Driver Behavior and Performance with In-Vehicle Display Based on Speed Compliance Dataset

Dataset available at: https://doi.org/10.7910/DVN/YITDXV

(This dataset supports report **Driver Behavior and Performance with In-Vehicle Display Based on Speed Compliance,** http://safersim.nads-sc.uiowa.edu/final_reports/UM%201%20Y1%20report.pdf)

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/YITDXV

The related final report **Driver Behavior and Performance with In-Vehicle Display Based on Speed Compliance**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/42269

Metadata from the Harvard Dataverse Repository record:
Dataset Persistent ID: doi:10.7910/DVN/YITDXV
Publication Date: 2019-07-18
Title: Driver Behavior and Performance with In-Vehicle Display Based on Speed Compliance
Author:

- Knodler Jr., Michael (University of Massachusetts Amherst) - ORCID: https://orcid.org/0000-0002-6517-4066
- Fitzpatrick, Cole (University of Massachusetts Amherst) - ORCID: https://orcid.org/0000-0002-9873-1391
- Christofa, Eleni (University of Massachusetts Amherst) - ORCID: https://orcid.org/0000-0002-8740-5558
- Parthasarthy, Aamani Ramanathan (University of Massachusetts Amherst) - ORCID: https://orcid.org/0000-0002-2062-3067

Contact: Knodler Jr., Michael (University of Massachusetts Amherst)
Description: Traffic-control devices are integral to driver-to-infrastructure and vehicle-to-infrastructure interactions. The non-conformation with (or nonperception of) signage by the driver leads to several compounded safety problems. The need exists for a more robust, low-cost, and user-centric mechanism of delivering information to the driver that can directly bear on safety. Technology has now advanced to the point where we can deliver information from a real-world physical environment to the driver in a noninvasive manner using holographic display [1]. With this rapid advancement in in-vehicle display technology, the transportation industry must undergo a transition period before entering the world of connected and autonomous vehicles. Here, the integration of in-vehicle display will play major role. The advantage is the level of flexibility and control offered by a dynamic in-vehicle display that allows us to provide very specific traffic-control information to the driver at situations and times deemed appropriate. The research questions will be focused on how such safety-critical traffic-control information, and what specific information, can be delivered effectively to the driver using a dynamic in-vehicle display without causing any form of distraction or engagement-related problems. Vehicles

exceeding the posted speed limit present an optimal application. With regard to the hierarchy of traffic-control devices, there is an urgent need for drivers to comply with speed limits. According to NHTSA, 26% of traffic fatalities in 2017 resulted from crashes where at least one of the drivers was speeding [2]. In addition, the act of unintentional speeding has been identified in research as the most frequent driving violation [3]. This forms the primary objective, which is to investigate driver behavior and compliance with invehicle display speed alerts. This research investigates the characteristics of visual cues that minimize the driver's perception time without adding to redundant visual clutter and at the same time accounting for the safety aspects required in a driving environment. This research endeavor evaluated drivers in a controlled environment using a full-scale driving simulator with active invehicle displays and eye-tracking equipment. The experiment investigated driving parameters such as head and eye movements, vehicle-handling measures, task-engagement behaviors, and physiological parameters. Ultimately, the goal of this study was to understand driver-sign compliance with the implementation of an in-vehicle display in the driving-simulator environment. The results were helpful in gaining a better understanding of drivers' responsiveness depending on the nature of the cue. (2019-04-01)
Subject: Engineering
Related Publication: http://safersim.nads-sc.uiowa.edu/final_reports/UM%201%20Y1%20report.pdf
Depositor: Heiden, Jacob
Deposit Date: 2019-07-09

Recommended citation:
Knodler Jr., Michael; Fitzpatrick, Cole; Christofa, Eleni; Parthasarthy, Aamani Ramanathan, 2019, "Driver Behavior and Performance with In-Vehicle Display Based on Speed Compliance", https://doi.org/10.7910/DVN/YITDXV, Harvard Dataverse, V1, UNF:6:Z2gpV6Jh/oTssMrWts+Z6A== [fileUNF]

Dataset description:
This dataset contains 1 .zip file, Driver_BehaviorPerformance_Speed.zip, containing 9 files in 4 formats (.m, .xls/.xlsx, .docx, .csv) further described below.

- 2 files in .m: NTL staff were able to open these files with a basic text editor (for more information on different types of .m files, please visit https://www.file-extensions.org/search/?searchstring=m).
- 5 files in .xls/.xlsx: The .xls/.xlsx files found in this collection are titled 1.tab_incursions.xls, 1.tab_means.xlsx, Analysis.xlsx, Data Labels for Simulator Data.xlsx, and Participants List.xlsx. The .xls and .xlsx files are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine
- 1 file in .docx: This file is titled Survey Questionnaire.docx. The .docx file is a Microsoft Word file, which can be opened with Word and other free word processor programs, such as Kingsoft Writer, OpenOffice Writer, and ONLYOFFICE.
- 1 file in .csv: The.csv file found in this collection is titled Survey Responses.csv. 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/YITDXV,on 2019-08-28. 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.