The Impact of Driver's Mental Models of Advanced Vehicle Technologies on Safety and Performance Dataset

Dataset available at: https://doi.org/10.7910/DVN/0CWLOZ

(This dataset supports report **The Impact of Driver's Mental Models of Advanced Vehicle Technologies on Safety and Performance**)

This U.S. Department of Transportation-funded dataset is preserved by the SAFER-SIM University Transportation Center in the Harvard Dataverse Repository (https://dataverse.harvard.edu/), and is available at https://doi.org/10.7910/DVN/0CWLOZ

The related final report **The Impact of Driver's Mental Models of Advanced Vehicle Technologies on Safety and Performance**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/55879

Metadata from the Harvard Dataverse Repository record:

Description: Advanced driver assistance systems (ADAS) are rapidly being introduced across automobile manufacturer lineups. These technologies have the potential to improve safety, but they also change the driver-vehicle relationship—as well as their respective roles and responsibilities. To maximize safety, it is important to understand how drivers' knowledge and understanding of these technologies—referred to as drivers' mental models—impact performance and safety. This study evaluated the impact of the degree of accuracy (or quality) of drivers' mental models of adaptive cruise control (ACC) on performance using a high-fidelity driving simulator. Participants with varying degrees of ACC experience were recruited and trained such that they had either a strong or weak mental model. Participants then completed a study where they interacted with the ACC system and encountered several edge-case events. In general, participants with strong mental models were faster than those with weak mental models to respond in edge-case situations— defined as cases where the ACC did not detect an approaching object, such as a slow moving motorcycle. The performance deficits observed for drivers with weak mental models appear to reflect uncertainty surrounding how ACC will behave in edge cases. These results raise several important questions surrounding driver introductions to ADAS and the need for training (2020-05-01)
Subject: Engineering

Recommended citation:

Gaspar, John; Carney, Cher; Shull, Emily; Horrey, William, 2020, "The Impact of Driver's Mental Models of Advanced Vehicle Technologies on Safety and Performance", https://doi.org/10.7910/DVN/0CWLOZ, Harvard Dataverse, V1

Dataset description:

This dataset contains 1 file described below, that can be downloaded in the file formats .tab, .csv, or RData.

output_AAA_SS_MM_public.tab:
The tab file extension is also related to a specially formatted text format - tab separated value format. Tab separated file is a very simple textual data format which allows tabular data to be exchanged between applications that use different internal data formats. (for more information on .tab files and software, please visit https://www.file-extensions.org/tab-file-extension-tab-separated-value).

The .csv, Comma Separated Value, file is a simple format that is designed for a database table and supported by many applications. The .csv file is often used for moving tabular data between two different computer programs, due to its open format. The most common software used to open .csv files are Microsoft Excel and RecordEditor, (for more information on .csv files and software, please visit https://www.file-extensions.org/csv-file-extension).

National Transportation Library (NTL) Curation Note:
As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (https://ntl.bts.gov/public-access) Section 7.4.2 Data, the NTL staff has performed ***NO*** additional curation actions on this dataset. NTL staff last accessed this dataset at https://doi.org/10.7910/DVN/0CWLOZ on 2020-07-07. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.