

An aerial night view of London, showing the River Thames winding through the city. The city lights are visible, and the River Thames is illuminated. The text "Capstone project - Car accident severity" is overlaid in white serif font.

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.

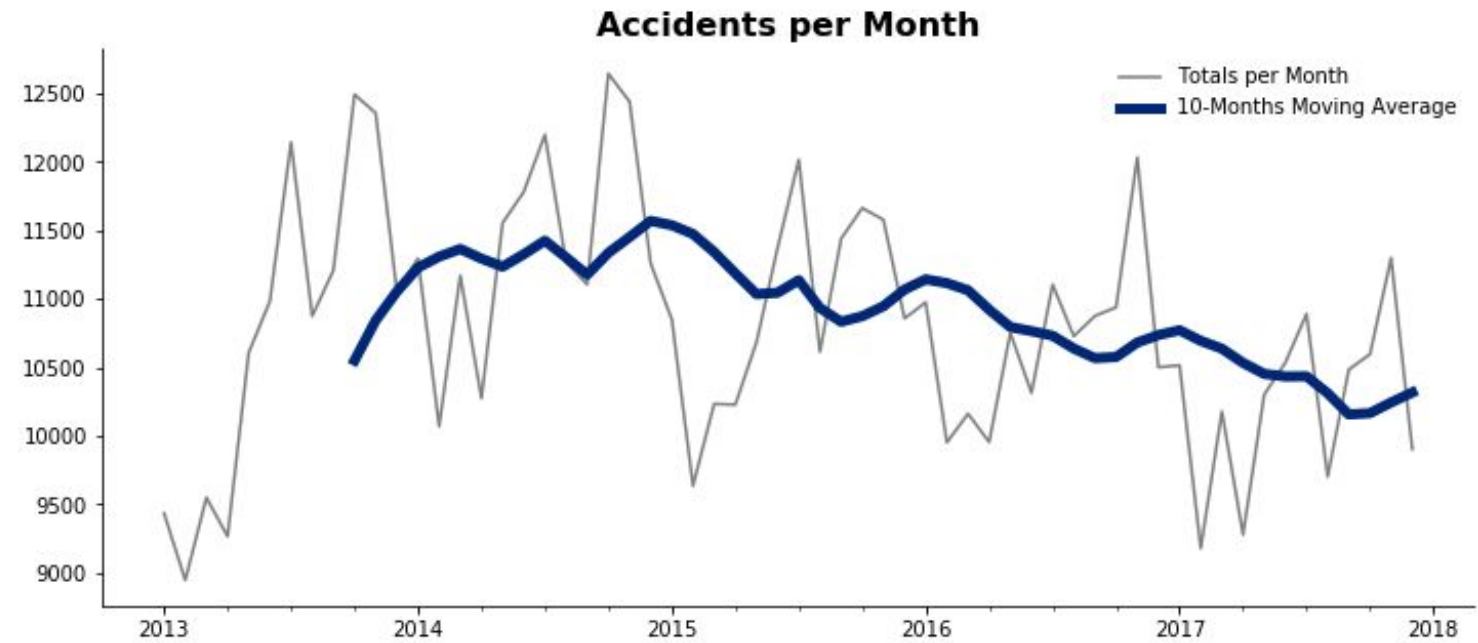
THE SOLUTION

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.



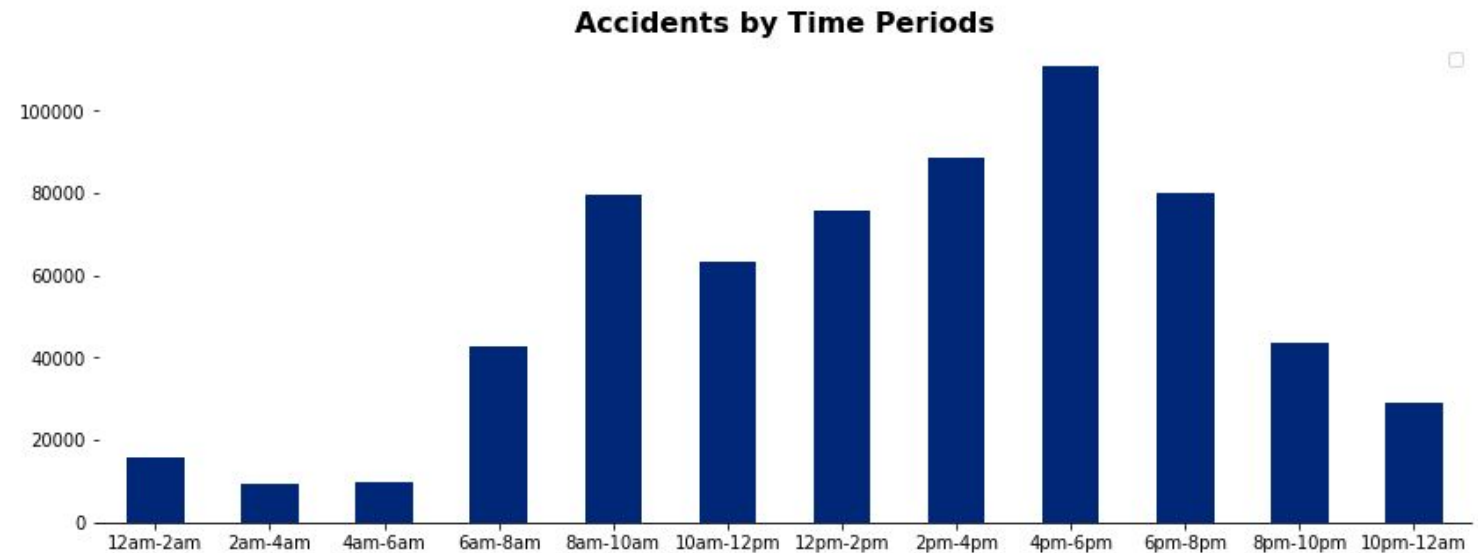
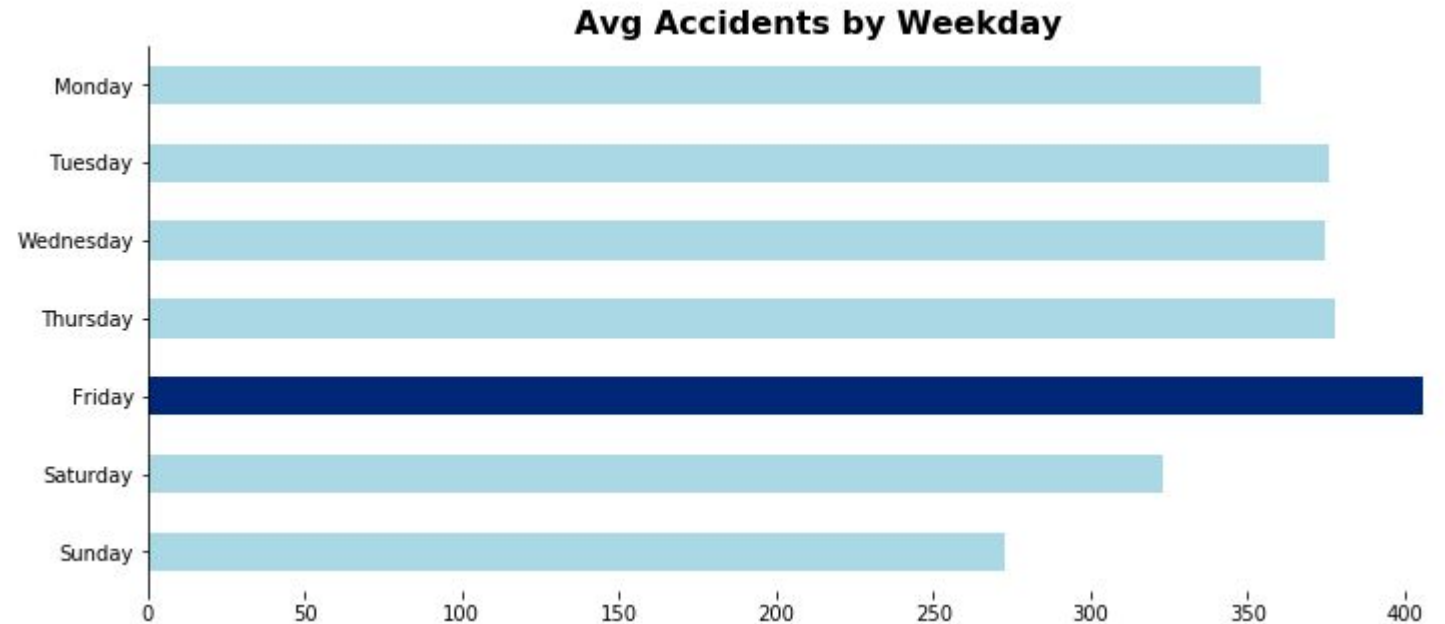
Accident trends

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



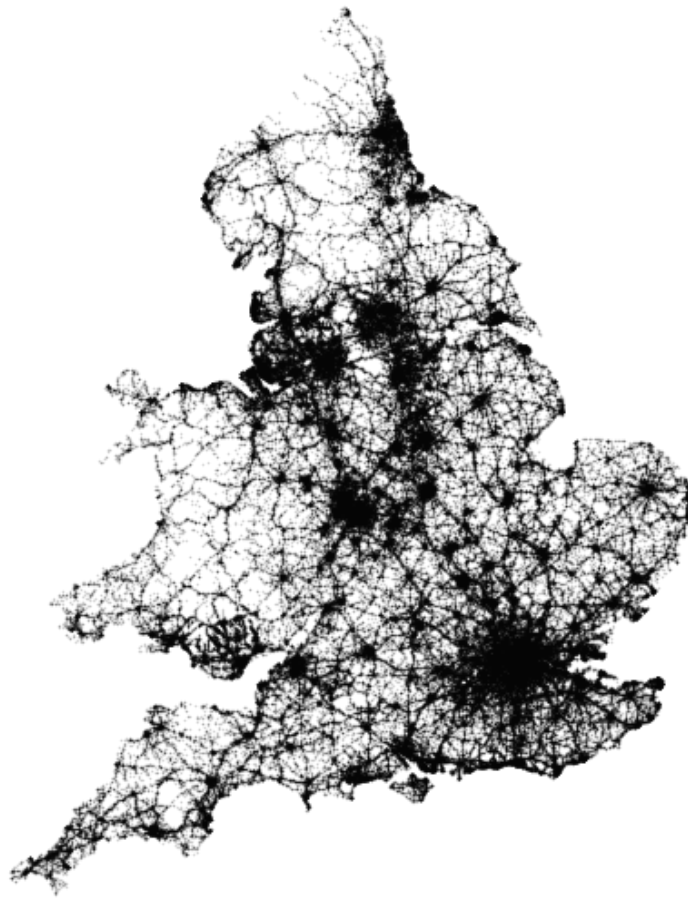
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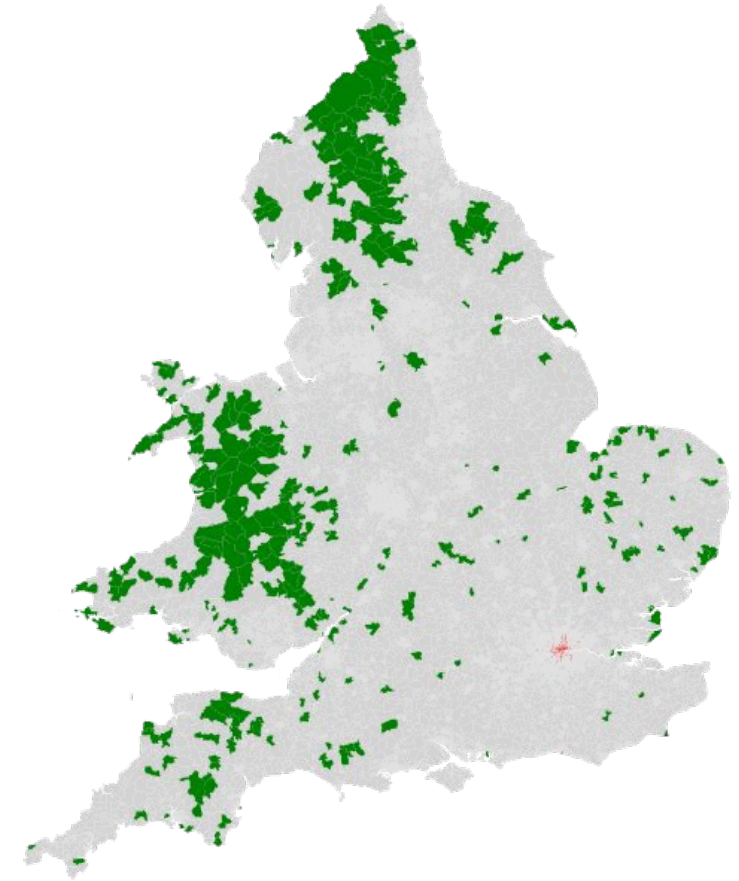


Accident hot-spots

Road traffic accidents in England and Wales, 2013-2017



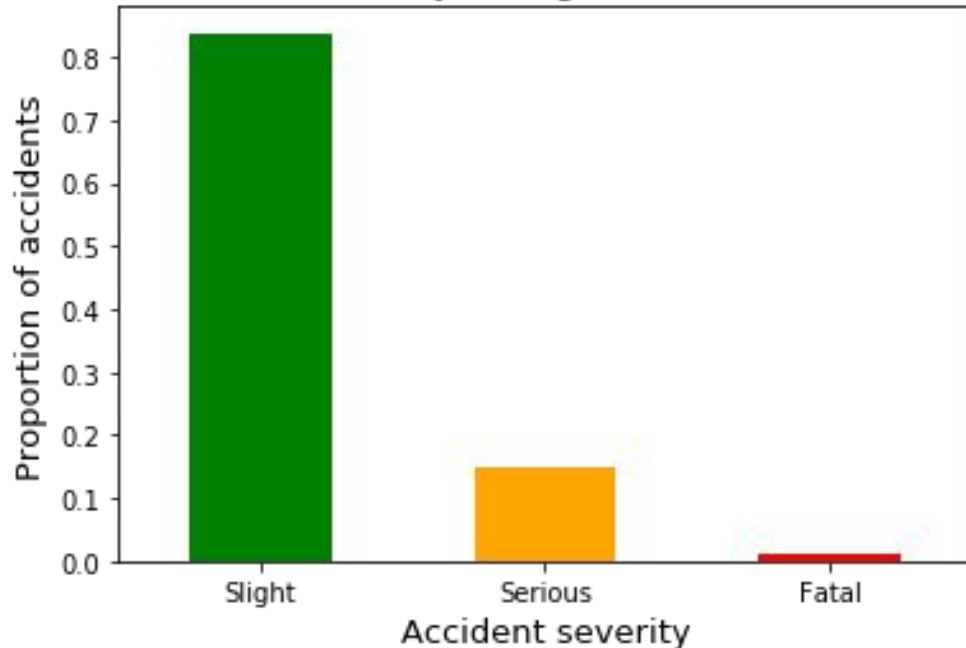
LSOAs in England and Wales with the highest (red) and lowest (green) density of traffic accidents 2013-2017



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

Accident severity

Traffic accident severity in England and Wales, 2013-2017



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

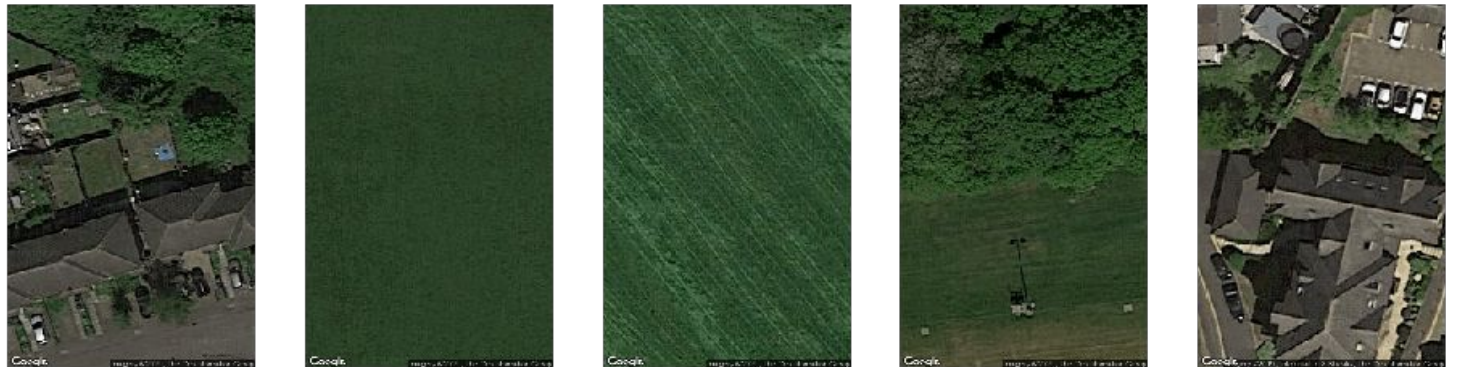
Methodology

- ❖ 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.

safe

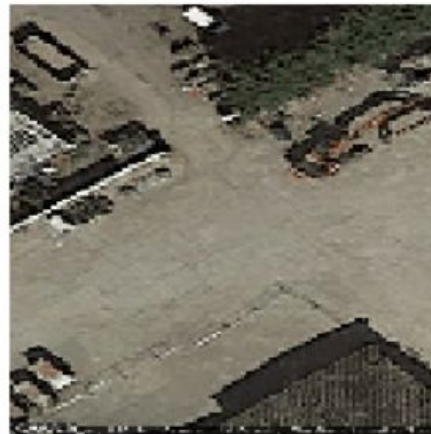


Rural

fatal/serious



safe

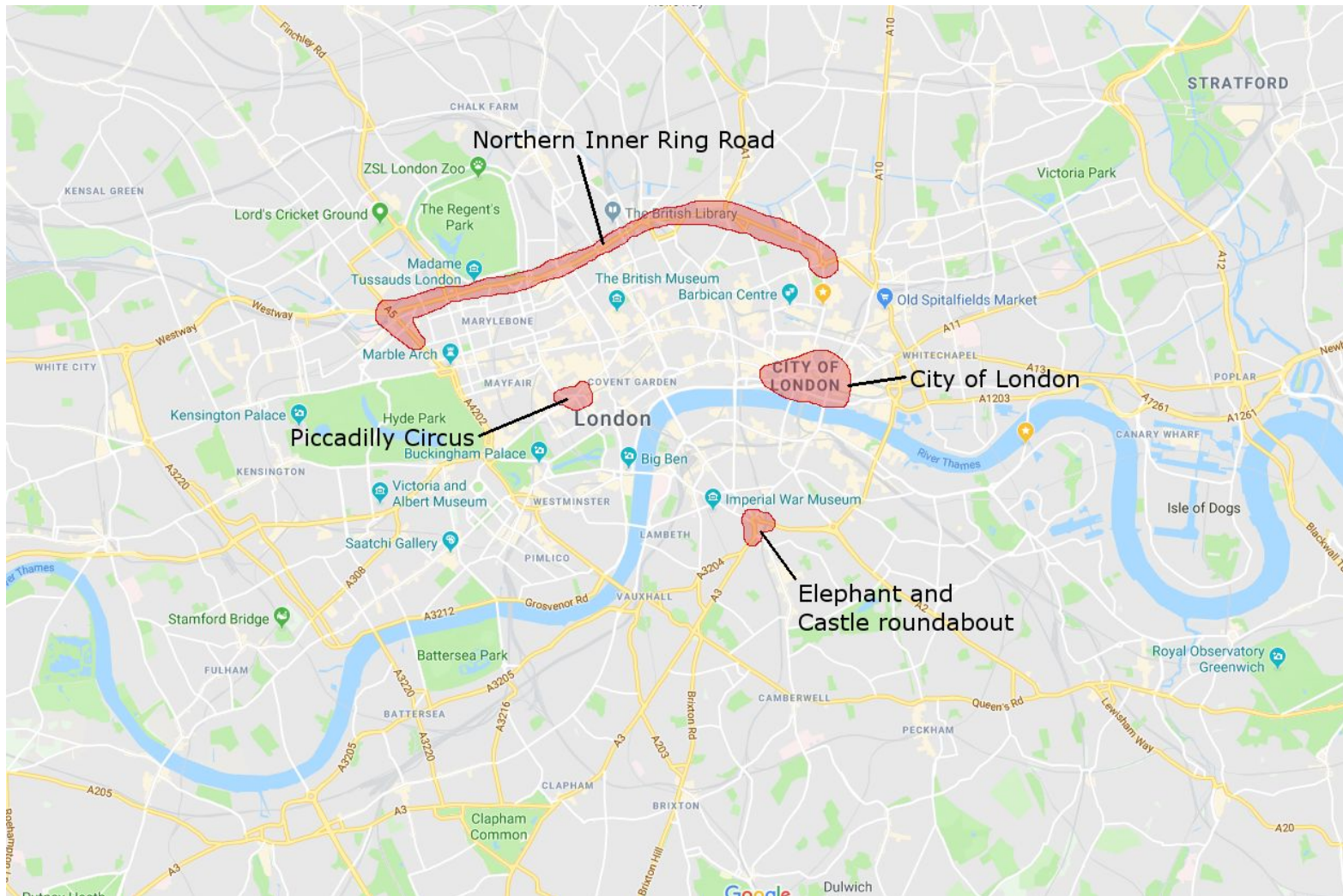


Urban

fatal/serious



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

An aerial night photograph of London, showing the River Thames winding through the city. The Tower Bridge is illuminated on the left, and the city lights create a warm glow against the dark sky. A large railway viaduct runs diagonally across the right side of the image. The text "Any questions?" is overlaid in the center in a white, sans-serif font.

Any questions?