Patterns and predictive modelling of traffic accidents

Challenge Provider: Project Urban Co-creation Data Lab (UCD Lab)

The Project UCD Lab is co-financed by CEF Telecom, the EU instrument to facilitate cross-border interaction between public administrations, businesses and citizens, and the project beneficiaries are: Universidade Nova de Lisboa, Município de Lisboa, Agência para a Modernização Administrativa, I.P., NEC Portugal - Telecomunicações e Sistemas, S.A, and Barcelona Supercomputing Center - Centro Nacional de Supercomputación.
The UCD Lab project aims to support decision-making at the municipality level in order to provide citizens with high quality services in the areas of micromobility, waste management, parking, pollution and emergency. By building analytical capabilities and services in these areas, municipalities will be in a position to better respond to day to day challenges.

Context

The recent and future increase in population that live and work in cities will significantly pressure cities infrastructures, namely in roads, increasing the probability of the occurrence of traffic accidents, carrying significant challenges in cities mobility, transportation systems, and the more important in human safety. In this sense, it is of extreme importance to understand the infrastructural and environmental characteristics when traffic accidents occur along with predicting them, to allow for city emergency services an optimised response to an emergency, and for city managers to plan road traffic, considering the risk of traffic accidents.

Goals

Understand the causes and anticipate traffic accidents.

Outcome

An **explainable** predictive model of traffic accidents at **street level** by a **period of the day**.

Available Resources

This challenge should be completed based on open data. As recommended dataset, we found Waterloo Open traffic accident dataset.

As a reminder, all the data resources can be found here: https://bit.ly/wdl-data. You can also use any open, free and legally available data - Even if it is for another city.

Traffic Collisions

Traffic collision database from the city of Waterloo.

- This dataset contains the traffic collision from 2005-2018
- You can find the dataset here: https://data.waterloo.ca/datasets/75fa68b17e5b421d9d881f987c2d43fc_0
- Tip: The dataset includes an API that allows you to download the GeoJSON file with the coordinates of the accident. We highly suggest that you use that.

Provider: Open data of the city of Waterloo

Other Data

The city of Waterloo has a very rich collection of open data available in English. You can find it on their portal: https://data.waterloo.ca/. Don't forget that you can use any of the other data sources provided, such as the weather.

Submissions

Deadline: 01 - 05 - 2021 @ 14h00 GMT + 1

Don't forget that you will need to deliver the report **using the template provided** (see below) and a 1-minute summary.

Submission template: http://bit.ly/wdl-template

Tips

- Do state-of-the-art research. There might be already a lot of interesting things done before;
- Try to fill in the template from start to finish with a straightforward dummy solution first and iterate afterwards;
- You can use other data sources, such as weather, which can be very useful;
- We don't define which period of the day for you to predict on purpose. We want to tell us which is the most useful in this case;
- If possible, don't forget to explain the predictions of your model.