

Assessing the Effectiveness of Connected Vehicle Technologies based on Driving Simulator Experiments Dataset

Dataset available at: <https://doi.org/10.7910/DVN/XU6HOA>

(This dataset supports report **Assessing the Effectiveness of Connected Vehicle Technologies based on Driving Simulator Experiments**)

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/XU6HOA>

The related final report **Assessing the Effectiveness of Connected Vehicle Technologies based on Driving Simulator Experiments**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/56077>

Metadata from the Harvard Dataverse Repository record:

Description: Connected vehicle technology is expected to reduce crashes and improve roadway safety overall despite its effect being dependent on the content of crash scenarios. The reason behind this is that the heterogeneity between crash scenarios may cause variation in a driver's perception and interpretation of the crash scenarios. Further, the heterogeneity may lead to different driver behaviors and evasive strategies. Consequently, both the benefits and influence of connected vehicle technology are affected. This project aimed to identify the variation of the performance of connected vehicle technology between different crash scenarios. Specifically, two types of connected vehicle technologies, forward collision warning (FCW) technology and pedestrian-to-vehicle (P2V) technology, were tested in four rear-end crash scenarios and three pedestrian crash scenarios, respectively. The results showed promising effectiveness of FCW and P2V technologies to reduce the possibility of a crash. Specifically, FCW reduced rear-end crashes by 56.6%-69.8%, and P2V reduced pedestrian crashes by 89.2%-97.2%. More importantly, the results captured a significant variation in the performance of FCW and P2V between crash scenarios. In different scenarios, the technologies aroused different driver brake operations, and, consequently, the technologies achieved different safety benefits. In addition, the interaction effects between technologies and driver features were affected by crash scenarios. Age, gender, crash/citation experience, and driving experience were found to affect the warning effect in different scenarios. This study has practical implications for the understanding of how heterogeneity of crash scenarios can affect connected vehicle technology. (2019-12-01)

Subject: Engineering

Recommended citation:

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Dataset description:

This dataset contains 1 .zip file collection described below.

Assessing the Effectiveness of Connected Vehicle Technologies based on Driving Simulator Dataset.zip:

This collection contains 10 files listed below.

- 34_track1_7_yueli_0502_20190531144436.csv
- 33_track1_7_yueli_0502_20190531132841.csv
- 32_track1_1_yueli_0430_20190530142630.csv
- 31_track1_2_yueli_0502_20190530123216.csv
- 30_track1_2_yueli_0502_20190530105615.csv
- 29_track1_2_yueli_0502_20190529105352.csv
- 28_track1_1_yueli_0430_20190528132523.csv
- 27_track1_1_yueli_0430_20190528113850.csv
- 25_track1_1_yueli_0330_20190426171141.csv
- 24_track1_1_yueli_0330_20190426150633.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/XU6HOA> 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.