

CAR ACCIDENT SEVERITY

Capstone project

Week 1

1. Introduction / Business problem

1a. Report

Road Traffic Injuries (RTIs) are a major public health problem. The World Health Organization (WHO) reports that the number of deaths due to road accidents has exceeded one million in recent years. (1)

The problem is huge and concerns everyone, a fact that makes the analysis of road accidents necessary. Forecasts have been rising in recent decades. (2) The analytical approach to the data will provide answers that can be used to identify and predict factors that affect the severity of road accidents.

The most popular scientific method is Machine Learning, because it has the ability to identify existing patterns in data and to predict, through the creation and evaluation of different algorithms.

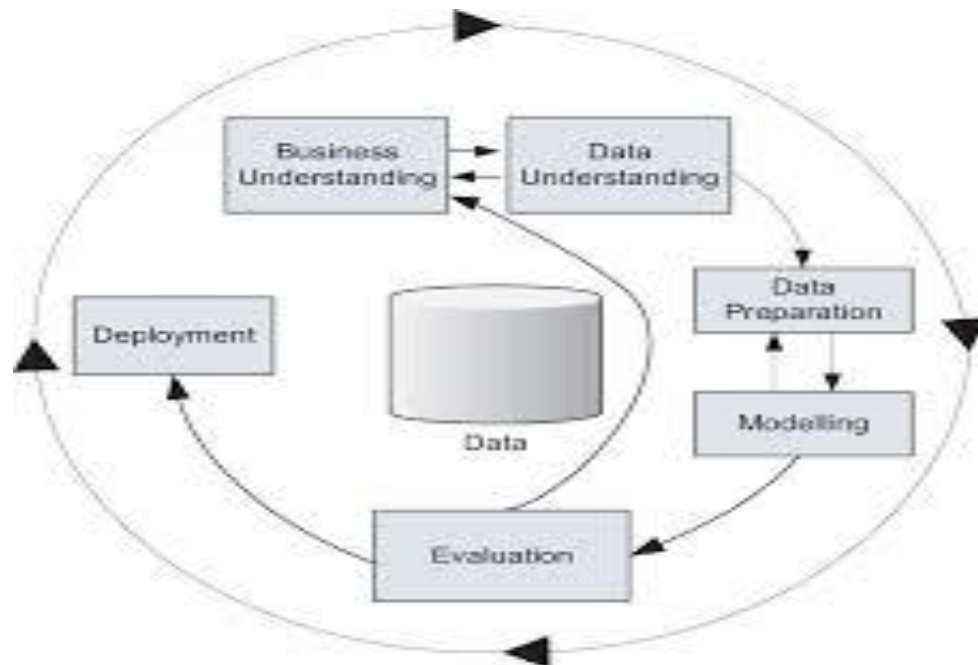
Furthermore, Machine Learning can manage another problem that arises, the large amounts of data that are generated, since road accidents are frequent and increasing at a rapid rate.

1b. Expectancy

This project aims to predict whether an accident that happens under a specific set of circumstances will be an accident limited to *property damage* or if it will include some form of *physical injury* to the driver and/or the passengers.

The aim is therefore to predict the severity of the accident through training and assessment machine learning algorithms, with the help of a data set, including recording provided by SDOT Traffic Management Division, Traffic Records Group in Seattle, United States.

As an approach to achieve this goal, the interprofessional standardized data mining process (CRISP-DM) (Figure 1) will be applied. The data will therefore be well understood and prepared before being fed for the forecast modeling analysis in the next steps.



F1, (3)

1c. Involved

The analysis is addressed to those involved in road traffic such as:

- National Emergency Center,
- Public Health Department
- Traffic Control Police authorities
- Infrastructural Development & Management Authorities
- Traffic Control Police Authorities,
- Roadside assistance services,
- Insurance Companies,
- Taxpayers & Travelers

in order to guide the stakeholders to decrease the property damage or/and physical injury by improving safety margins and ways to deal with the severity of the accident.

References:

- (1) World Health Organization: <http://www.who.int>
- (2) Accident Risk Prediction based on Heterogeneous Sparse Data: New Dataset and Insights, S. Moosavi et al., SIGSPATIAL '19, November 5–8, 2019, Chicago, IL, USA
- (3) Cross-industry Standard Process for Data Mining (CRISP-DM), <https://www.oreilly.com/library/>