

Seating configuration and position preferences in fully automated vehicles

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Abstract-

Objectives: This study aimed to understand seating configuration and position preferences in a fully automated vehicle (FAV) across 7 hypothetical traveling scenarios.

Methods: Participants completed an online survey in which they were asked to imagine traveling in an FAV across 7 hypothetical traveling scenarios and asked to select 1 of 5 seating configurations and 1 of 4 seating positions for themselves and for any additional occupants. Furthermore, participants were asked to indicate any activities that they and any additional occupants would engage in and whether they would be willing to wear a different seat belt in an FAV while seated in a non-forward-facing mode or while reclined.

Results: Five hundred and fifty-two participants (male = 50.5%; mean = 36.6?years, SD = 14.0?years) completed the online survey. Most participants resided in Australia (40.9%), Spain (16.5%), Sweden (15.6%), or Lebanon (19.4%). Most participants drove on a daily basis (60.0%), had driven between 5,000 and 15,000?km in the previous year (33.2%), and reported that they always or almost always wear a seat belt while traveling in a motor vehicle (98.2%). Across all scenarios, participants were most likely to prefer a conventional seating configuration (i.e., all seats facing forward; between 40.0 and 76.3%). In terms of seating position preferences, participants preferred seating position A (i.e., the conventional driver's seat; between 54.6 and 68.3%), regardless of with whom they were traveling. The most common activity while traveling alone was reading (25.0%). However, when traveling with other occupants, talking was the most common activity (41.0-63.0%), even with someone they did not know (31.0%). Most participants predicted that they would always or almost always wear a seat belt when traveling in an FAV (95.9%). Most participants also reported that they would be very willing or willing to wear a different seat belt configuration in an FAV while seated in a non-forward-facing mode or while reclined (73.8 and 80.7%, respectively).

Conclusions:This study has provided valuable insight regarding seating configuration and position preferences in an FAV, as well as predicted activities and restraint use. Future research will use this information to simulate likely injury outcomes of these preferences in the event of a motor vehicle crash and provide a basis for the design of occupant protection systems for FAVs.

Index Terms- Seating configurations, seating positions, road safety, fully automated vehicles

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