An Assessment of Traffic Safety between Drivers and Bicyclists Based on Roadway Cross-Section Designs and Countermeasures Using Simulation Dataset

Dataset available at: https://doi.org/10.7910/DVN/FFSR6R

(This dataset supports report **An Assessment of Traffic Safety between Drivers and Bicyclists Based on Roadway Cross-Section Designs and Countermeasures Using Simulation,** http://safersim.nads-sc.uiowa.edu/final_reports/UCF%20C1%20Y1_Report.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/FFSR6R

The related final report **An Assessment of Traffic Safety between Drivers and Bicyclists Based on Roadway Cross-Section Designs and Countermeasures Using Simulation**, is available from the National Transportation Library's Digital Repository at https://rosap.ntl.bts.gov/view/dot/42275

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Description: Cycling is encouraged in countries around the world as an economical, energy-efficient, and sustainable mode of transportation. Simulation is an important approach to analyzing the safety of cycling by identifying the effects of different factors. To ensure the success of a simulation study, it is essential to know the factors that have significant effects on bicycle safety. Although many studies have focused on analyzing bicycle safety, they lack bicycle exposure data, which could introduce biases for the identified factors. This study represents a major step forward in estimating safety performance functions for bicycle crashes at intersections by using crowdsourced data from STRAVA. Several adjustments considering the population distribution and field observations were made to overcome the disproportionate representation of the STRAVA data. The adjusted STRAVA data that includes bicycle exposure

information was used as input to develop safety performance functions. The functions are negative binomial models aimed at predicting frequencies of bicycle crashes at intersections. The developed model was compared with three counterparts: a model using the un-adjusted STRAVA data, a model using the STRAVA data with field observation data adjustments only, and a model using the STRAVA data with adjusted population. The results revealed that the STRAVA data with both population and field observation data adjustments had the best performance in bicycle crash modeling. The results also addressed several key factors (e.g., signal control system, intersection size, bike lanes) that are associated with bicycle safety at intersections. It is recommended that the effects of these identified factors be explored in simulation studies. Additionally, the safety-in-numbers effect was acknowledged when bicycle crash rates decreased as bicycle activities increased. The study concluded that crowdsourced data is a reliable source for exploring bicycle safety after appropriate adjustments.
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Dataset description:
This dataset contains 1 .zip file collection described below.

2016+UTC+Bicycle+Safety_Data_UCF.zip:
This collection contains one .xlsx file of the same name (2016+UTC+Bicycle+Safety_Data_UCF.xlsx). The .xlsx file is a Microsoft Excel file, which can be opened with Excel, and other free available software, such as OpenRefine

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/FFSR6R on 2019-09-03. 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.