Analysis and Predicting the UK Road Traffic Accident

Analysis of UK Traffic Accidents and Predicting the Accident Severity

• The costs of fatalities and injuries due to traffic accidents have a great impact on the society and economy.

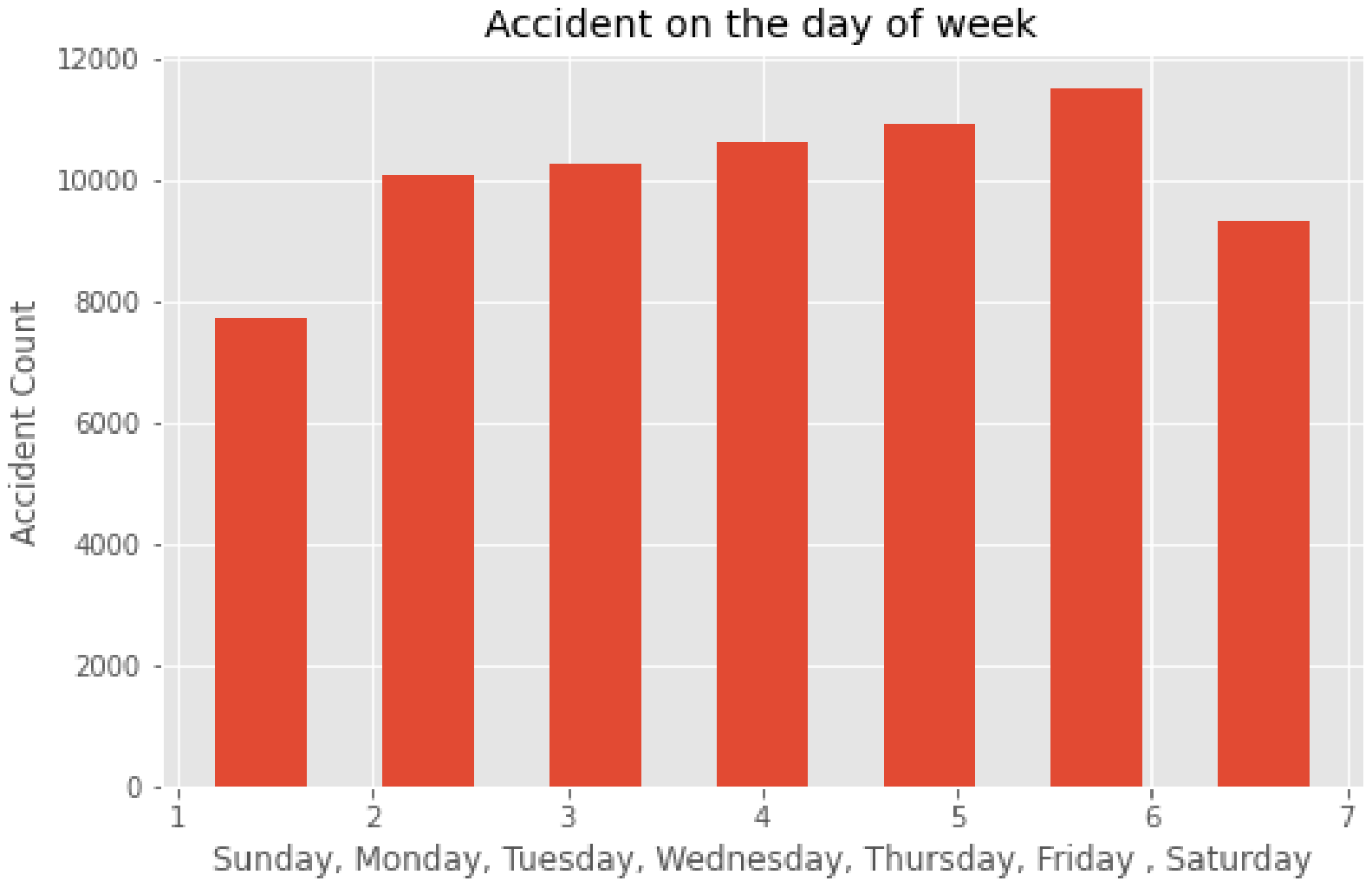
• Predicting the Accident Severity, can make well-informed actions and better divide financial and human resources.

- Government can decrease prevent cost.
- Insurance company can manage risk and premium cost.
- Driver increase they chances of staying safe on the road.

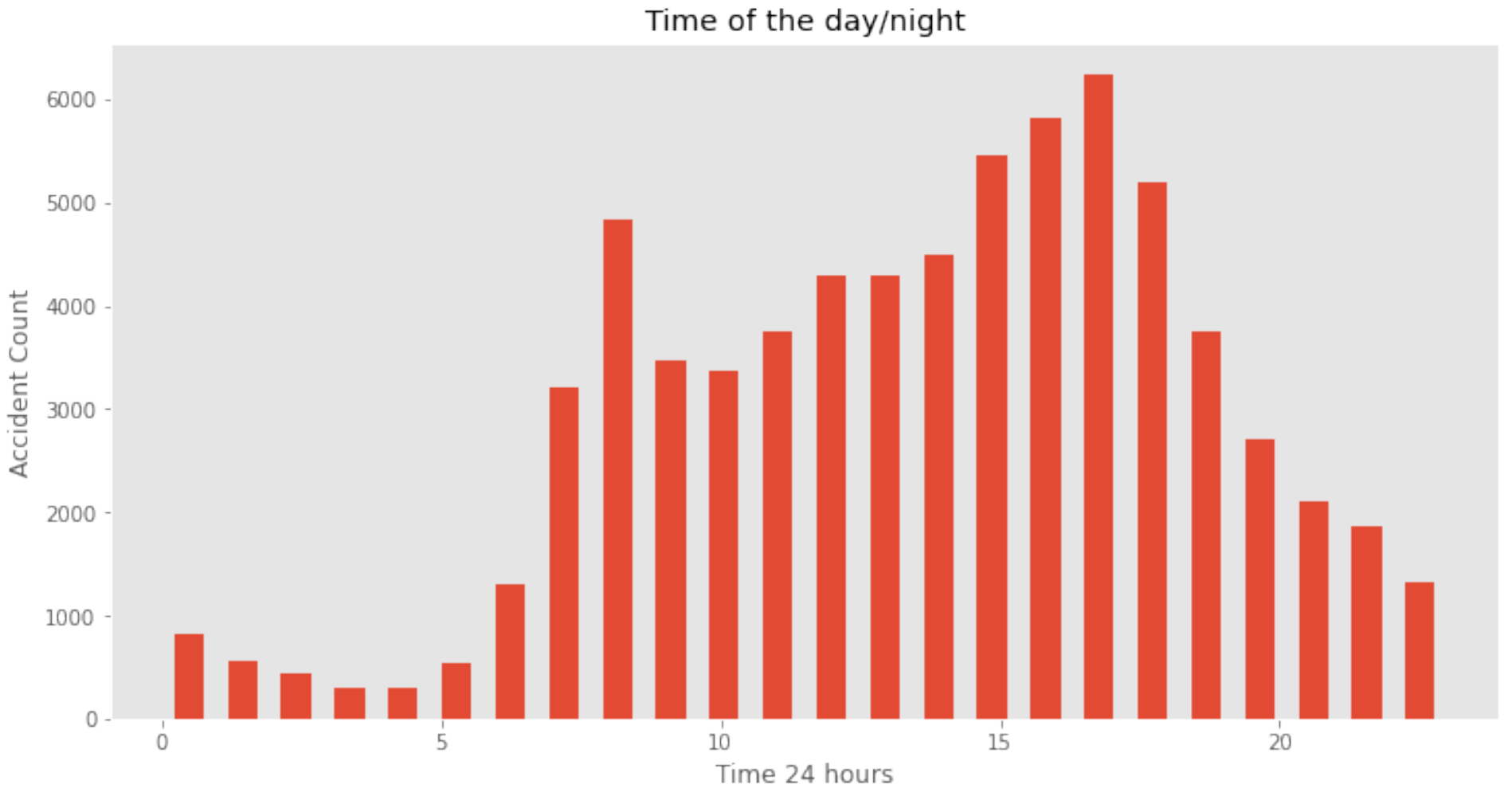
Data acquisition and cleaning

- Road accidents and safety data data (2015) from www.data.gov.uk.
- Data downloaded and 2 files Accident Circumstances and Vehicle were joined into one table.
- Missing values not imputing any mean or median value as the dataset are big enough to execute analysis.
- Cleaned data contains 70,383 rows and 53 features.

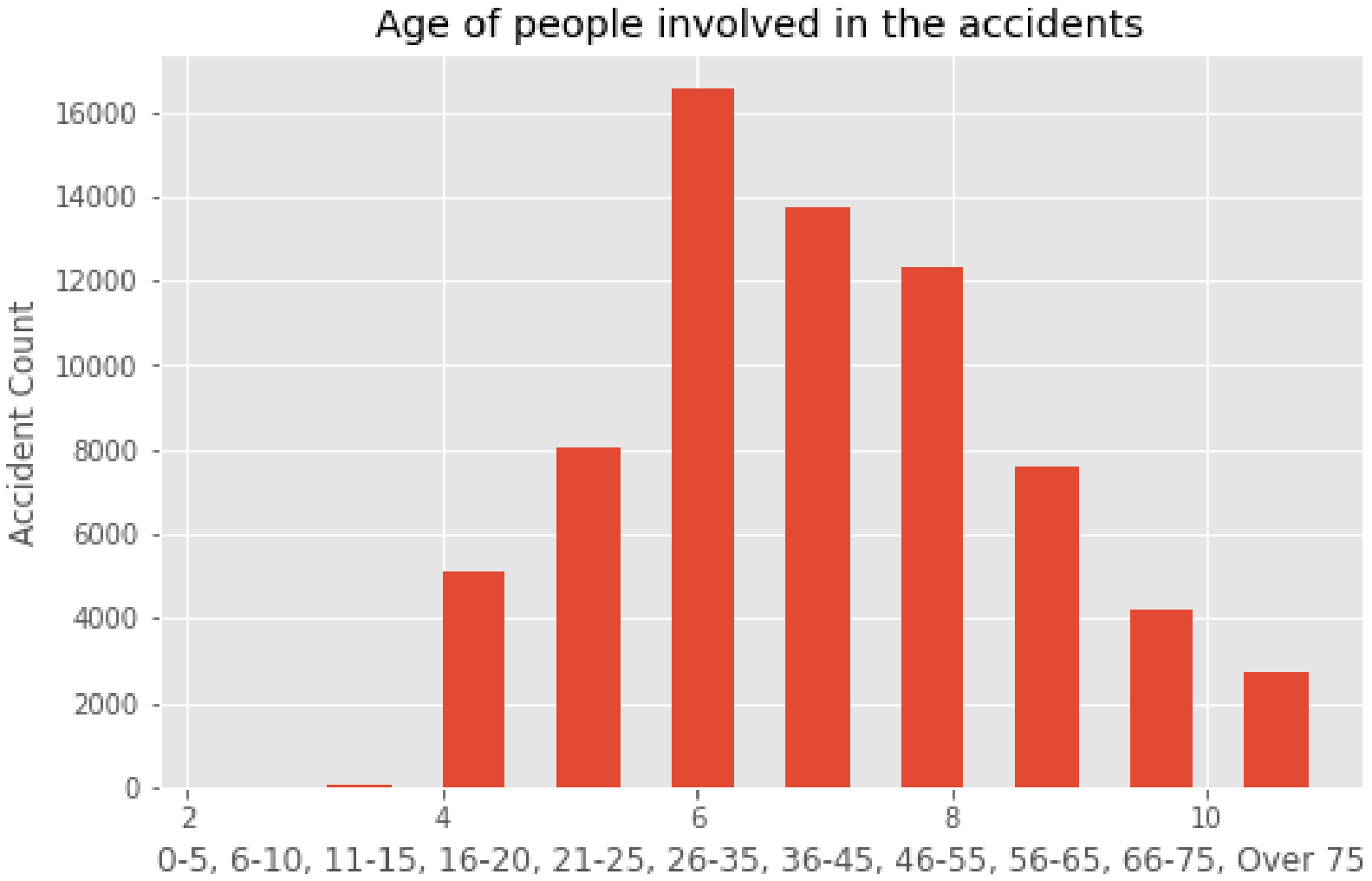
What the number of accidents on the days of a week?



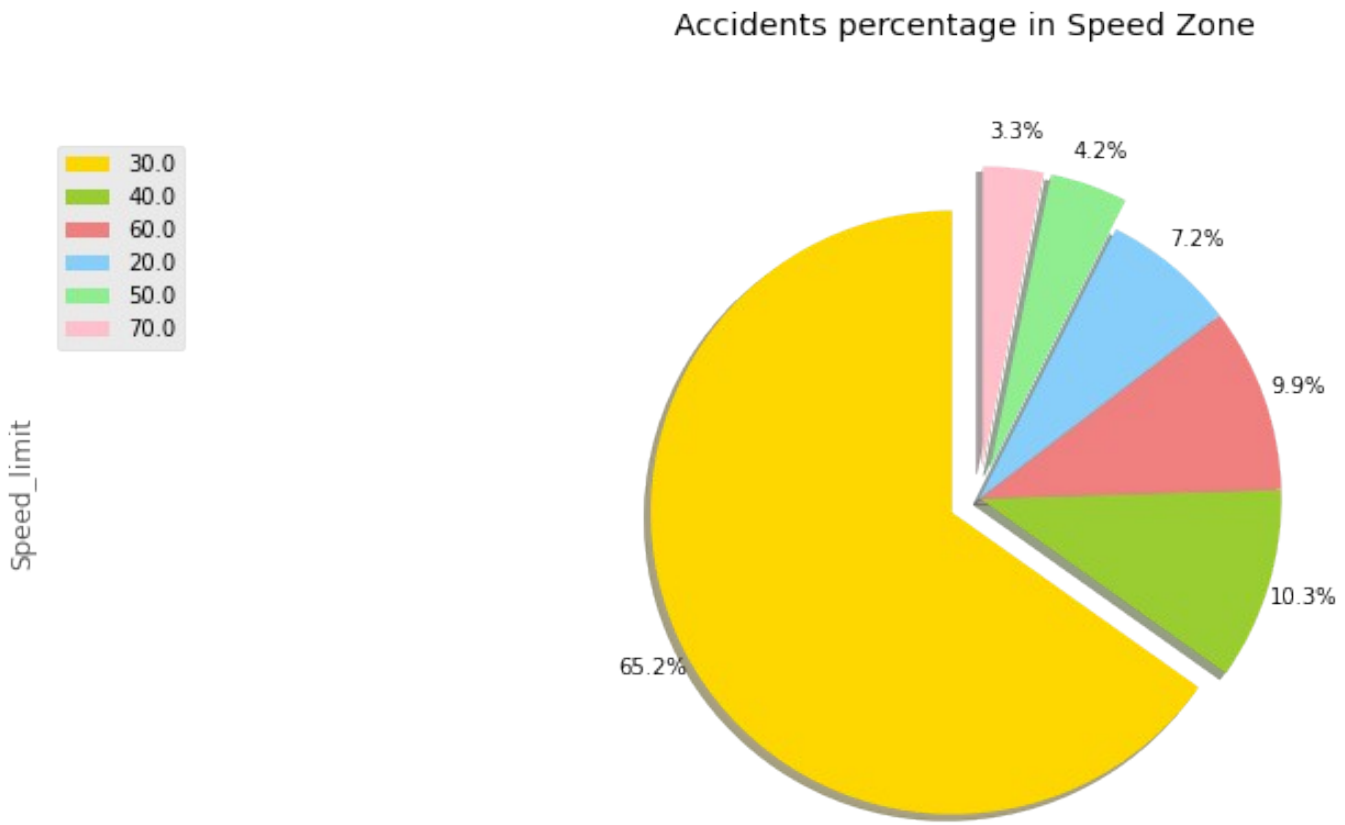
What time had the most accident?



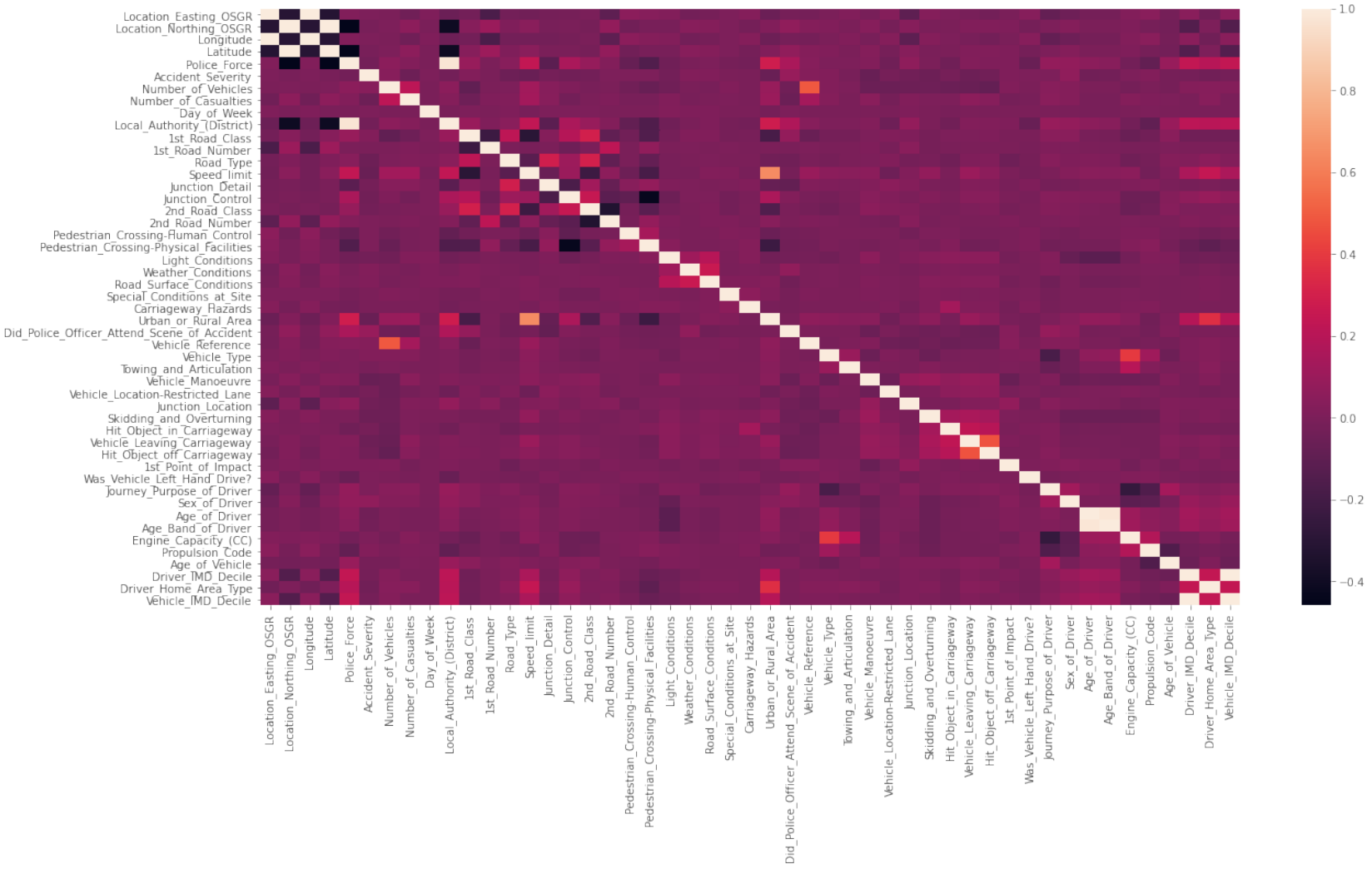
What are the age group are most likely to be involved in accidents?



What the Speed Zone had the most accident?

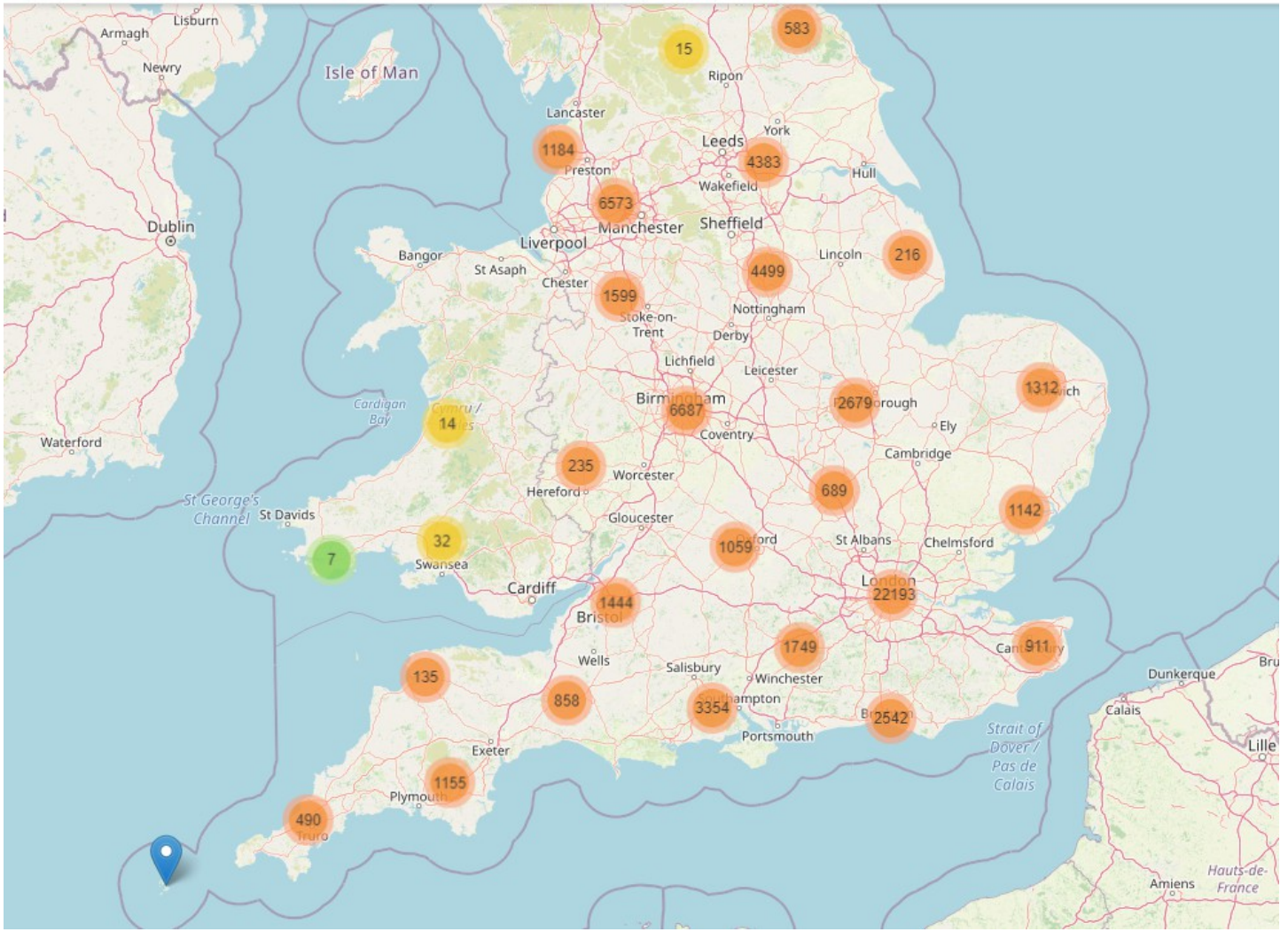


Correlation between categorical variables



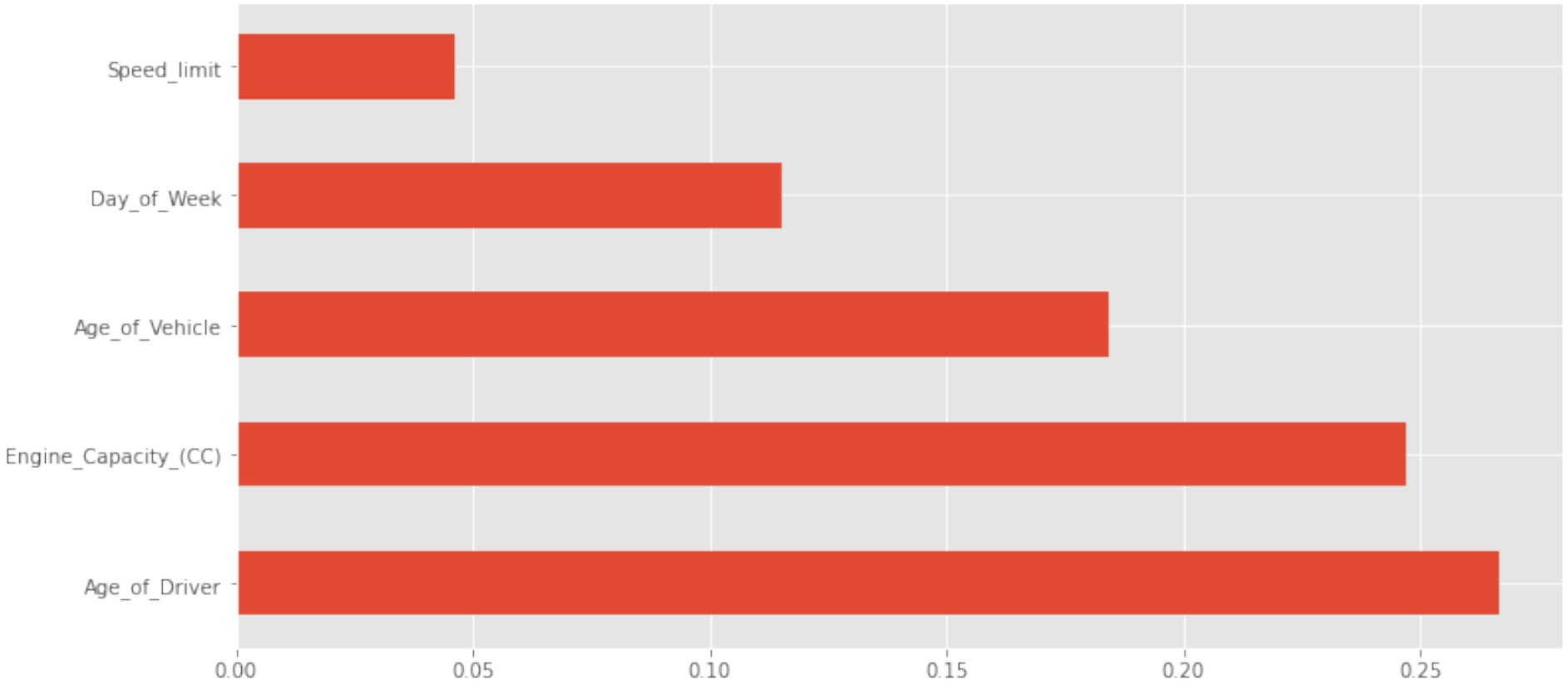
This data had many variables but there is not so much strong correlations between any variables. I can spot few interesting correlations for example: speed limit and Urban or Rural Area.

Plotting accidents Location on Google Maps

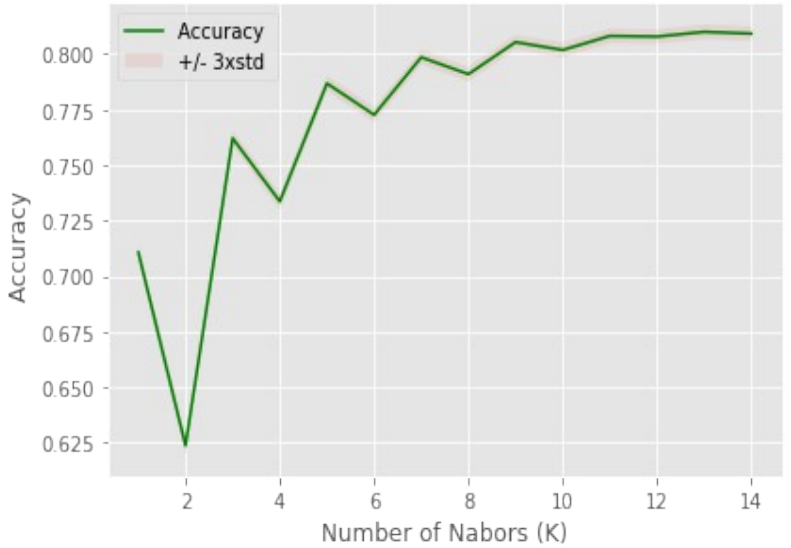


London has the most accidents. However, it also depends on the amount of traffic of each area.

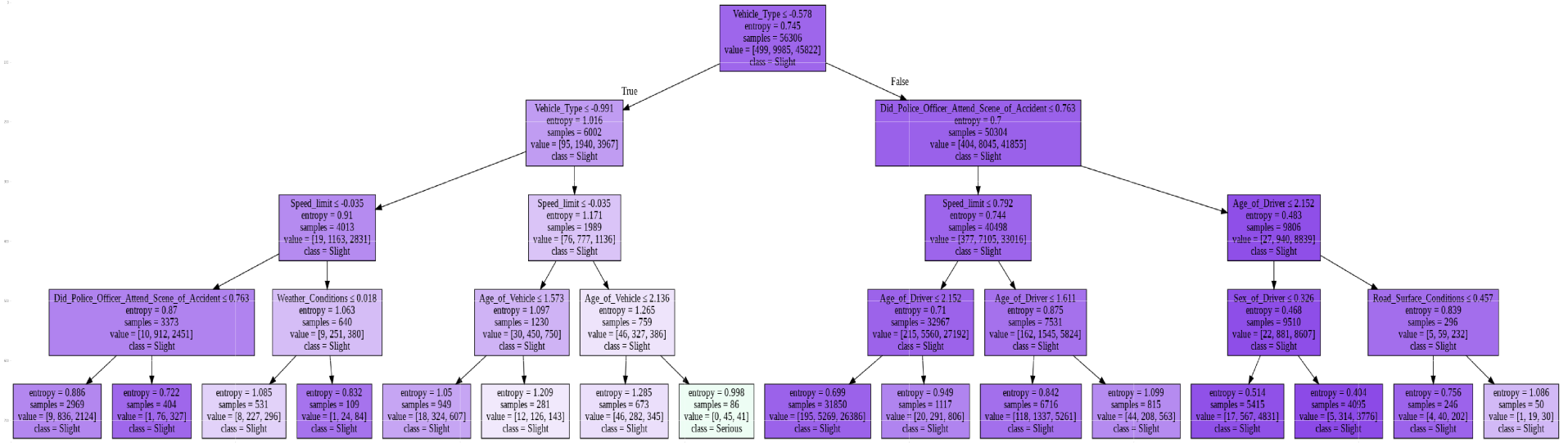
Important Feature to cause the traffic accident



Classification Model



- K Nearest Neighbor(KNN) : The best accuracy was with 0.80997 with k= 13
- Decision Trees's Accuracy : 0.81487



Conclusion and future directions

- Built useful models to predict the accident severity.
- Accuracy of the models are really good perform and still has a room for improvement.
- Capture more leading causes.
- Ideas include:

  Actual speed that the vehicle was going when the accident happened.

  Alcohol usage.