Air Quality Prediction in Busy Streets

Challenge Provider: UNStudio

UNStudio, founded in 1988, is an international design firm specialising in architecture, interior architecture, product design, urban development and infrastructural projects. With offices in Amsterdam, Shanghai, Hong Kong, Frankfurt, Dubai and Melbourne. UNStudio's mission is to design for lasting impact and contribute to the larger societal challenges of urbanisation.

Context

The Green Mile is a project initiated by UNStudio, Blendingbricks, Heineken, The Rijksmuseum, The Amsterdam University of Applied Sciences and The Dutch National Bank (DNB). It aims to transform *Stadhouderskade* street in Amsterdam which is currently the most polluted, busiest and the street with the most traffic and pedestrian accidents in the city. The goal of the project is to transform *Stadhouderskade* into a place where people stay instead of just transiting through.

Further Background Information

- Related WDL 2021 Challenge: Predicting air quality for outdoor activities

Goal

The goal of this challenge is to help the initiators of the project create a case and buzz for the needed change in the street and more specifically for the current impact it has on air pollution.

Sustainable Development Goal

GOAL 11: Sustainable Cities and Communities
Target 11.6: Reduce the environmental impacts of cities

Outcome

Create an explainable predictive model for the different pollutants that are produced at *Stadhouderskade* and suggest how:

- It can be used by the Green Mile project to persuade governmental bodies and the public in the need for change;
- It can be used to create and influence the Green Mile (example: Can restrictions be applied based on the model's predictions? Any warning system?)

Available Resources

The following list of resources is available for you to use:

- Hourly measurements of different air pollutants at *Stadhouderskade*.
    - Please note, even though CO2 measurements are not provided, NOx is provided which is also a dangerous car pollutant.
- OpenWeather API

The description of the datasets can be found in the dictionary.

As a reminder, you can also use any data that is open, free and legally available - And Amsterdam has over 300 datasets (If your dutch is a bit rusty, you should use Google Translate ;)).

Tips

- The modelling is important and it is important to come up with interesting features and a technically creative solution.
- But it is not the only important thing, put on your creative hats and think about how this model can be useful towards the bigger goal of the Green Mile.

Submissions

Deadline: Wed, 23 March 23h59 AoE (Anywhere on Earth)

Don't forget that you will need to submit the solution report (notebook template with the link below) and executive summary (markdown template below). You also need to submit a **3-minute** video summary of your solution.

Solution report template: https://bit.ly/wdl_2022_jupyter_template
Executive summary template: https://bit.ly/wdl_2022_exec_sum