

Perceptions of and Experiences with Advanced Driver Assistance Systems Among New and Used Vehicle Purchasers, Renters, and Borrowers

INTRODUCTION

Advanced Driver Assistance Systems (ADAS) comprise several different vehicle technologies that work independently and in concert to warn drivers of potential safety hazards, take action to prevent or mitigate a collision, or to provide continuous driving support. It is important for drivers of ADAS-equipped vehicles to understand these technologies and use them appropriately. Although used vehicles account for the majority of passenger vehicle sales in the United States, and people sometimes drive vehicles that they do not personally own, most research about user experiences with ADAS has focused explicitly or implicitly on owners of new vehicles. The current study sought to investigate understanding of and experiences with ADAS among individuals who drive ADAS-equipped vehicles of which they were not the original owner, including owners of used vehicles as well as renters and borrowers of vehicles equipped with ADAS.

METHODOLOGY

A web-based survey was administered to a convenience sample of drivers recruited online from a commercial crowdsourcing platform. The questionnaire investigated drivers' general understanding of ADAS; experiences of purchasing, renting, or borrowing vehicles; and awareness and use of ADAS in vehicles that they had driven recently. Questions about ADAS focused mainly on two specific technologies: Adaptive Cruise Control (ACC) and Lane Centering Assistance (LCA). A total of 3,466 respondents completed the survey.

KEY FINDINGS

At the time of purchase, new vehicle purchasers self-reported having a better understanding of ACC (but not LCA) than did purchasers of used vehicles. New vehicle purchasers also self-reported having a better understanding of both technologies at the time of the survey (after having owned their vehicle for some time). In contrast, when respondents' understanding of these technologies was measured directly, no such differences were observed, as both groups demonstrated moderate but incomplete understanding of the systems. Both groups of purchasers reported similar rates of use of and attitudes toward ACC and LCA.

TECHNICAL REPORT:

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The project also investigated the experiences of respondents who had recently rented or borrowed a vehicle, including whether information about ACC and LCA had been shared with them. Respondents reported that most of the vehicles they borrowed and rented were equipped with ACC and LCA, and when equipped, a majority of respondents reported they had used the systems. The proportion of borrowers who reported that someone talked to them about the ACC or LCA in the vehicle was about twice the proportion among renters, though in both groups these proportions were small. In addition, borrowers reported longer conversations than renters about ACC and LCA.

Respondents provided information about how they learned about ACC and LCA in the vehicles they purchased, borrowed, and rented. Almost three-quarters of new and used purchasers tried to learn about the ACC in their primary vehicle. Of these, most reported learning by driving with the system or consulting the owner's manual. Most borrowers and renters did not read about ACC or LCA in the owner's manual, but borrowers were more likely to do so than renters.

Finally, the research examined when and how users prefer to learn about ADAS. A majority of respondents said they would want to learn about ADAS when purchasing a new vehicle (92%) or used vehicle (73%), and they would prefer to learn about ADAS before test-driving a vehicle and during the purchase experience. Fewer respondents expressed interest in learning about ADAS when borrowing, renting, or driving vehicles for work. The respondents' preferred sources of information were very consistent across situations, with approximately one in four wanting printed materials and a similar number wanting to learn from videos.

Based on these findings, implications for stakeholders are noted. Manufacturers should provide straightforward means for anyone to determine what specific ADAS features are equipped on a vehicle. They should also provide simple resources such as quick start guides to inform vehicle users about the ADAS features on that specific vehicle. Dealerships should provide vehicle-specific information about ADAS to purchasers of vehicles, including used vehicles, and customize the level of information provided to the purchasers' interests. However, more research is needed to determine the optimal form and content of such information as well as the best method and timing of providing it to the vehicle user.