UK Road Accidents

An Analysis By Fadhil

Executive Summary

- Our data set has been collected by the UK police forces for every vehicle collision in the United Kingdom from 2012-2015
- Our features include a myriad of information, such as location, condition, casualties, etc
- There are a total of 28 columns and 570,610 rows of data
- In this analysis we will be answering a couple of hypothetical assumptions, questions and presenting some insights
- The purpose of this analysis is to uncover the important aspects affecting the severity and occurence of these accidents and postulate some solutions to tackling this issue

01 Hypotheses & Questions

02 Methodology

03 Exploratory Analyses

04 Conclusion & Findings

01 Hypotheses and Questions

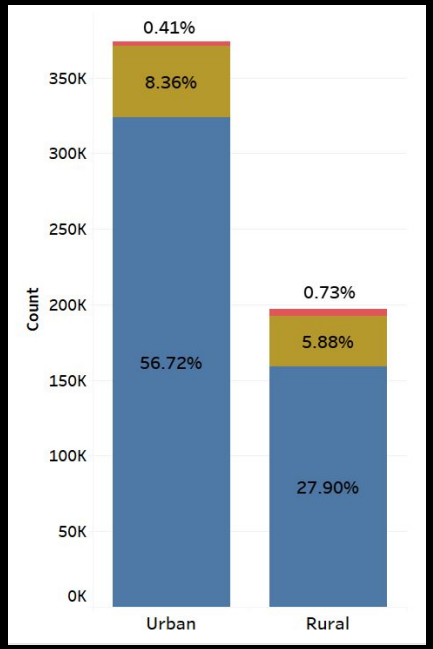
- How is severity of accidents dependent on the following:
  - Speed limit
  - Seasonality - time of year, day of the week and time of the day
  - External factors e.g. Road Type and Light conditions
  - Geography (Rural vs Urban areas)
- What are the predictors of accident severity?
- What are the predictors of police response (i.e. if a police officer will attend the scene)?
- How do we reduce the severity/occurrence of these accidents?

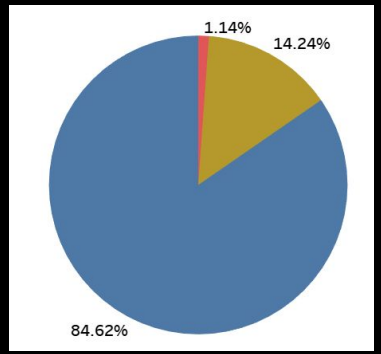
02 Methodology

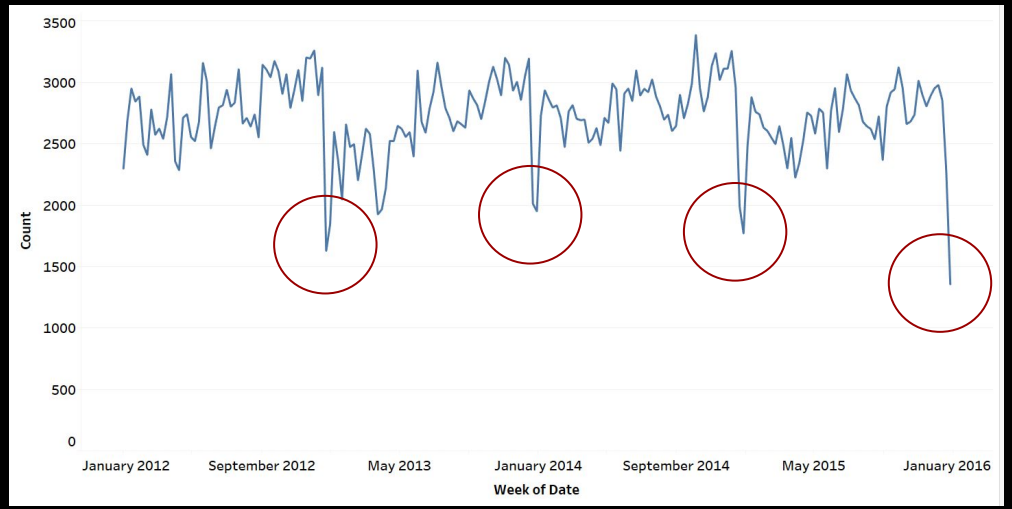
- Exploratory Data Analysis will be done via Tableau and visualisations such as bar graphs, pie charts and area charts will be utilised to portray relationships between the features and severity of accidents
- Predictors for both accident severity and police response are generated from the most important features in a Machine Learning predictive model (Random Forest Classifier)
- With the predictors generated above, identify ones that can be controlled and pose solutions for the reduction of the severity/occurrence of accidents

03 Exploratory Analyses

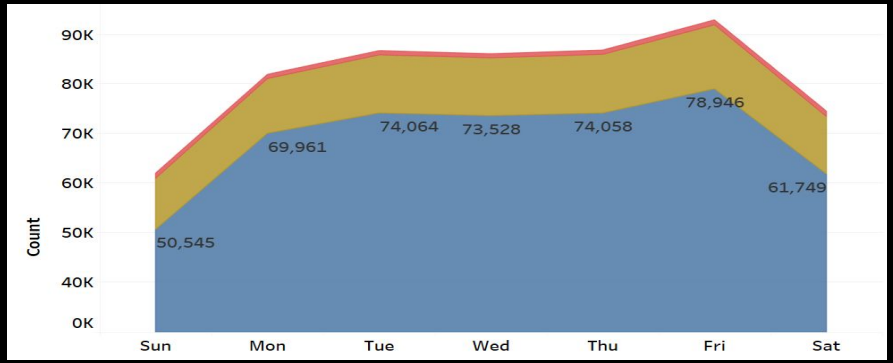
- Distribution of severities in our data
- Urban/Rural
- Seasonality

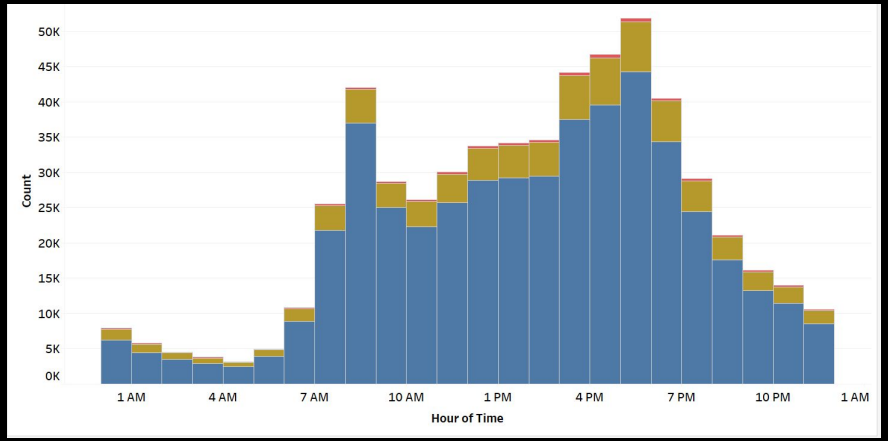


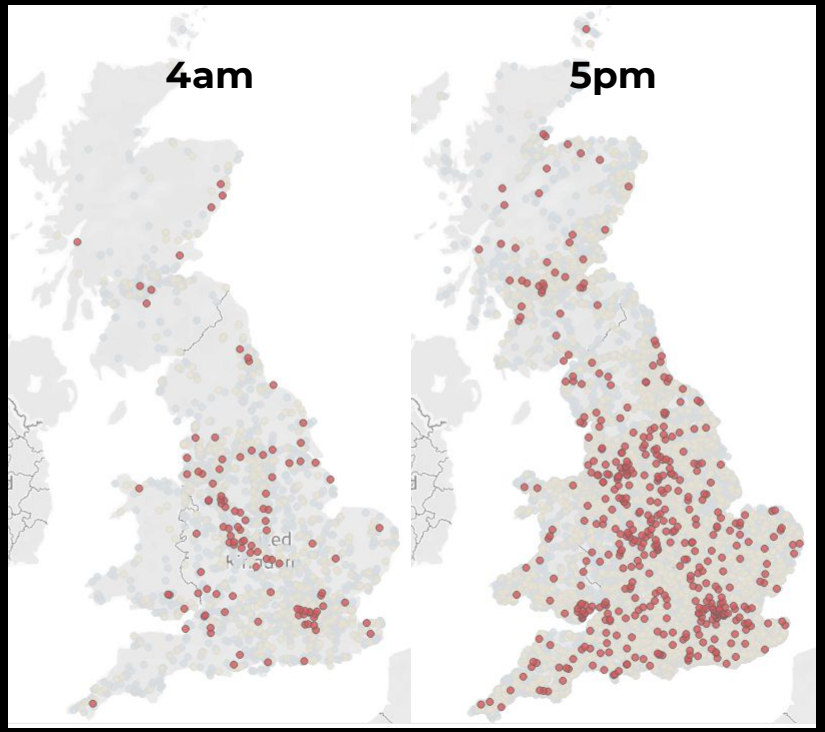




Time and Day

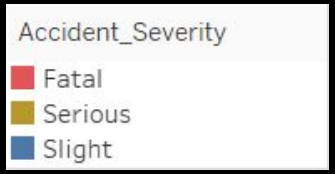




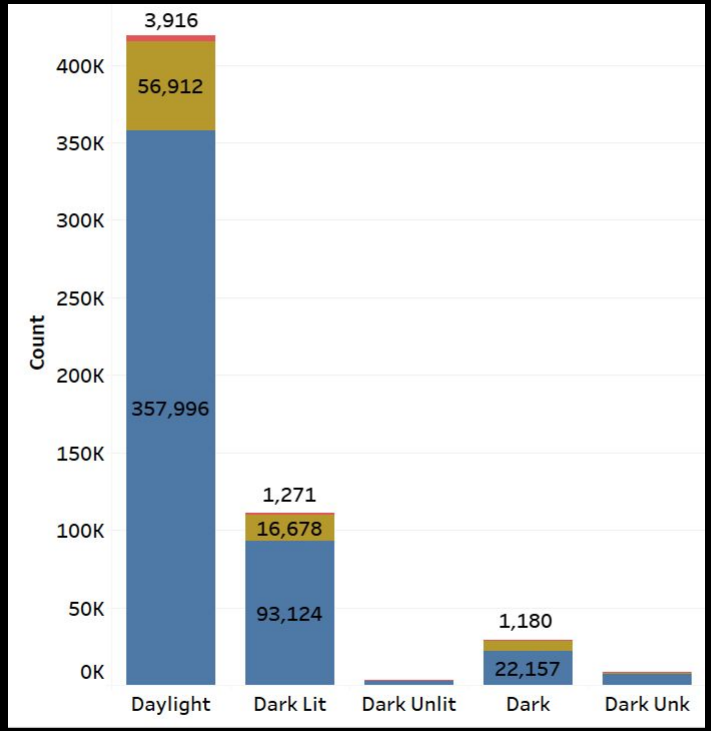


- Most of our accidents occur during morning/evening rush hour
- Weekends seem to have the least number of accidents and Fridays having the most

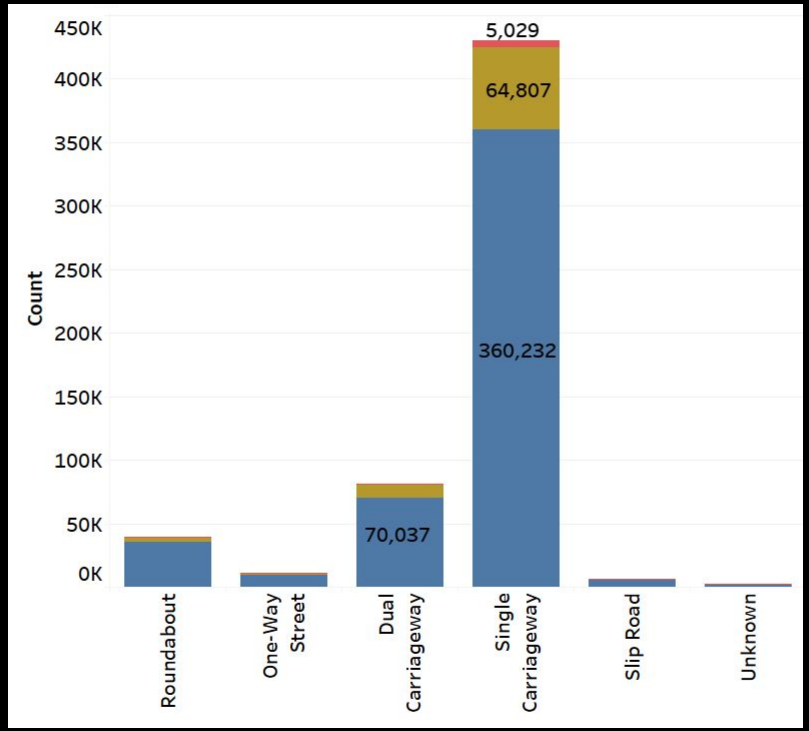
External Conditions



Light Condition



Road Type

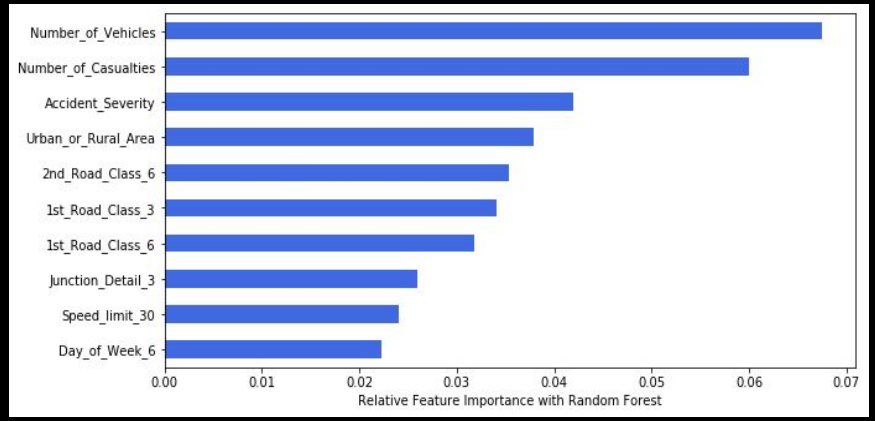


Predictors via ML

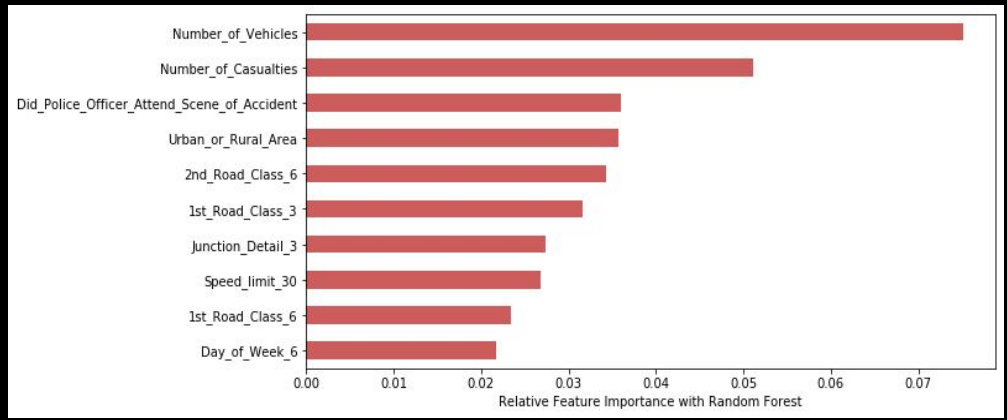
- It appears that the predictors for both Police Attendance and Severity are extremely similar
- Other than the interchangeability of Police Attendance and Severity as features, Speed Limit is higher up on the Severity vs Police Attendance

2nd_Road_Class_6	Unclassified
1st_Road_Class_3	A (major road)
1st_Road_Class_6	Unclassified
Junction_Detail_3	T/Staggered Junction

Police Attendance



Severity



04 Conclusion & Findings

- Accidents most commonly occur during the summer months, fridays and rush hour.
- The vast majority happen during daylight and on single carriageways
- Severity seems to be more closely related to the number of vehicles involved, T or staggered junctions, on unclassified and A type roads and of course the number of casualties.
- With this insight, actionable plans should be carried out to reduce the severity of these accidents.
- More junction control and management of single carriageways should be conducted during peak accident periods mentioned above, with a greater emphasis in urban areas