

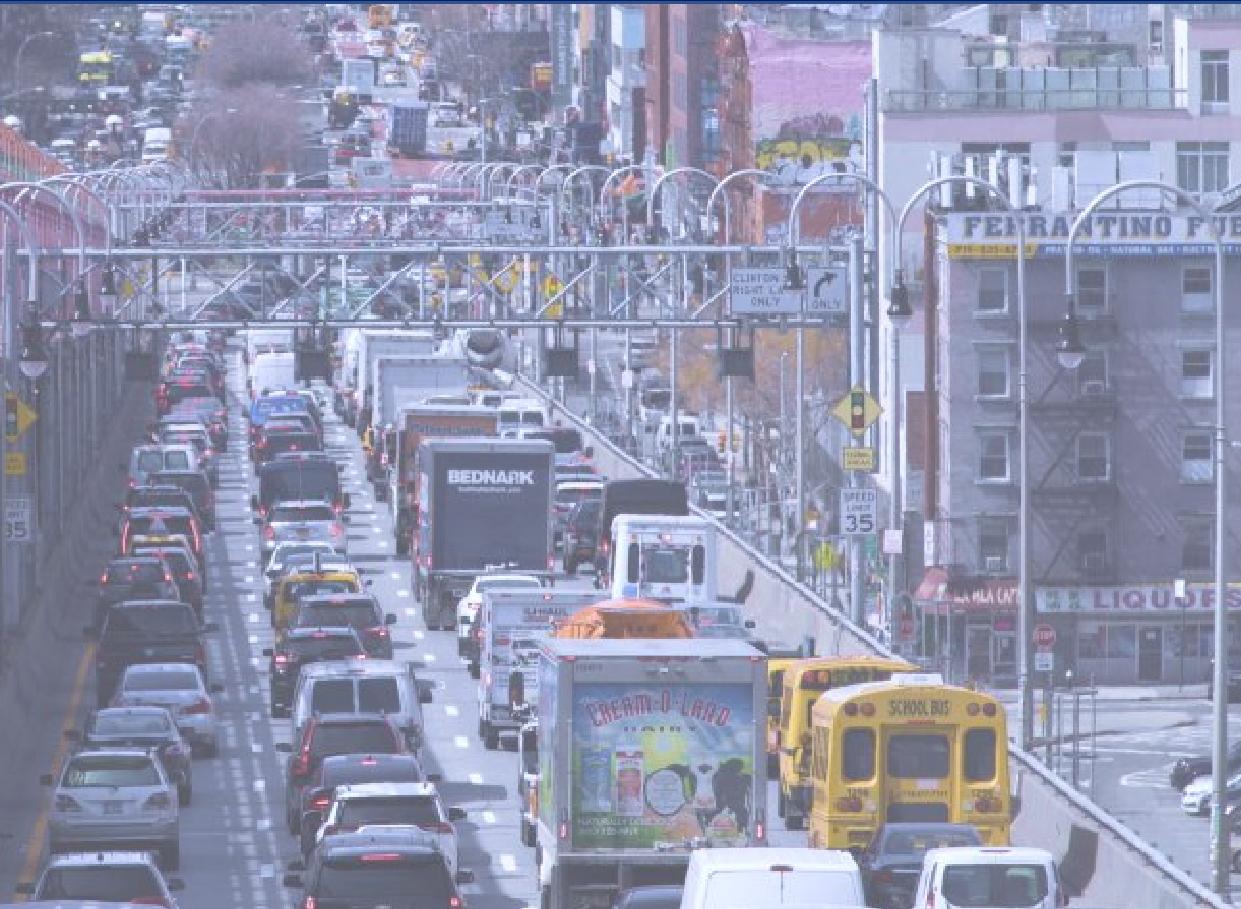
The background image is a wide-angle aerial photograph of London at dusk or night. The city is illuminated by numerous lights from buildings, streets, and traffic. The River Thames is visible on the left, with the City of London skyline across it. To the right, there are dense clusters of buildings, including modern skyscrapers and older residential structures. A major railway line cuts through the city, with tracks visible.

Predicting traffic accidents in London

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shaw

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PROBLEM



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

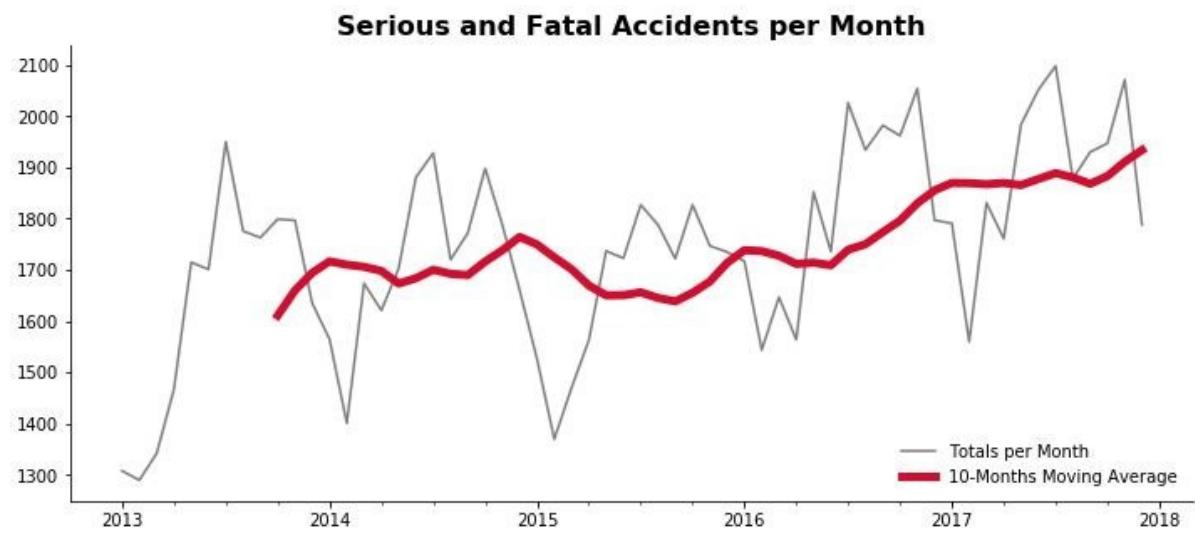
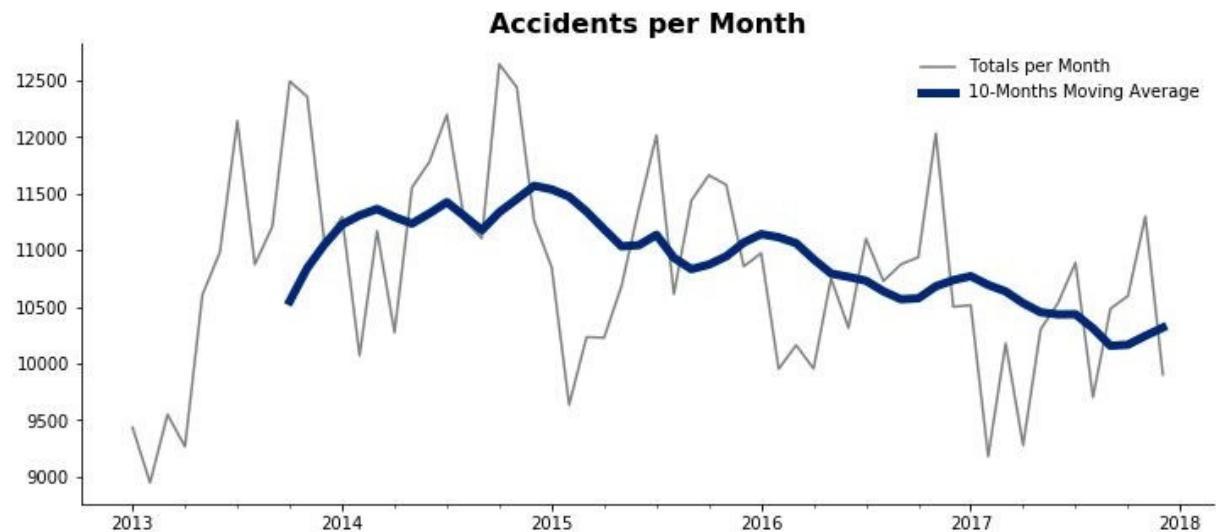
THE SOLUTION

Using satellite imagery combined
with traffic accident and local
area data to predict the location
of traffic accidents



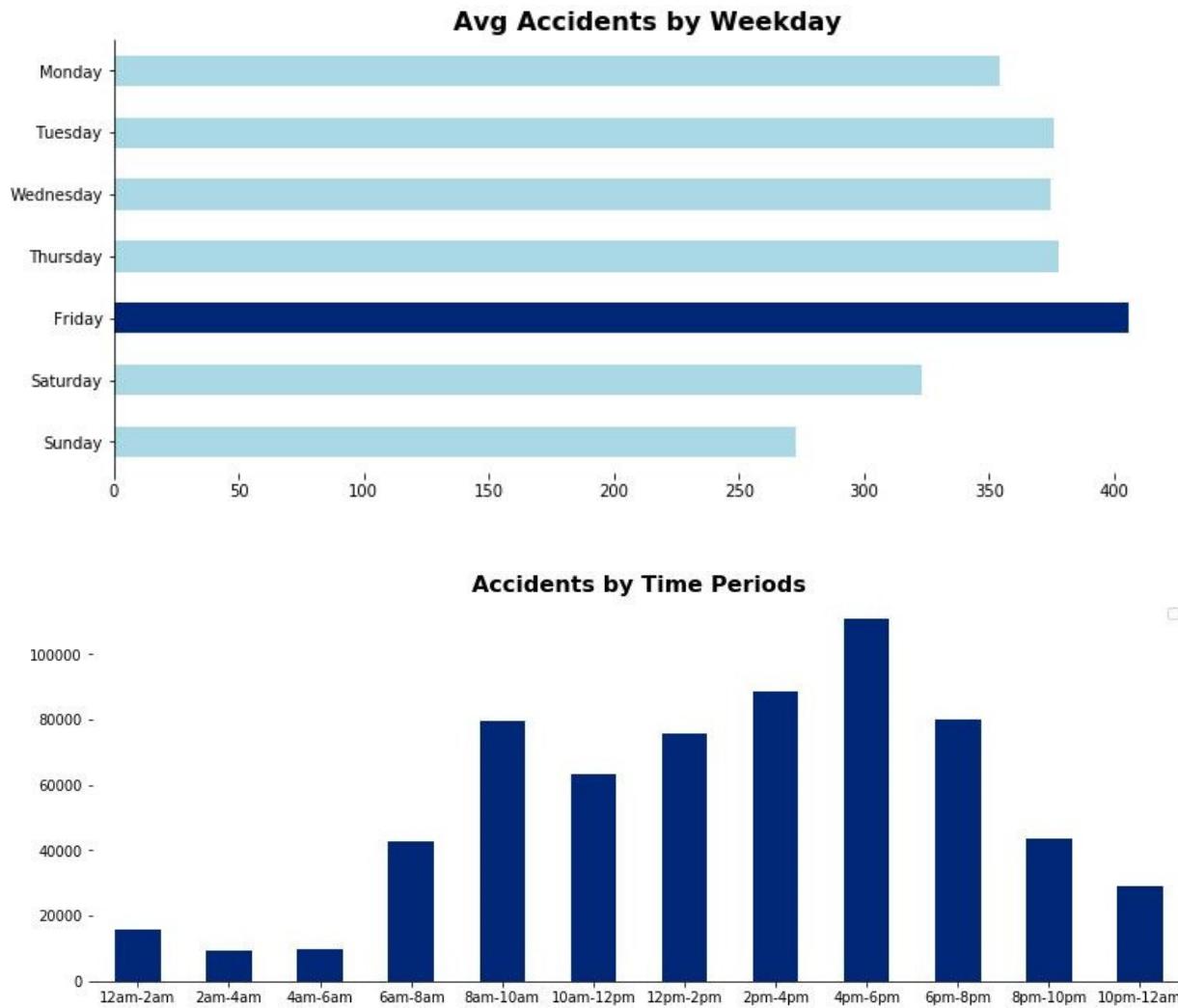
Accident trends

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



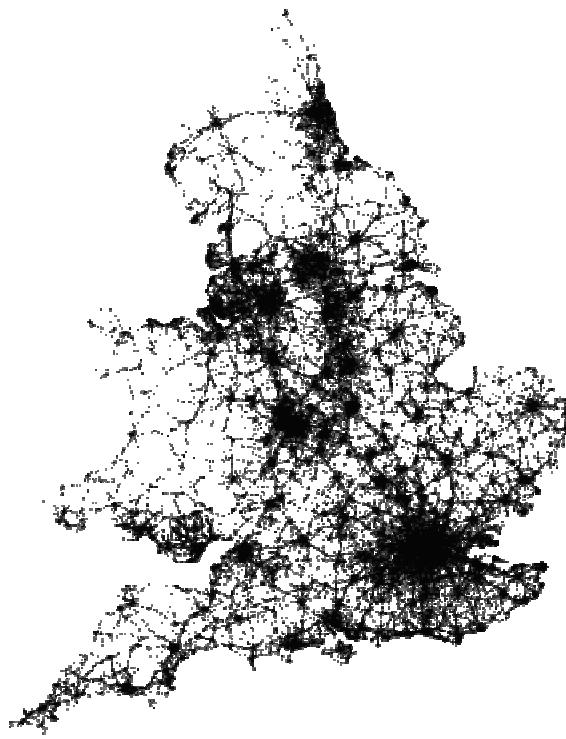
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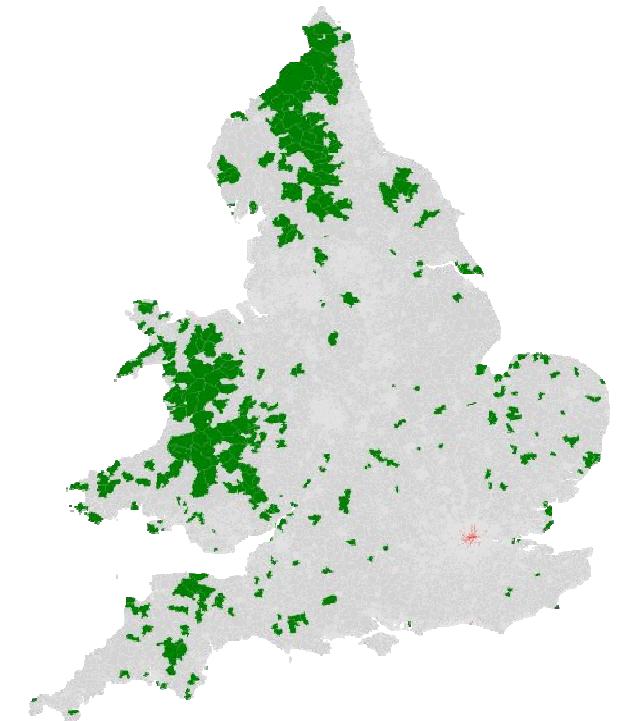


Accident hot-spots

Road traffic accidents in England and Wales, 2013-2017



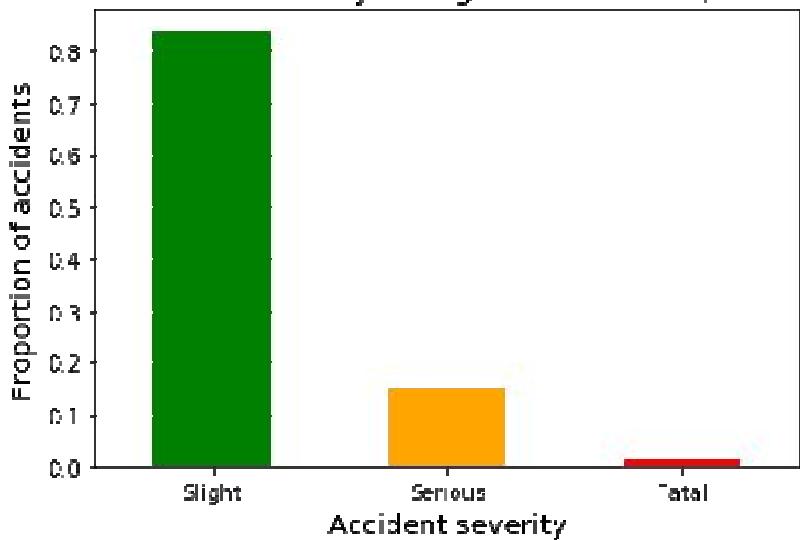
LSOAs in England and Wales with the highest (red) and lowest (green) density of traffic accidents 2013-2017



- ❖ 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:

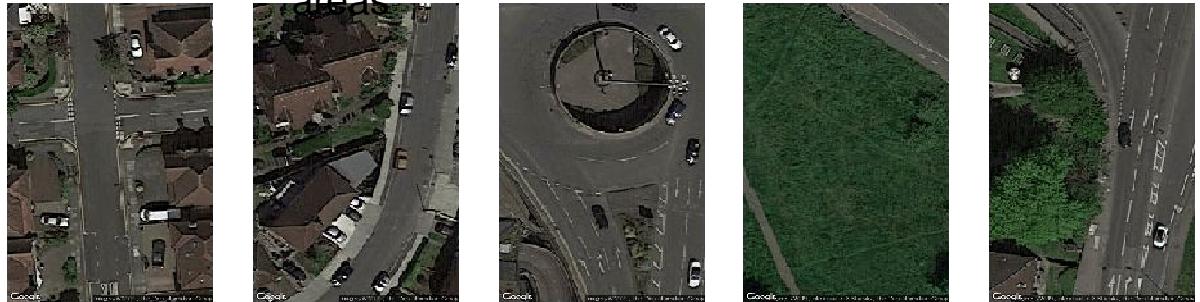
- ❖ On larger roads with higher speed limits
- ❖ On straight sections of road (not junctions)
- ❖ At night
- ❖ In rural areas

Methodology

by

- ❖ Three models - only satellite images, only other data, and combined
- ❖ Combined model performed the best (80% accuracy), with opportunities for further improvement

Examples of traffic accident areas



Examples of areas without traffic accidents

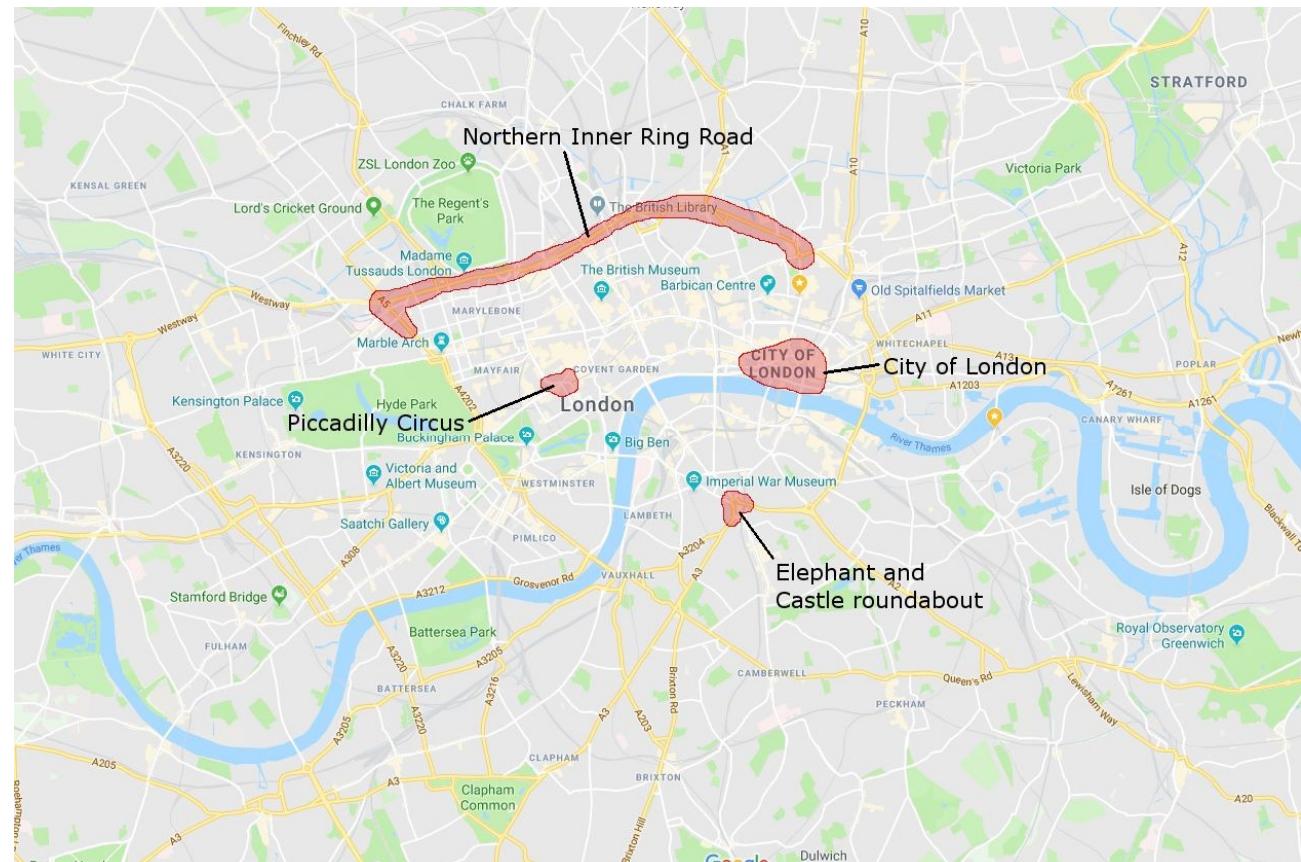


Predicting the location of traffic accidents

- ❖ Predicting locations of serious or fatal accidents
- ❖ Able to predict the worst locations for traffic accidents with 82% accuracy

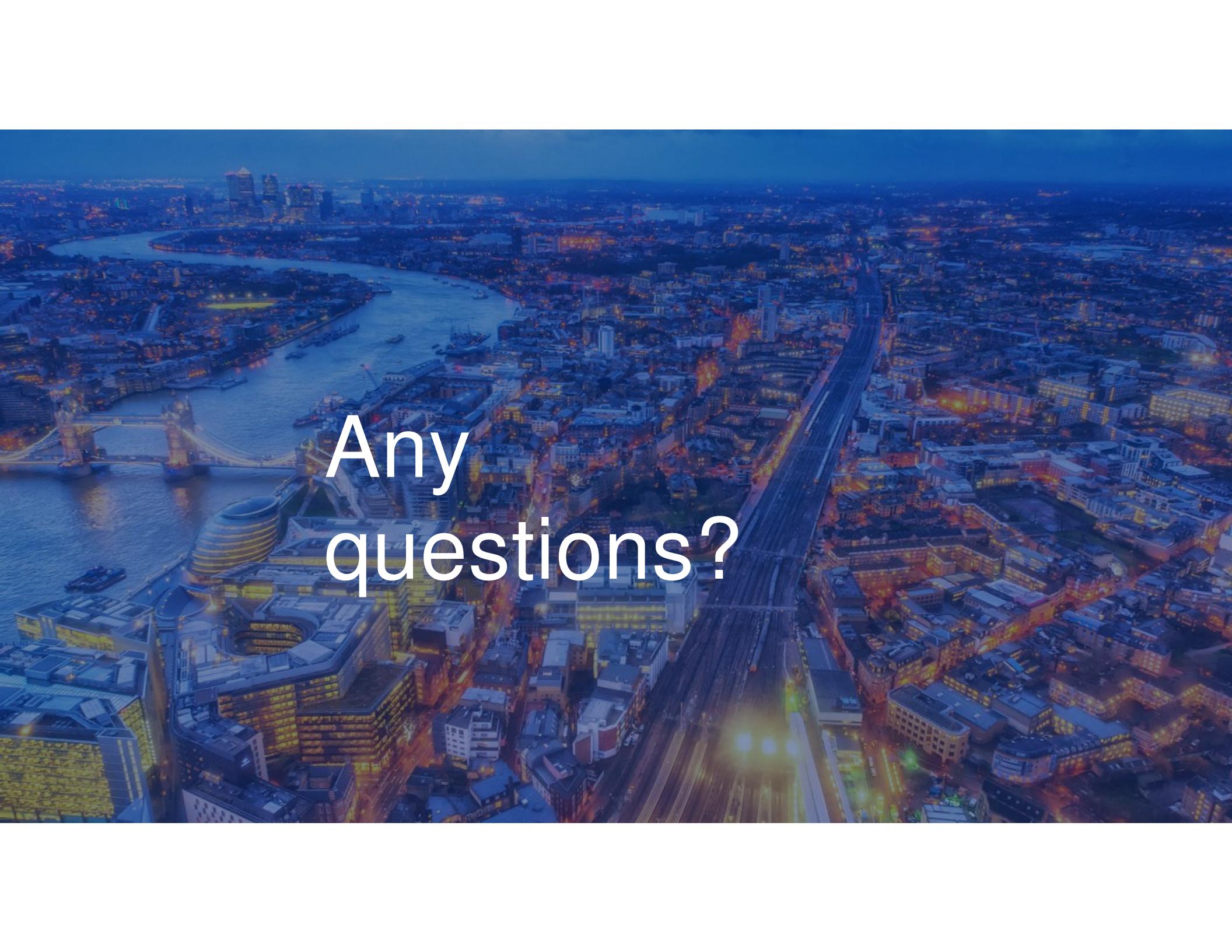


Rural and urban danger zones



Conclusion s & 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

An aerial photograph of London at night, showing the illuminated skyline of the city. The River Thames flows through the center, with the Tower Bridge visible on the left. The City Hall building is prominent in the foreground. The city lights create a warm glow against the dark blue of the night sky.

Any
questions?