PREDICT SEVERITY OF AN ACCIDENT

INTRODUCTION

Traffic accidents are a recurring problem in every corner of the world. Perhaps the biggest problem are the injured people caused by this collisions

Governments in each country should analyze these types of studies to issue laws that try to reduce the risk of traffic accidents, the frequent driver who goes to their work every day should know the prevention recommendations.

DATA

- The data set used is based on Seattle city records comprising from 2004 to 2020.
- There are more than 194 thousand records consisting of different features totaling 37.
- The objective will be to predict severity of accidents, the possible values for this variable are two: injury and prop damage.
- Within the dataset you can see 30% of lesions and the remaining 70% prop damage. This creates the 'imbalance issue' problem and for this reason the relevant recommendations will be used.

METHODOLOGY

Two possible causes are being considered for traffic accidents:

- Internal causes, are the responsibility of the driver and are represented in the columns: 'INATTENTIONIND', 'UNDERINFL', 'SPEEDING'.
- External causes, these are causes external to the driver and are represented in the columns: 'LIGHTCOND', 'ROADCOND', 'WEATHER'.

RESULTS

In general, the two models used (Logistic Regression, Random Forest Classifier) receive modest evaluations, both of which have no more than 63% accuracy in their evaluations with the Jaccard index.

The probability that the model correctly classifies as prop damage or injurie, an improvement is observed that reaches up to 68% and 69%.

RESULTS

- The feature importance for internal causes are:

Feature	Importance
Inattentionind	0.42
Alcohol influence	0.33
Speeding	0.25

- The feature importance for external causes are:

Feature	Importance
Light condition	0.62
Road condition	0.17
Weather	0.21

RESULTS

- Finally observing the six features:

Feature	Importance
Inattentionind	0.12
Alcohol influence	0.15
Speeding	0.10
Light condition	0.42
Road condition	0.12
Weather	0.09

CONCLUSIONS

- When you go out to drive avoid drinking this can reduce injuries in traffic accidents by up to 33%. Respect the speed limits as you can reduce accidents by up to 21%, and above all do not get distracted while driving because 42% of accidents are caused by being distracted.

- It is possible that on the road the weather is not good and that the track conditions are not favorable, this is out of your control but the most important thing is the light conditions, if you have a lot of difficulty in vision it is better to postpone the trip, or otherwise always use the high beams to have better visibility.