

## To Drive or Not to Drive – When Users Prefer to Use Automated Driving Functions

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### ABSTRACT

Vehicle automation is rapidly developing and getting more and more advanced. There will however be some time until vehicles are fully automated and able to drive everywhere. Until then, Automated Vehicles (AVs) will only be able to operate under certain conditions where the automation is capable of performing the required driving operations. Currently, manufacturers are testing and developing AV functions that are intended to operate under specific conditions. However, little is known about where users find a value in using driving automation, and how the experience of such functions affects the potential usage scenarios that people see.

Therefore, this paper has investigated where and when users would prefer to use AV functions, both before and after using an AV, based on a study that was conducted using a partially AV with two levels of automation on public roads in California, USA. The results are compiled into a user journey, to illustrate during which conditions the participants believe they would benefit from using automated vehicle functions the most, as well as preferences that users have towards the two functions regarding conditions and use. The results show that the participants would find a value in having this kind of functions during different traffic conditions (e.g. road type or specific traffic situations), and external or internal conditions (e.g. time of day or mood of user). The functions were mostly preferred to be of value during congested traffic situations or during longer trips, where the users would like to use their time differently than driving. The potential added value to the user experience when having driving automation in the car was believed to be either relaxation, meaning time to wind down, and physical and mental relief from stressful traffic situations, as well as a promise of efficiency and being able to do other activities by not having to focus on the driving task. These findings can give developers insights about a potential focus during the development of AV functions, in accordance to the needs and values users ascribe to them.

**Keywords:** Automation, Automated vehicles, Driving automation, User value, User study