Real-time Road Accident Risk Prediction

Department for Transport

Introduction

- UK Department for Transport's Road Safety through Tech Initiative
- Aim to partner GPS Navigation App maker for pilot project
- Can Navigation Apps help reduce accidents on UK roads?

Department for Transport

Motivation

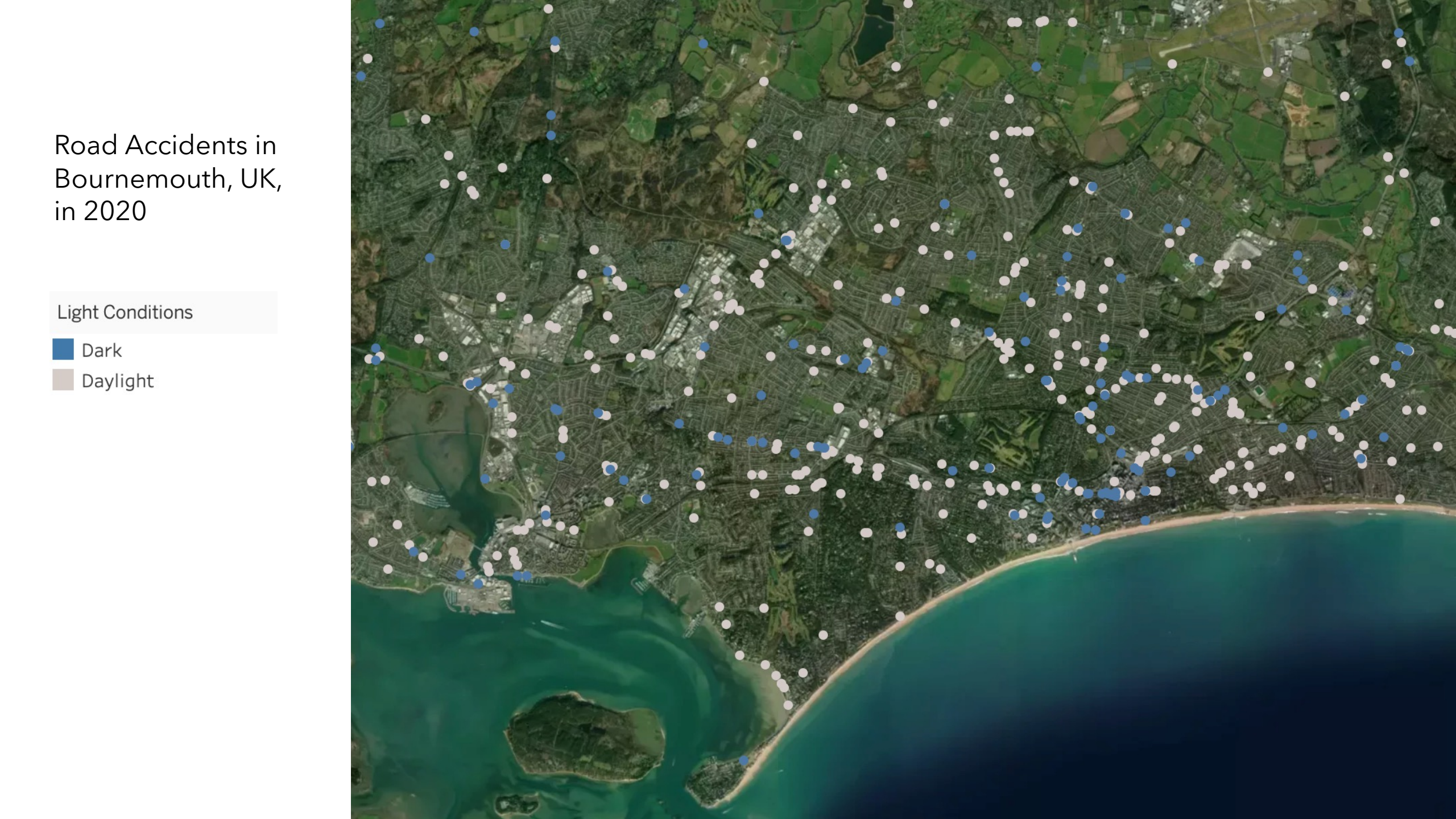
- 1,460 people killed in road accidents on UK roads last year
- 22,069 people seriously injured
- 91,200 accidents in total

Questions we want project to answer

- Can a navigation app predict moments of heightened accident risk, using:
  - historical UK accident data,
  - data previously collected by the navigation app, and
  - live data such as weather, light and traffic conditions?

- Can we warn drivers in a useful way?

Road Accidents in Bournemouth, UK, in 2020



Road Accidents in Bournemouth, UK, in 2020 in poor weather conditions

Light Conditions

- Dark
- Daylight

Similar accidents in the past few years at same intersection near Bournemouth, UK.

Solution Path

- Supervised learning: classification.
- Specifically, classifying each 'moment' on the road as high enough risk to warn driver, or not.
- A 'moment' is a combination of location on the road, direction of travel, and speed plus a set of conditions.

Measures of Success

- Ultimate aim is to A/B test with actual road users
- Before that: multiple tests on simulated road environments

Potential Pitfalls

- Are road accidents predictable?
- More data needed
- Can we warn drivers in a useful way?

The scale of the challenge

- 286 billion miles driven in UK last year
- Over 3 million miles driven per accident