Capstone project - Car accident severity

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PROBLEM

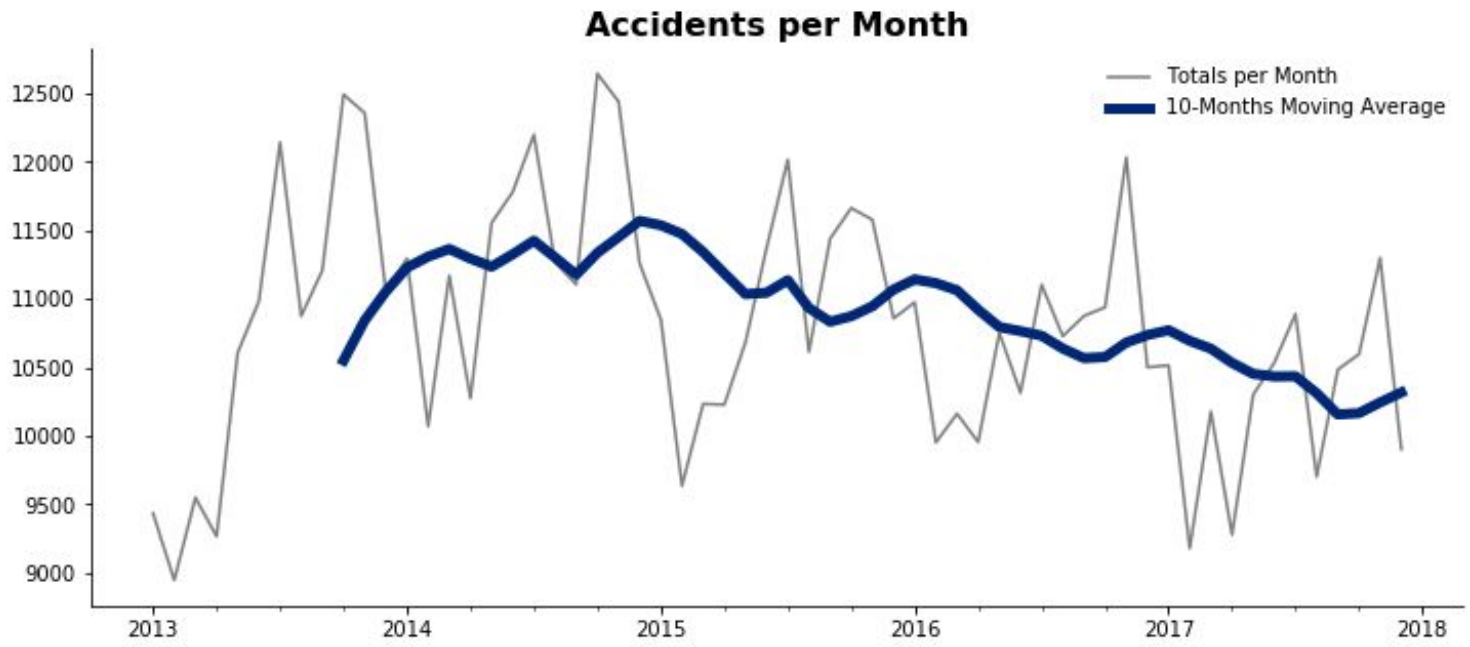
- Each year about 1.25 million people die in traffic accidents.
- Hard to predict where these will occur and what will be its severity, to take necessary action (e.g. avoiding these routes in routing software or for driverless cars).
- Also relevant for insurance companies and government.

THE SOLUTION

Using machine learning models to detect and predict the locations where the possibility of an accident is high using traffic accident data and local area data.

Accident trends

- Month: November & July
- Day: Friday
- Time: 4PM-6PM
- Age: 26-35 years old



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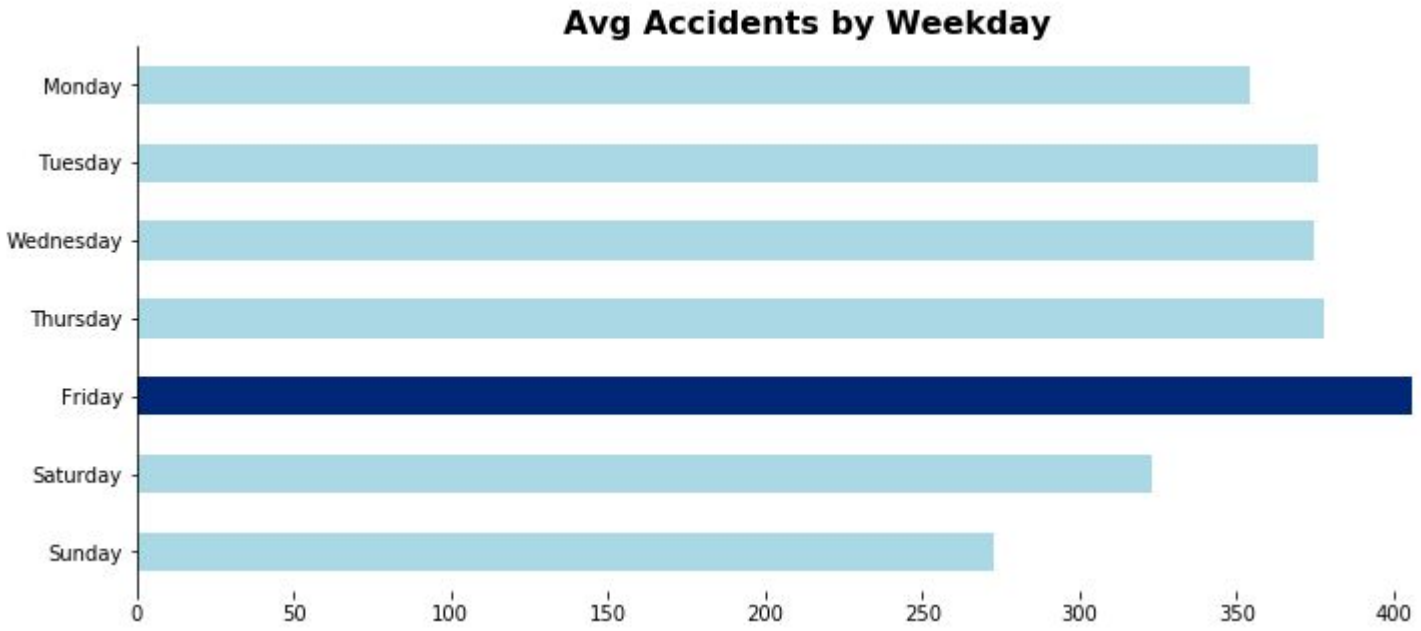
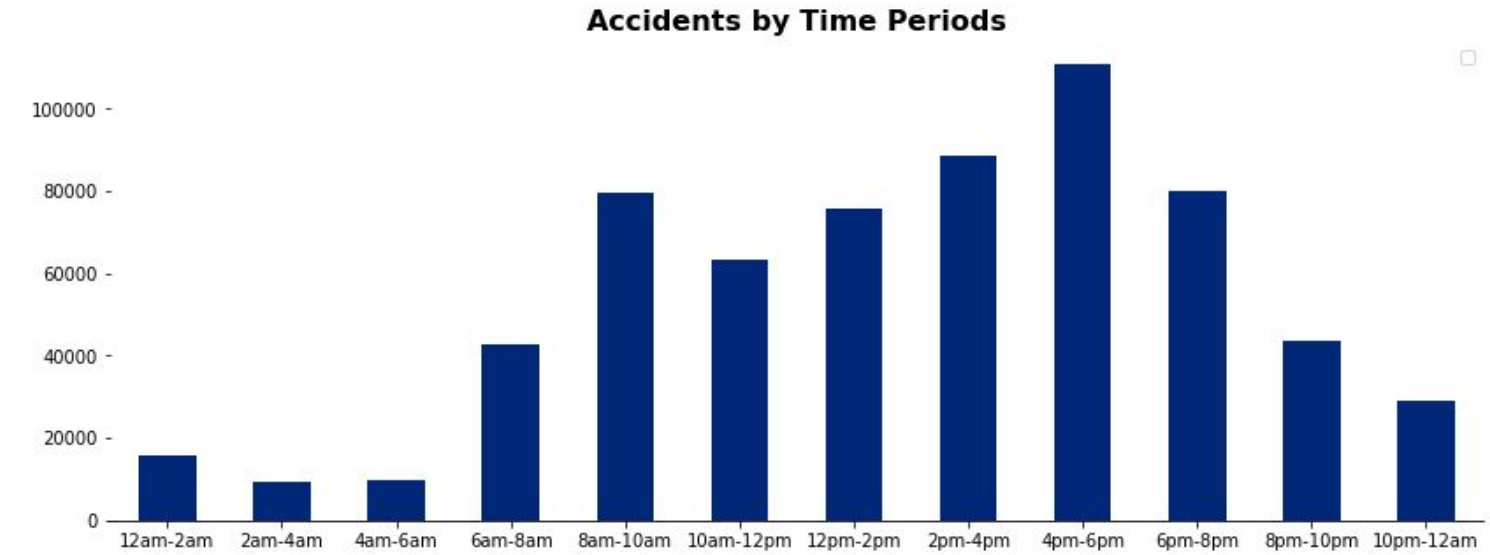
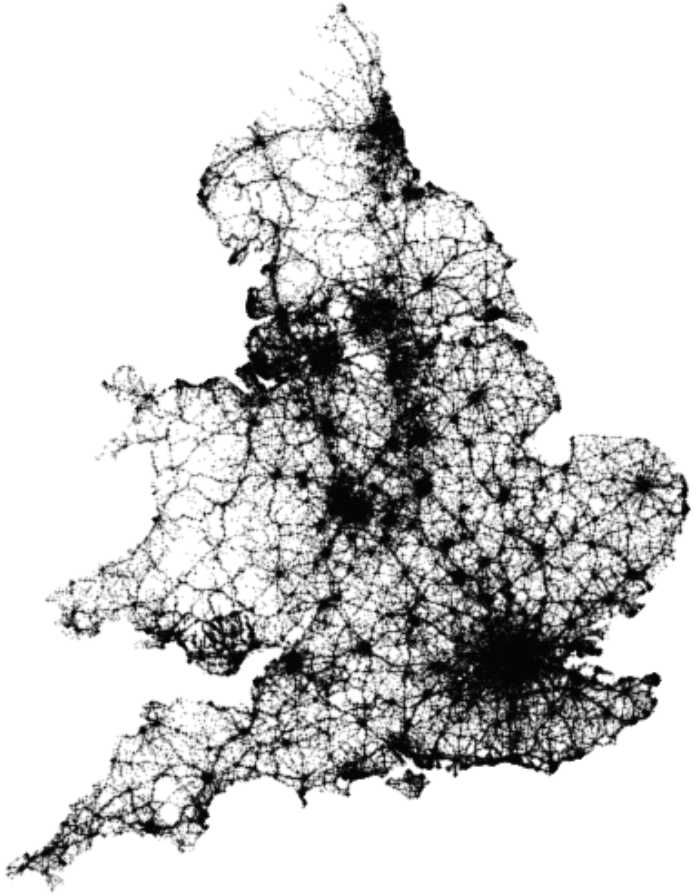




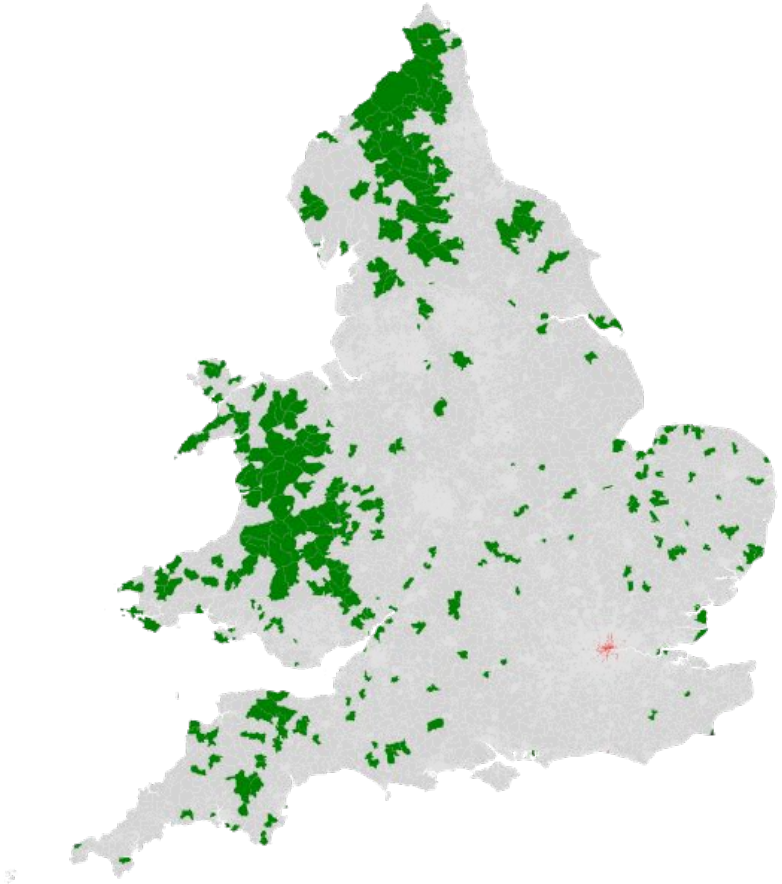
Accident hot-spots

- Big cities have the most traffic accidents
- London contains 95% of the 300 worst areas of traffic accident density

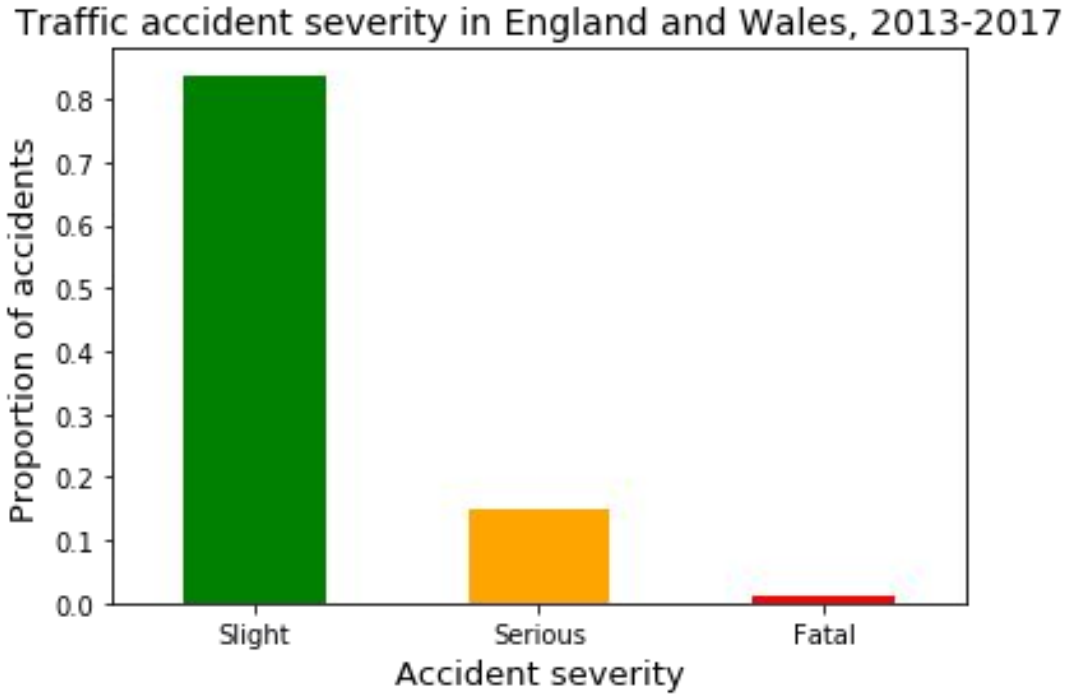
Road traffic accidents in England and Wales, 2013-2017



LSOAs in England and Wales with the highest (red) and lowest (green) density of traffic accidents 2013-2017



Accident severity



Fatal accidents are more likely to be:

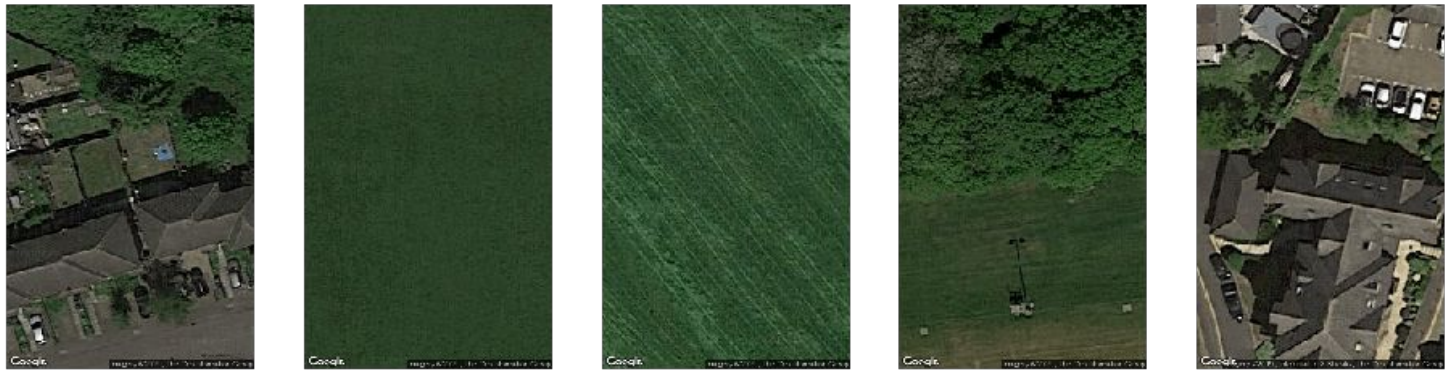
- On larger roads with higher speed limits
- On straight sections of road (not junctions)
- At night
- In rural areas

Methodology

- Machine learning model - The data is a combination of accident, population, and traffic data collected in the UK from 2013-2017.
- For this model we will be focusing on just accidents in London.

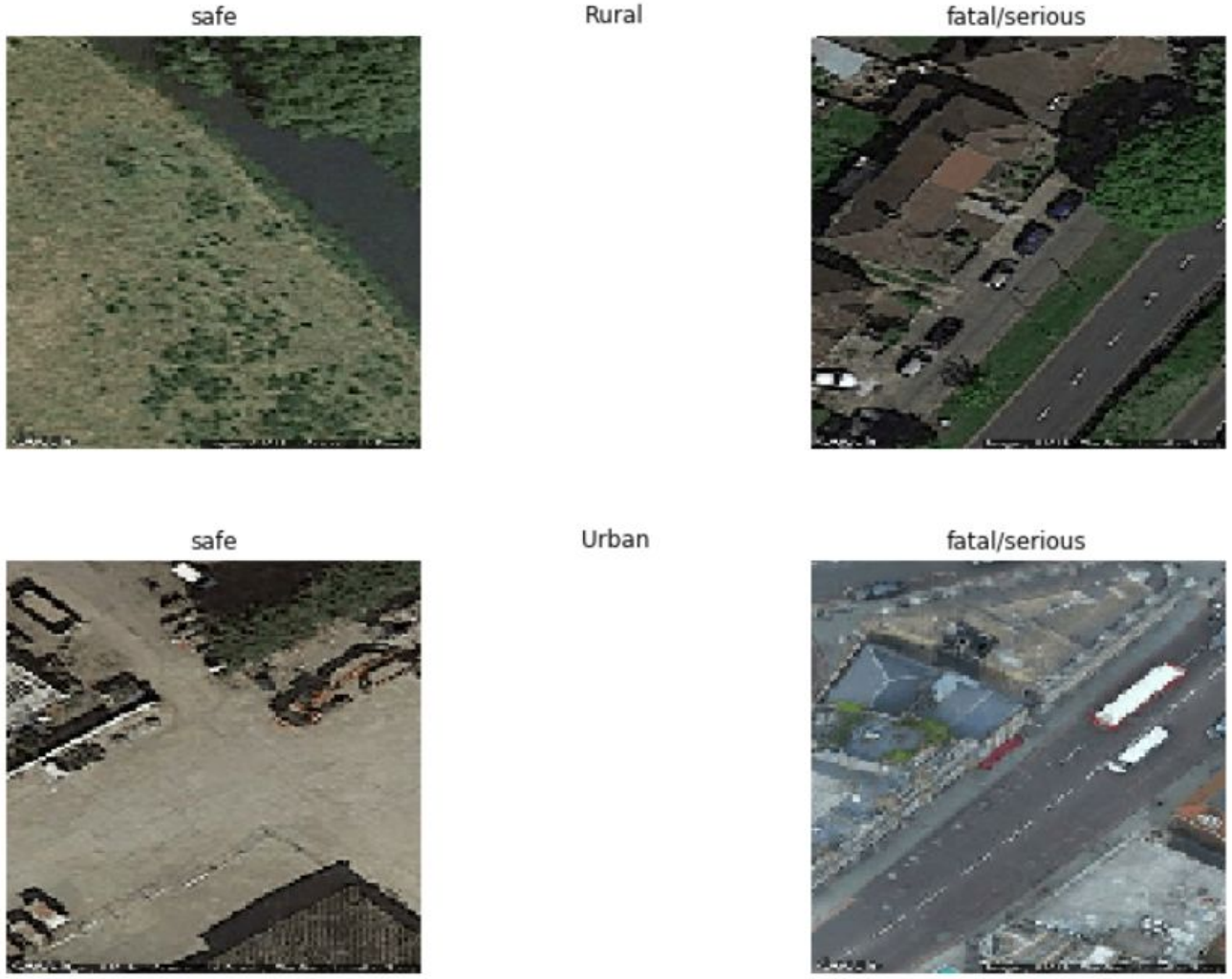
Examples of traffic accident areas

Examples of areas without traffic accidents

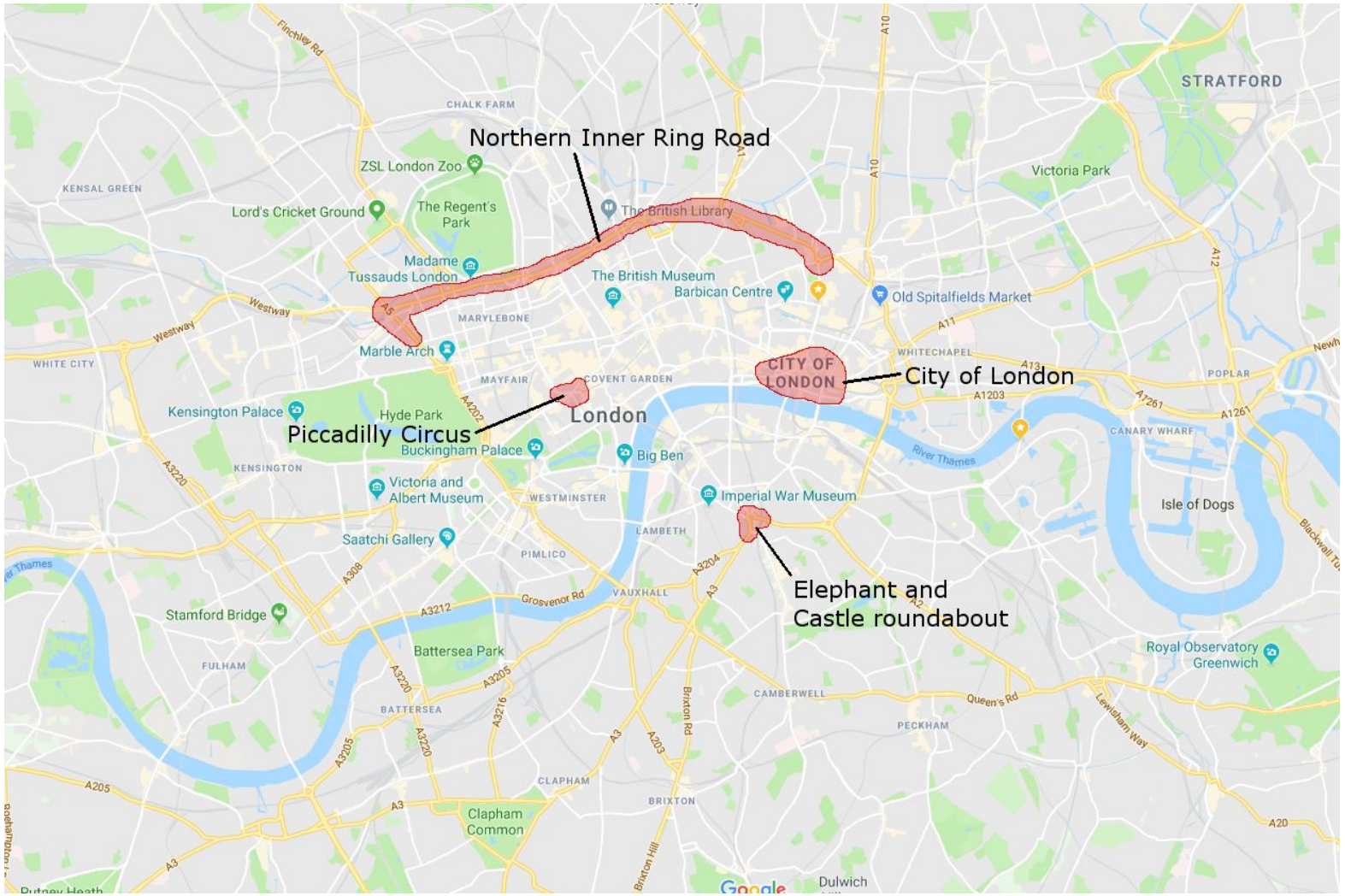


Predicting the location of traffic accidents

- Predicting locations of serious or fatal accidents.
- Able to predict the worst locations for traffic accidents.



Rural and urban danger zones



Conclusion & Future work

- Being able to predict the location of road traffic accidents could have many beneficial uses.
- Promising results from combining satellite images and other data.
- Future work could include:
  - Expanding to other cities and countries
  - Adding other data sources
  - Adding more images to learn from
  - Adding other methods
  - Comparing data between various models


Any questions?