

Exercise 2 - Analysis of naturalistic data

Exercise for the IDEA League summer school *Analysis and modelling road user behaviour* at Chalmers

Summer school responsible: Giulio Piccinini (giulio.piccinini@chalmers.se)

Exercise responsible: Alexander Rasch (alexander.rasch@chalmers.se),

Pierluigi Olleja (pierluigi.olleja@chalmers.se)

September 07, 2022

1.1. Introduction

In this assignment, you will apply your knowledge on naturalistic data to analyze the data from the 100-car Naturalistic Driving study. Specifically, this assignment will guide you into extracting relevant information to investigate crash risk and causation. In this assignment, you will be using MATLAB or Python, and the SAFER100car toolkit.

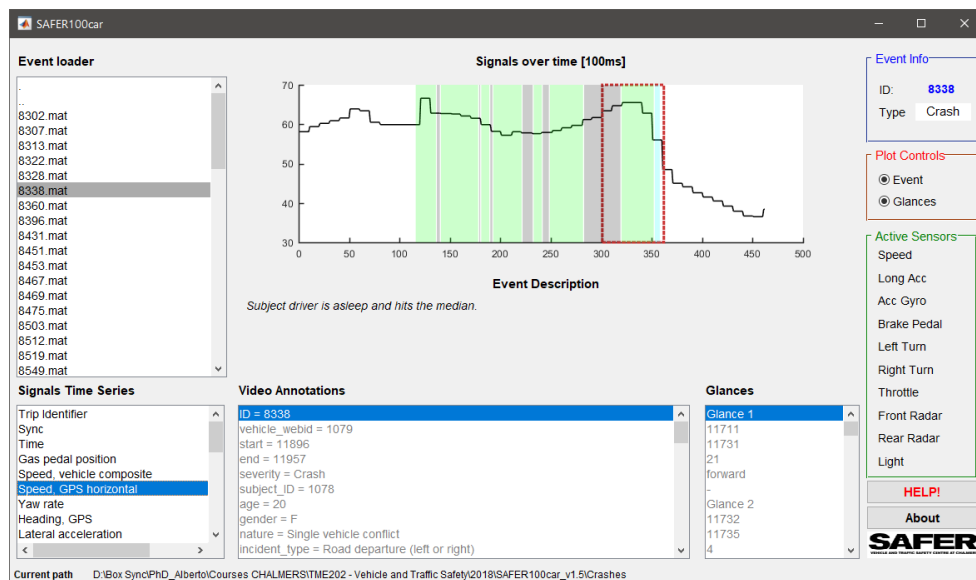
1.2. Learning objectives

After having performed this assignment, you shall be able to:

- Explain which data (objective and subjective) are collected in the 100-car Naturalistic Driving study;
- Run queries to retrieve information on events included in the 100-car data;
- Use the data to understand the causes and scenarios in which accidents happened;
- Identify contributing factors to accident related to human behavior;
- Use and interpret odds ratios to test association in the 100car data.

1.3. Instructions

The assignment consists of four tasks, which are described in the template script *Exercise.m*, or, for Python users, in the Jupyter notebook *Exercise.ipynb*. In the first task, you will explore the 100car data using the SAFER100car toolkit (available inside the folder *SAFER100car_v1.5*) to get acquainted with the information included in the dataset. Note that the *SAFER100car_v1.5* tool is only available in MATLAB. To obtain further information on the variables included in the dataset, please, refer to the dictionaries included with the toolkit (in the folder *SAFER100car_v1.5/Dictionaries*). Moreover, for your interest, in the folder *Further reading* we have stored some documents that explain in greater details the results from the 100 car naturalistic driving study (the reading is optional). All coding instructions are included in *Exercise.m* or *Exercise.ipynb*. You can find reference solutions at the end of this document.



1.4. Solutions

We have attached the results you should obtain from your analysis. Please, use them as a reference.

	Crashes	Near Crashes
Talking/listening on cell phone	6	38
Not Talking/listening on cell phone	62	722

Odds ratio: 1.84

95% Confidence interval: 0.75 - 4.52

	Crashes	Near Crashes
Eyes on-road	27	393
Eyes off-road	22	156

Odds ratio: 0.49

95% Confidence interval: 0.27 - 0.88