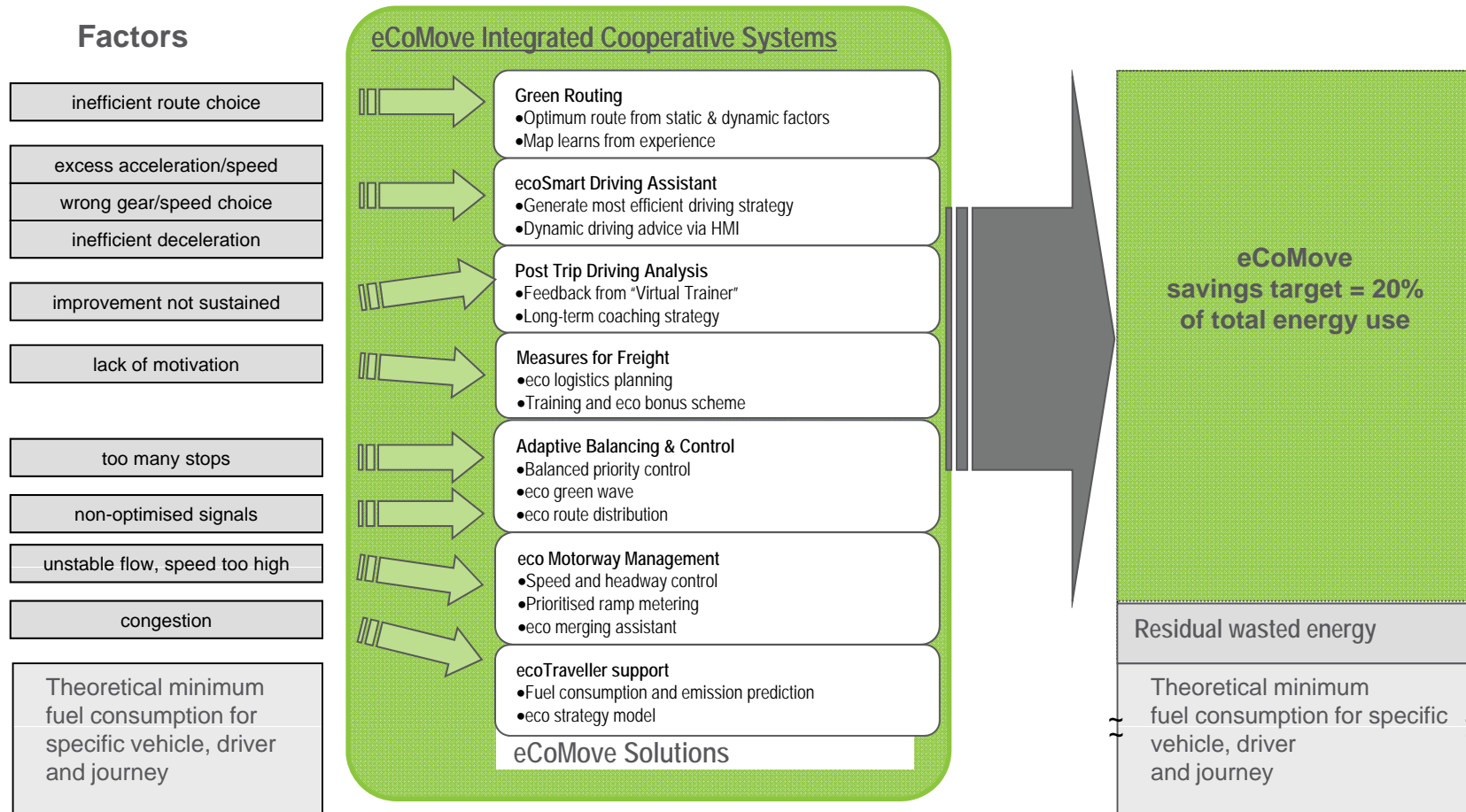
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# Integrated approach for “Green Mobility”

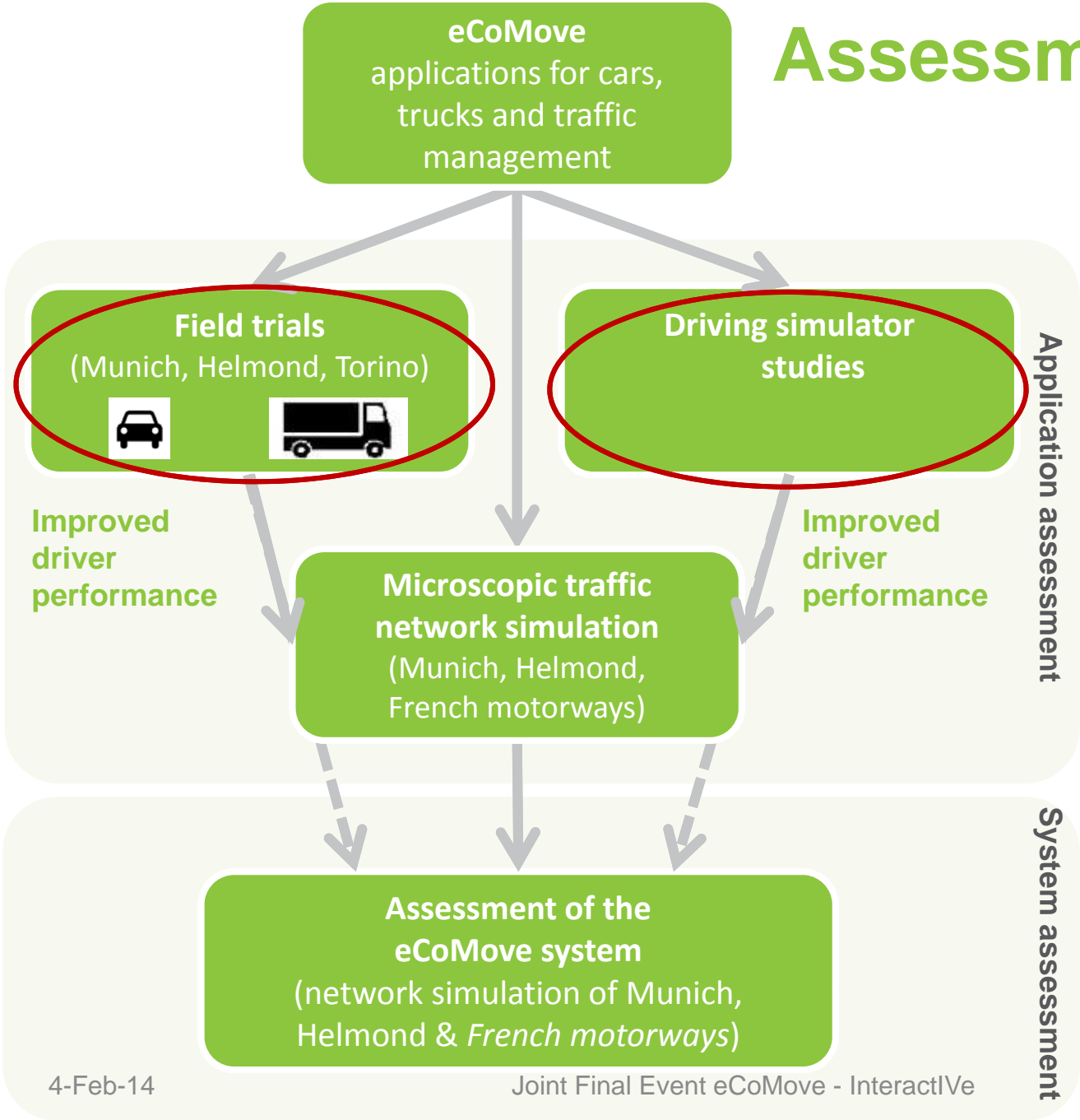


Situation today

The future



# Assessment concept



# eCoMove test sites

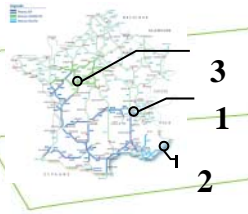
5 test sites with

- Different traffic conditions
- Different situations
- Different scenarios and possibilities to cover eCoMove use cases

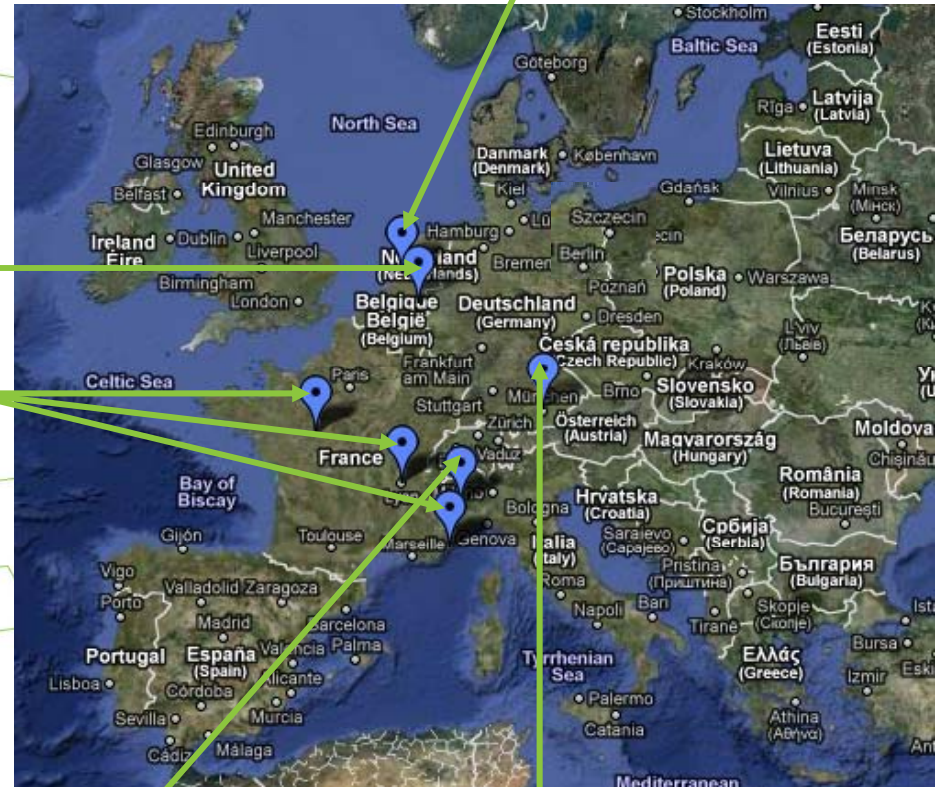


Motorway A9  
Badhoevedorp

French  
Motorways



Helmond



Torino



Munich



# Driving simulator studies

- Implementing and testing eCoMove applications in a controlled environment
- Five studies planned to cover different research questions (DLR, TUM, TECNALIA, TNO, VOLVO)
- Testing different feedback and training strategies to improve driver performance:
  - Gear changes, acceleration & deceleration, HMI design, distraction



Environment

Mobility

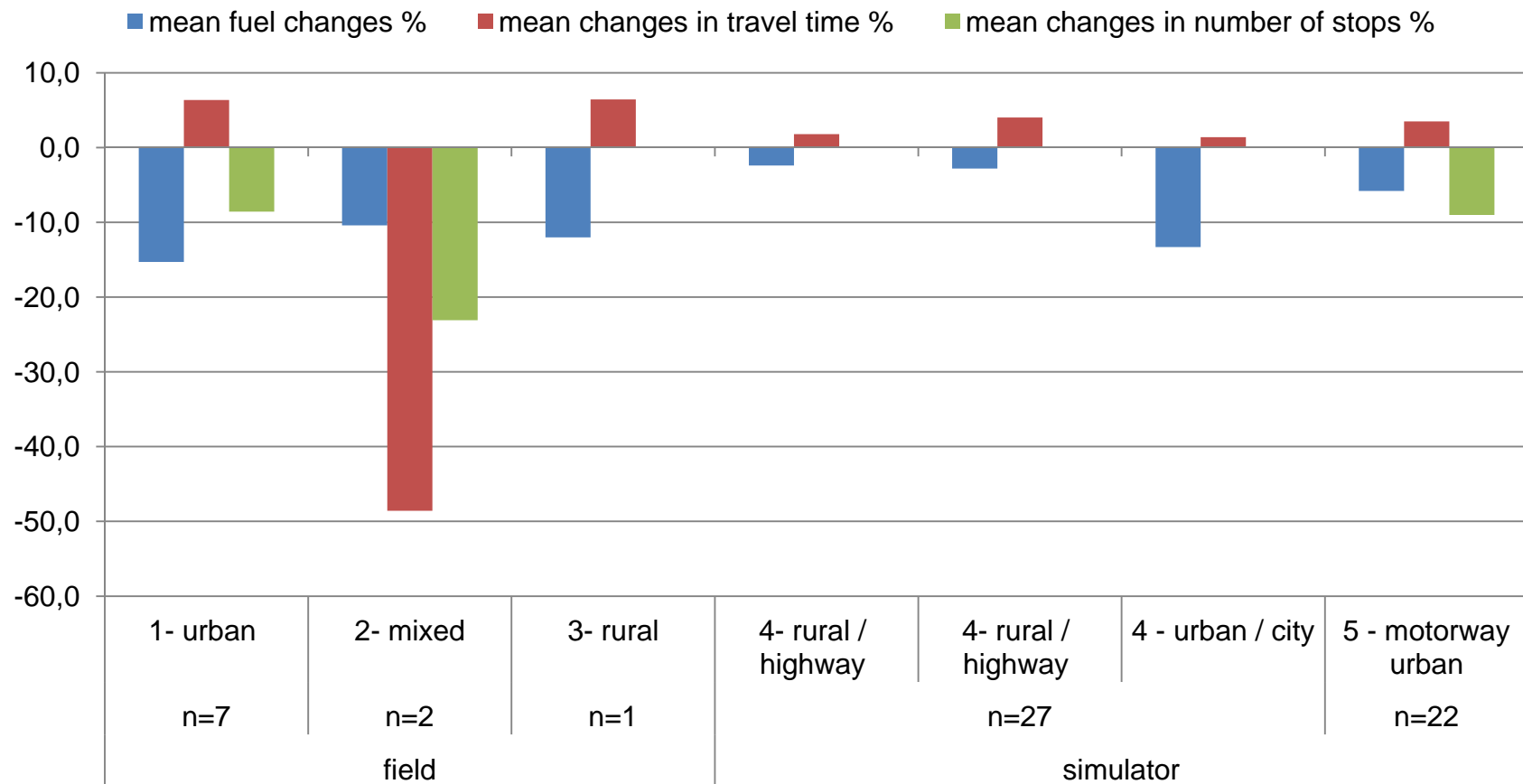
Safety

Compliance

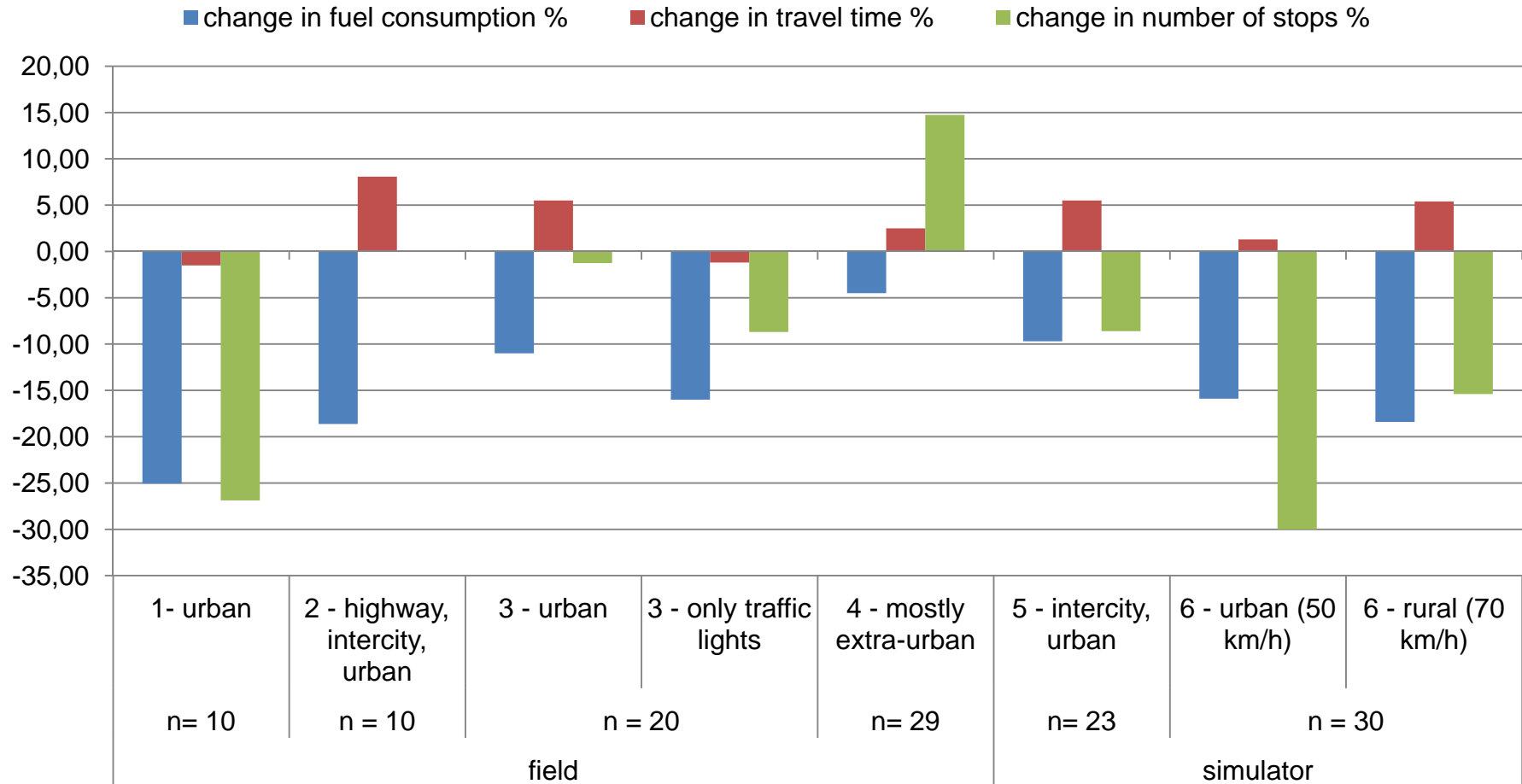
Driver  
performance

User acceptance

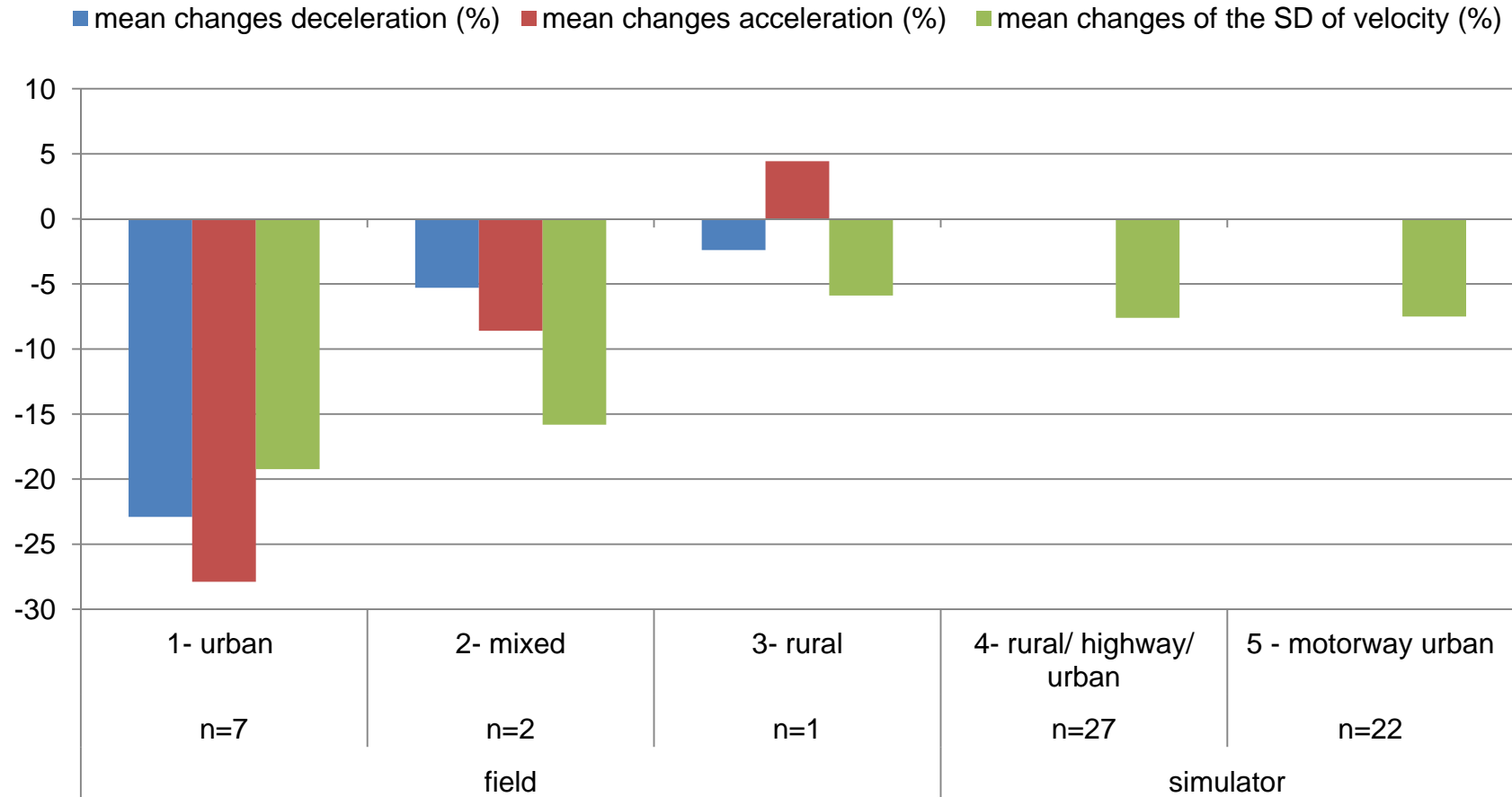
# Trucks – fuel reduction, travel time & number of stops



# Cars – fuel reduction, travel times, and number of stops

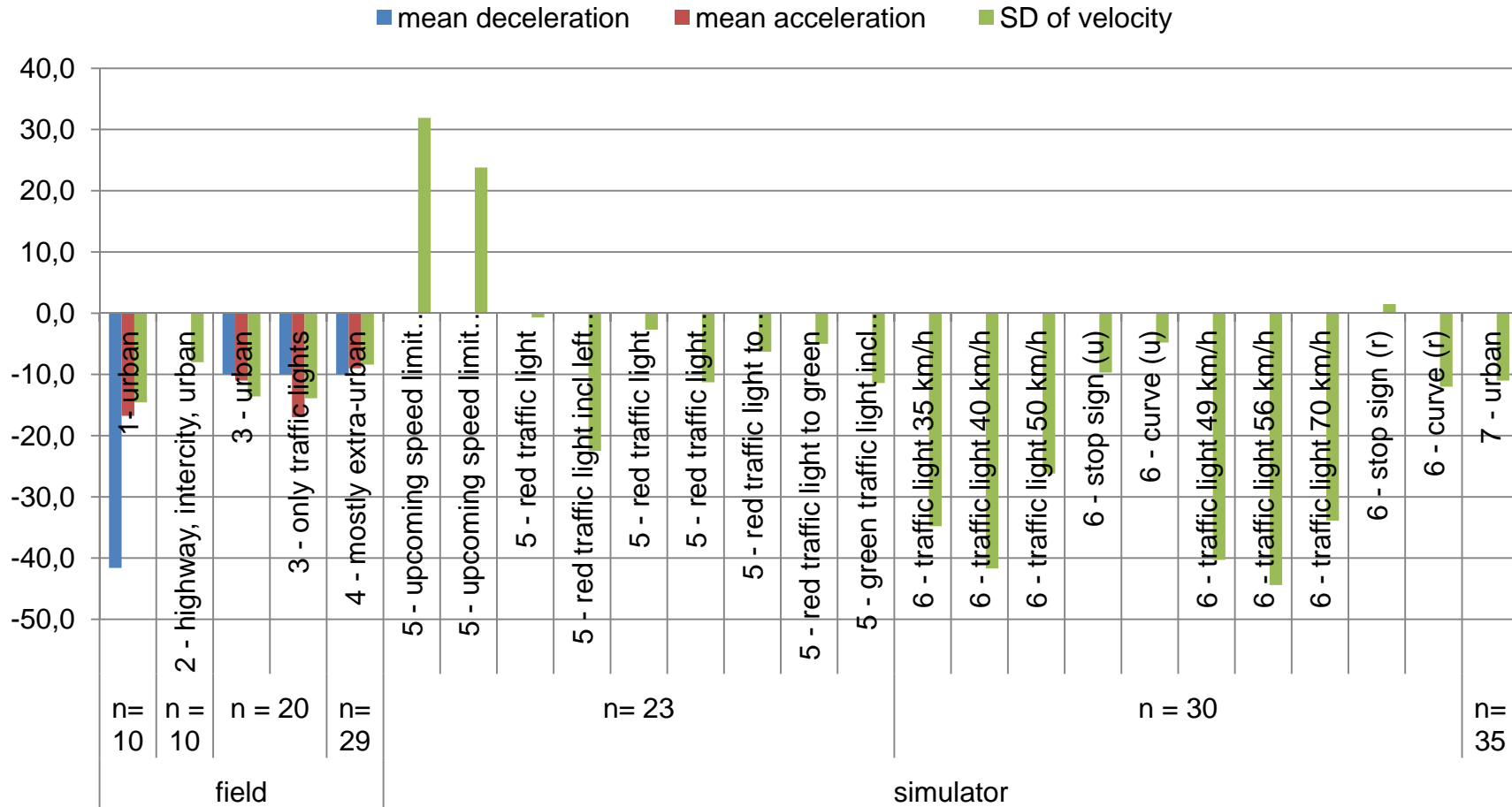


# Trucks – Driving Performance

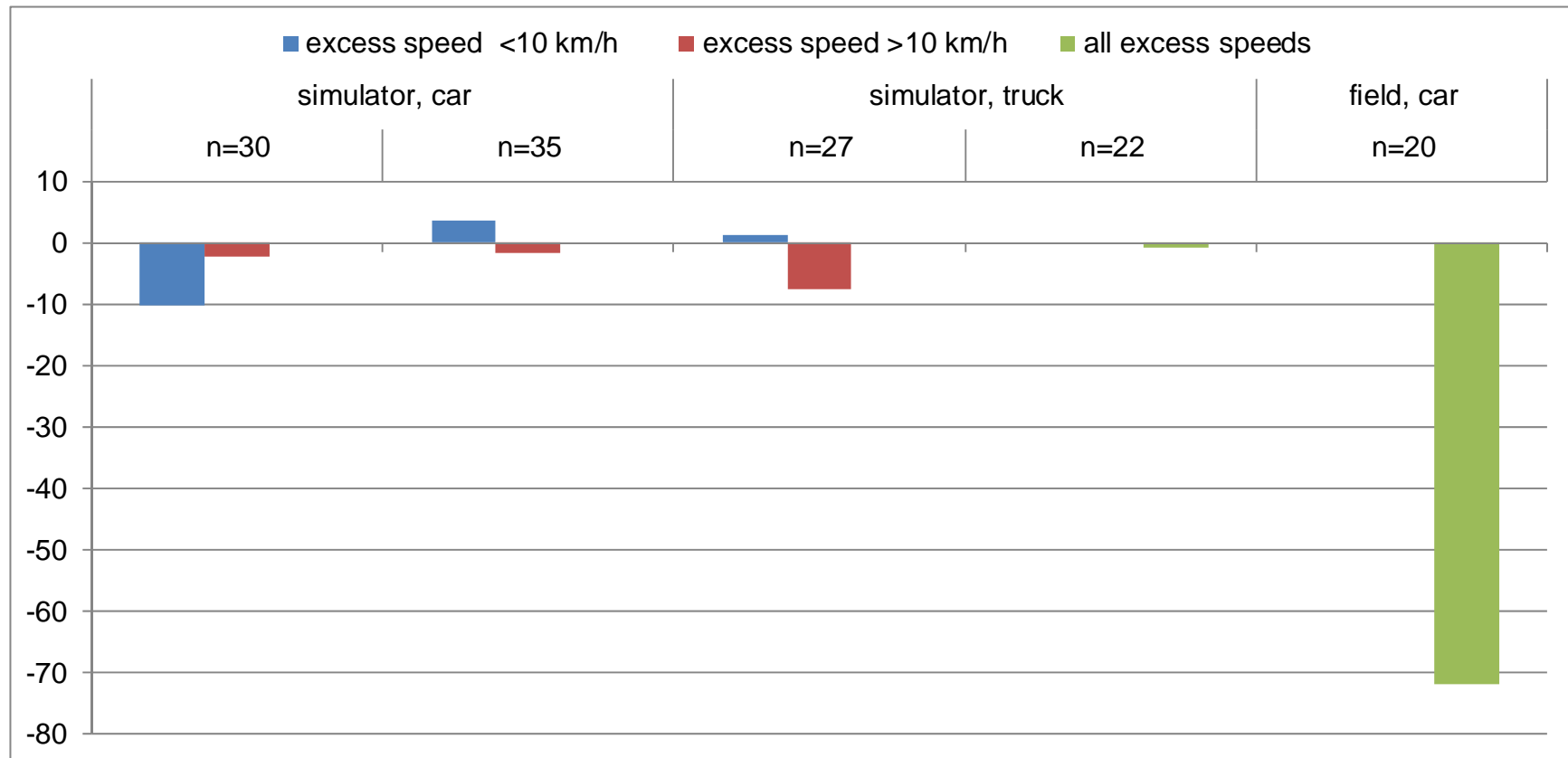




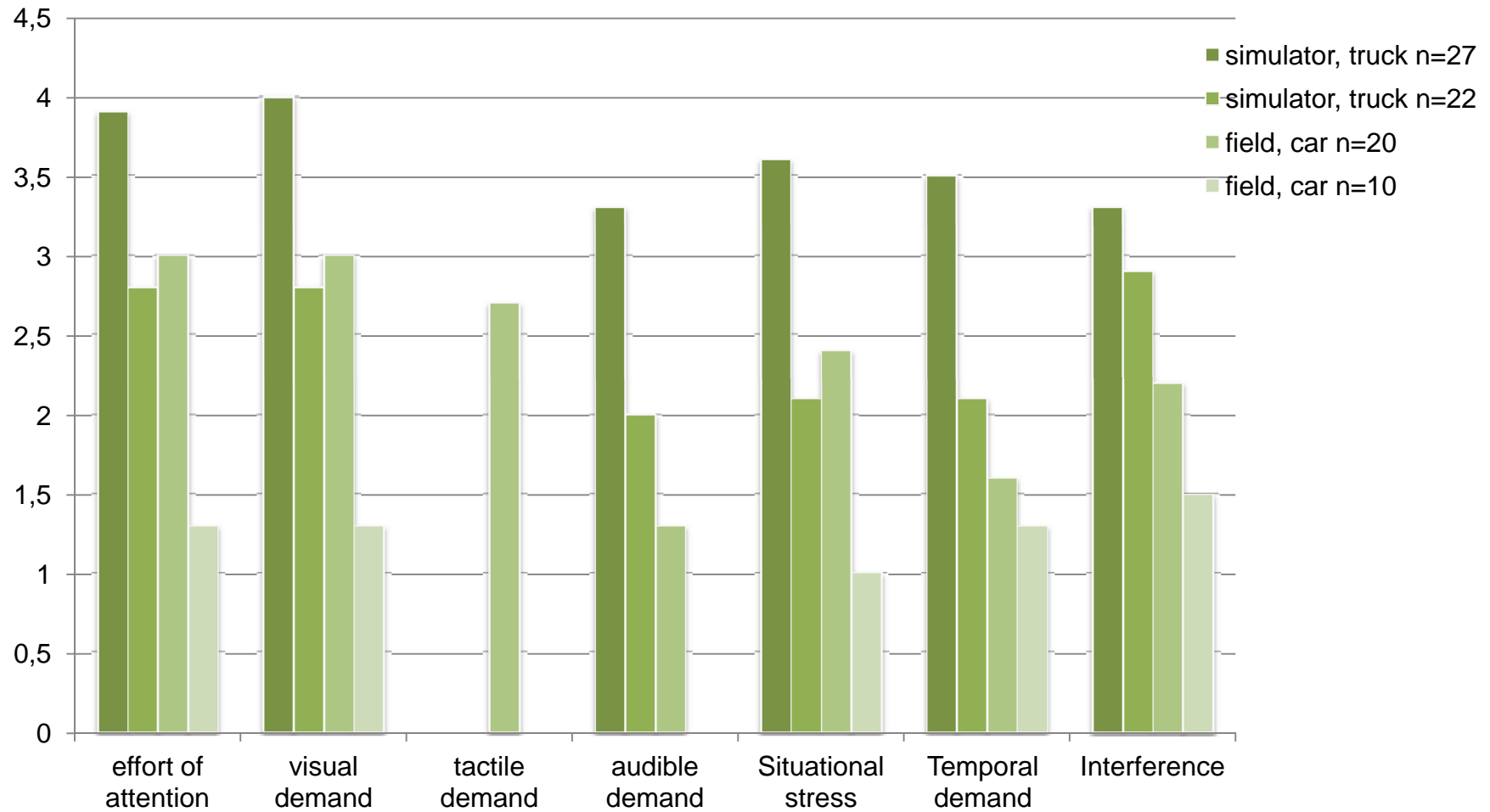
# Cars – Driving Performance, percental changes



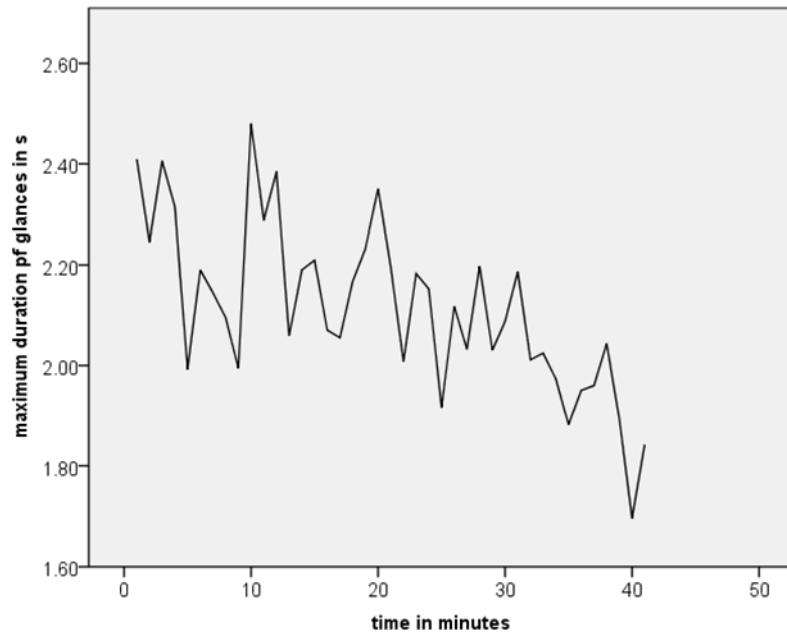
# Safety – change of time driven above the speed limit with cooperative systems (%)



# Safety - results of the DALI questionnaire

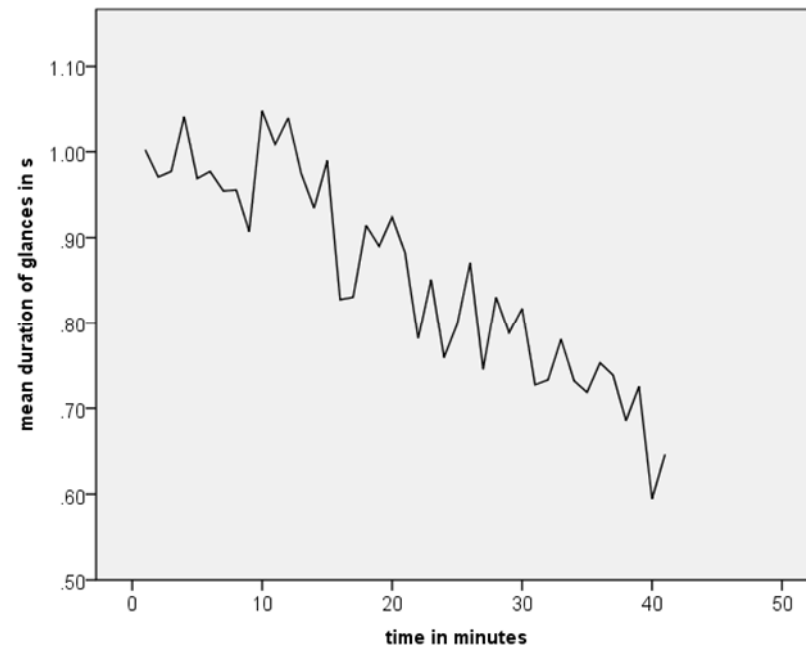


# Safety – gaze analysis

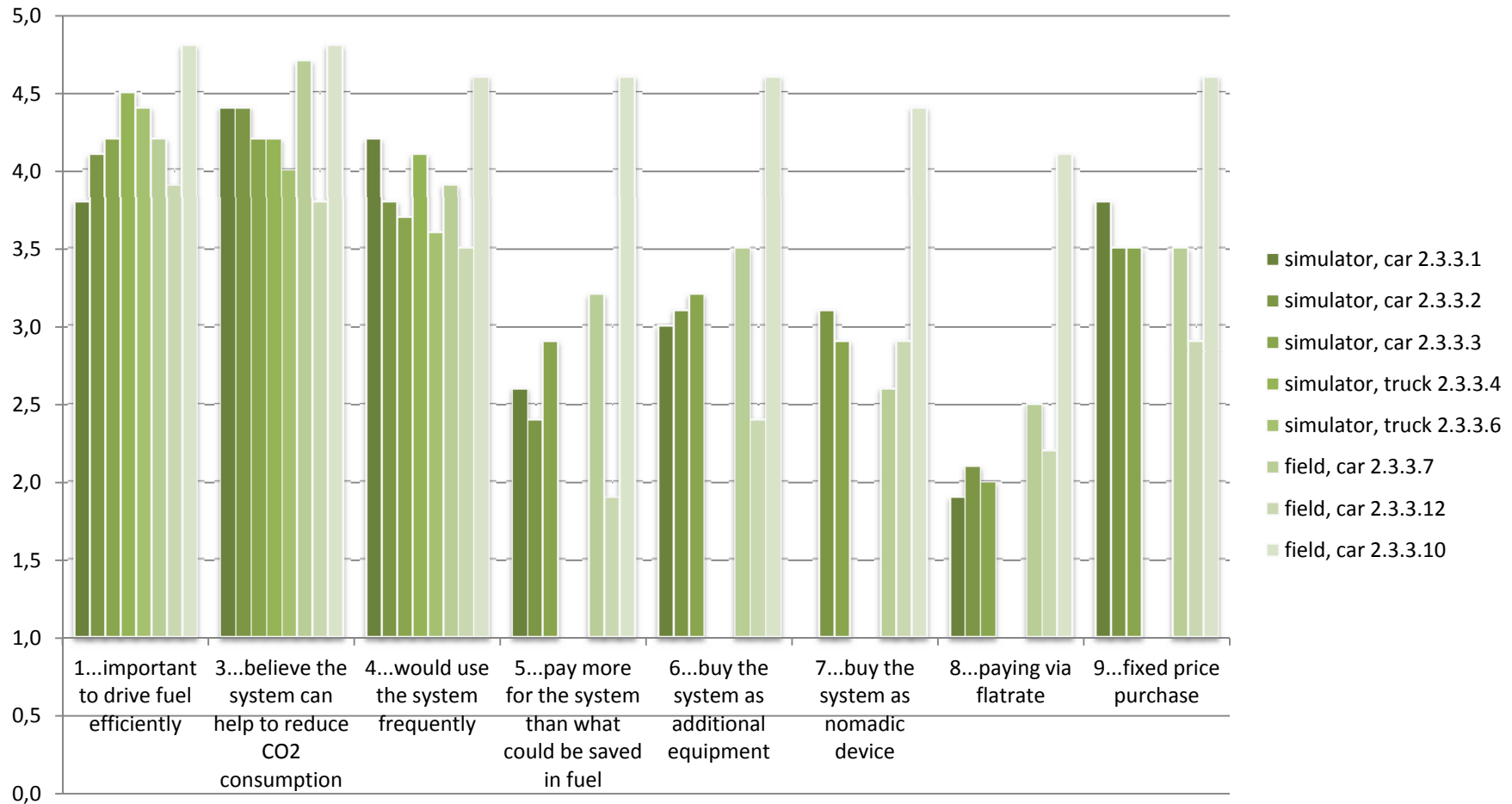


- Significant negative correlation between the mean ( $r=-0.914^{**}$ ) and the maximum ( $r=-0.688^{**}$ ) gaze duration and the duration of the trial

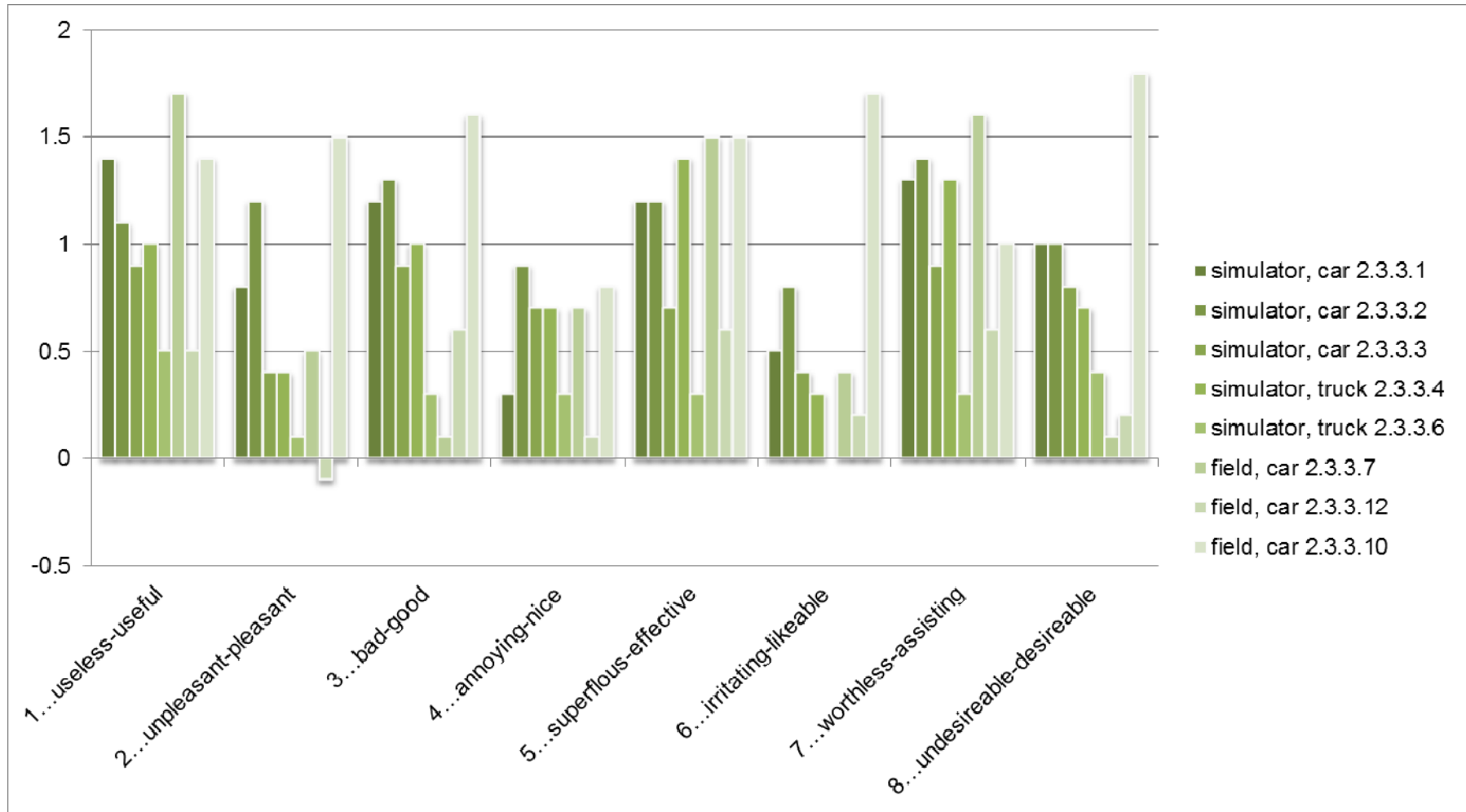
- Maximum gaze duration above 2 seconds for almost all participants



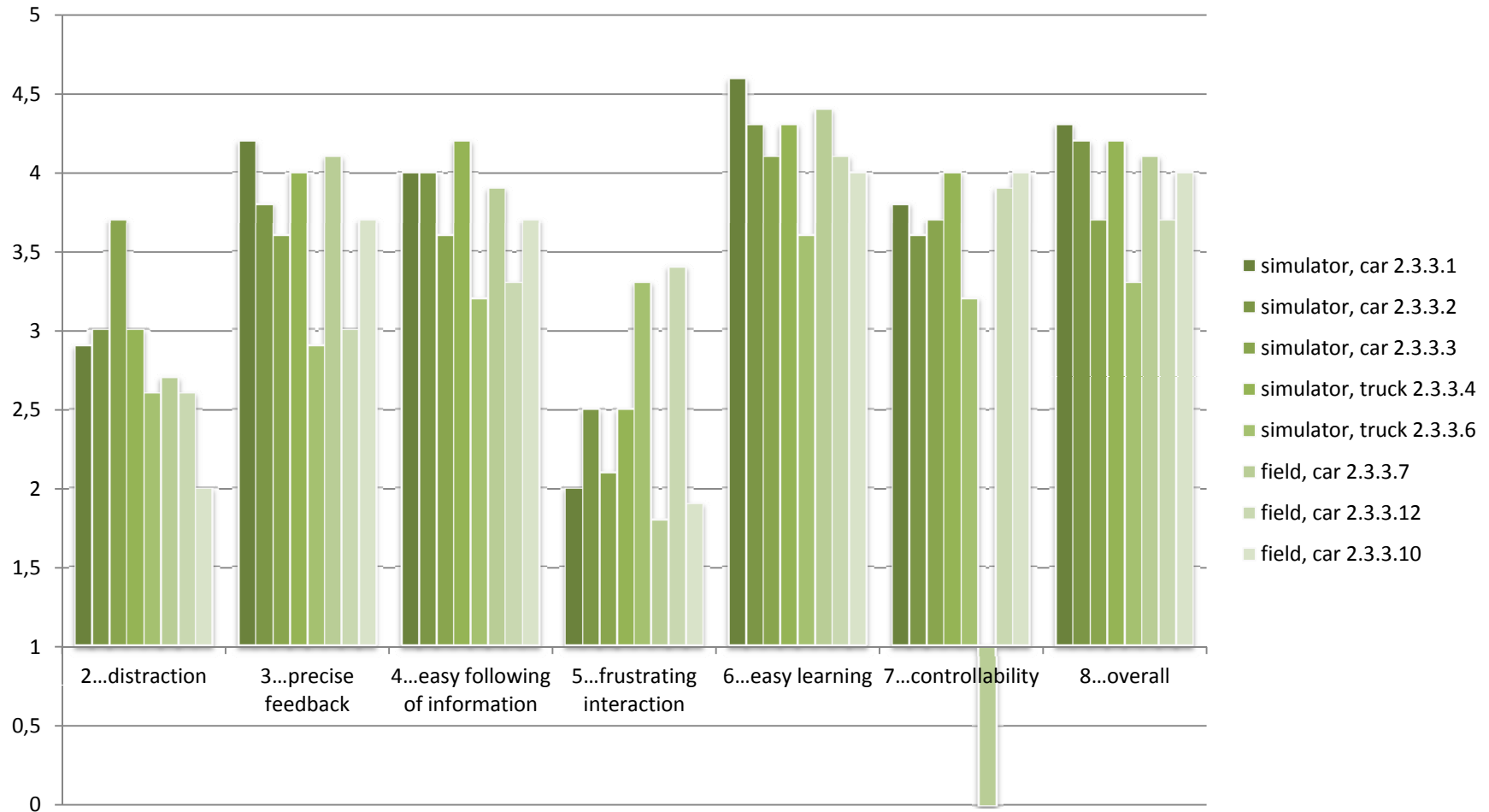
# Acceptance – Use of the System



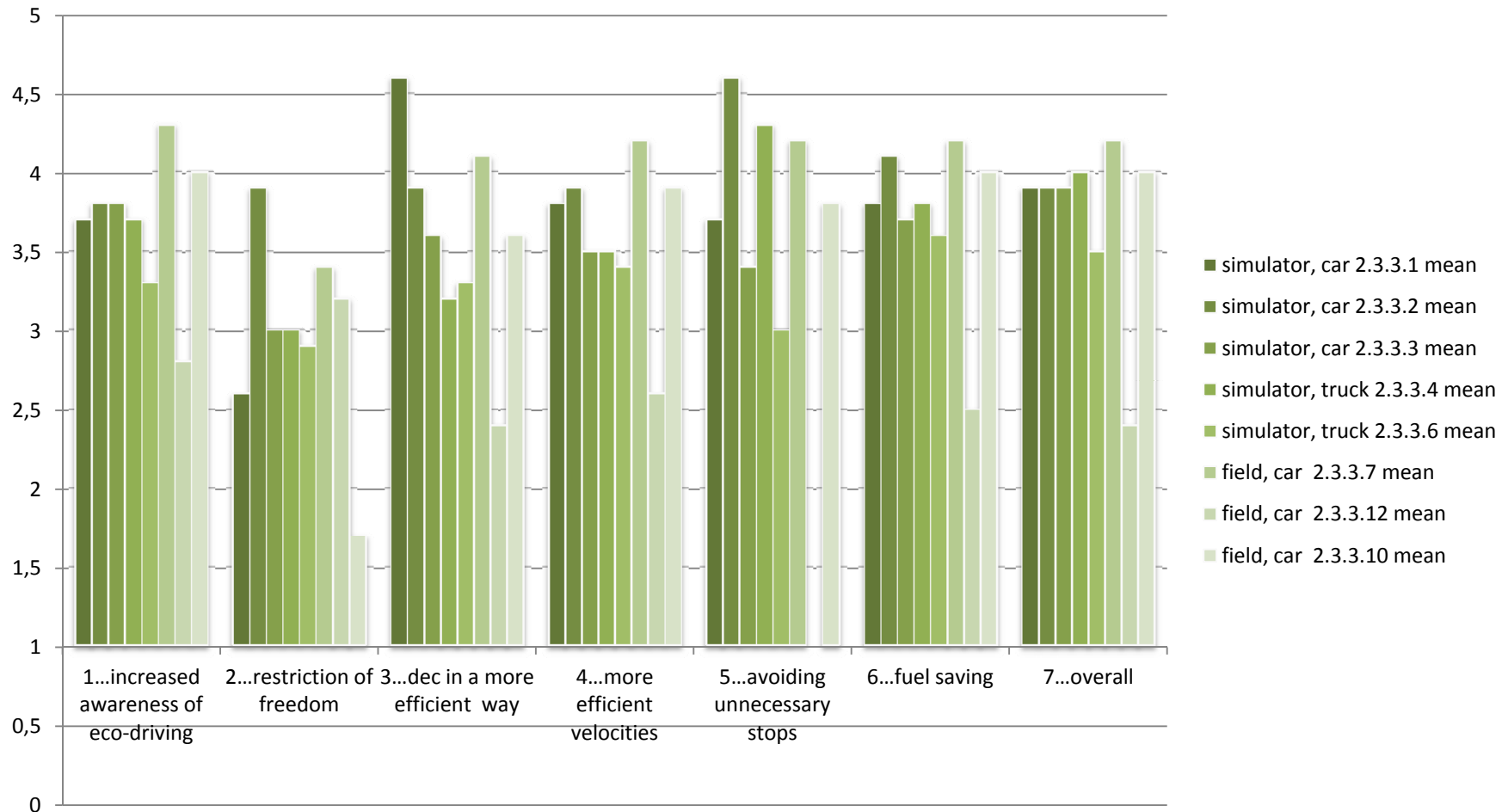
# Acceptance – van der Laan Scale



# Acceptance – Perceived Ease of Use



# Acceptance – Perceived Usefulness





# Conclusions

- Fuel reduction potential between 5% and 25%
- Less deceleration, acceleration and smaller speed standard deviations because fewer number of stops
- Small increase in travel time
- Also positive effects for traffic safety - less speeding
- Distraction of HMI seems to decrease with the duration of using and has to be researched further
- Overallly good acceptance of the systems

# Thank you for your attention

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