

DETERMINANTS OF THE SEVERITY OF CAR ACCIDENTS

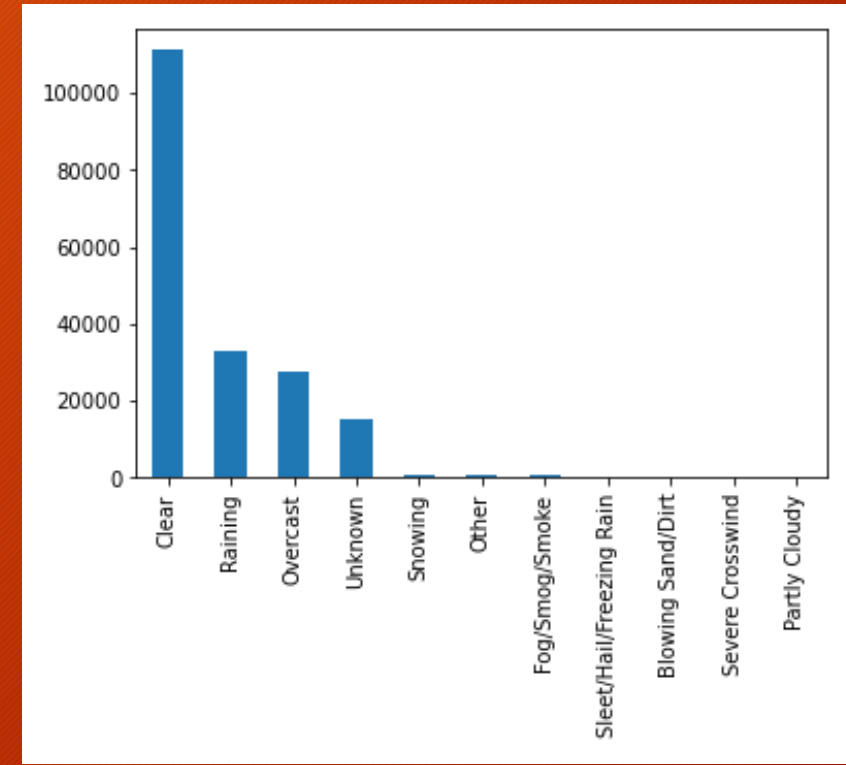
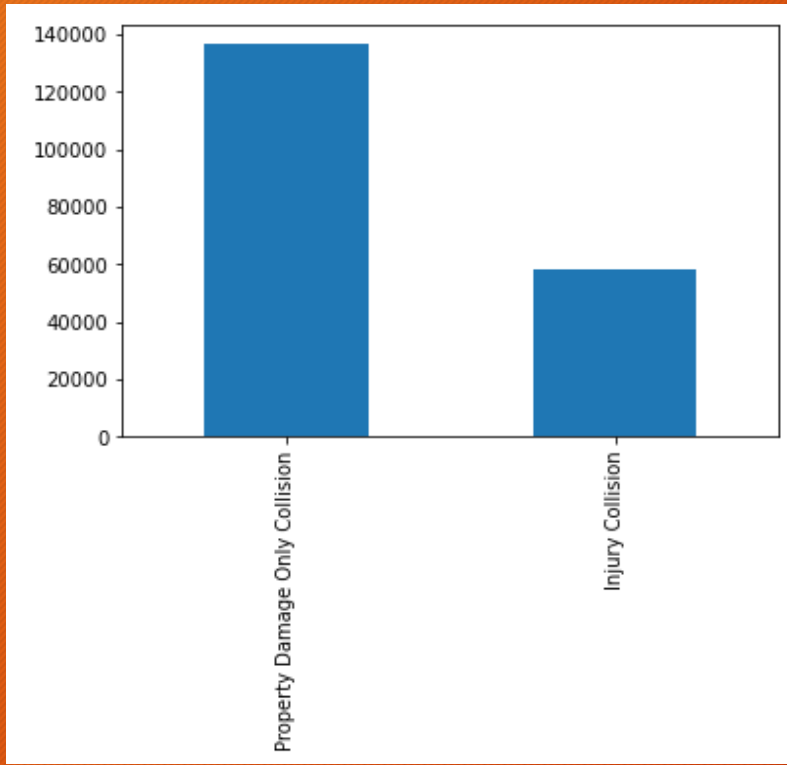
DESCRIPTION OF THE PROBLEM

- Car accidents are a huge concern in most of societies
- More than 30,000 people die due to car accidents per year
- Important to understand the drivers behind car accidents
- Weather, road and light conditions may play an important role
- Important to understand whether this is the case for policy-makers and drivers

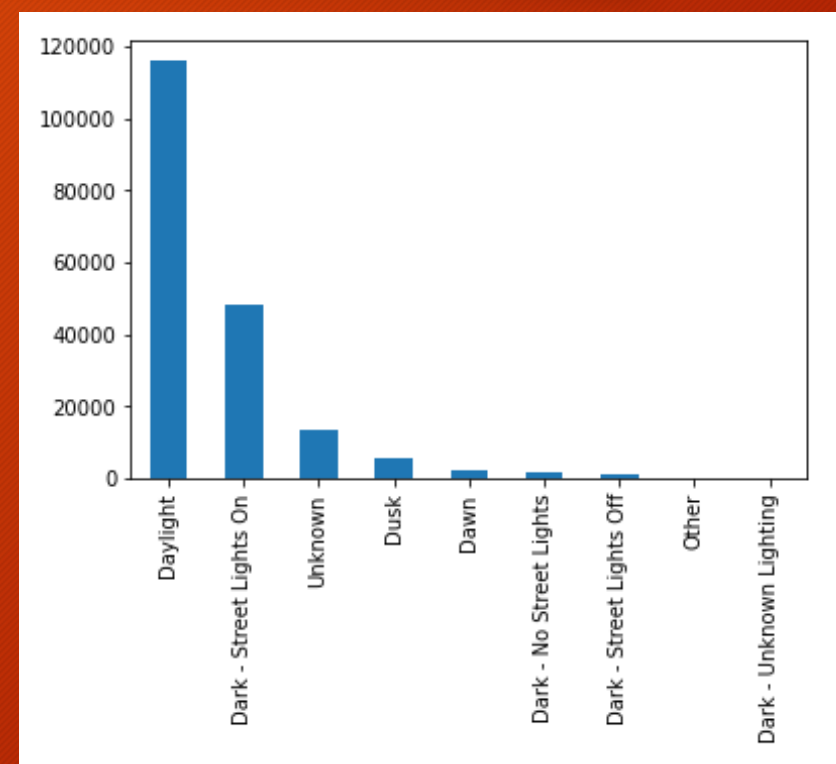
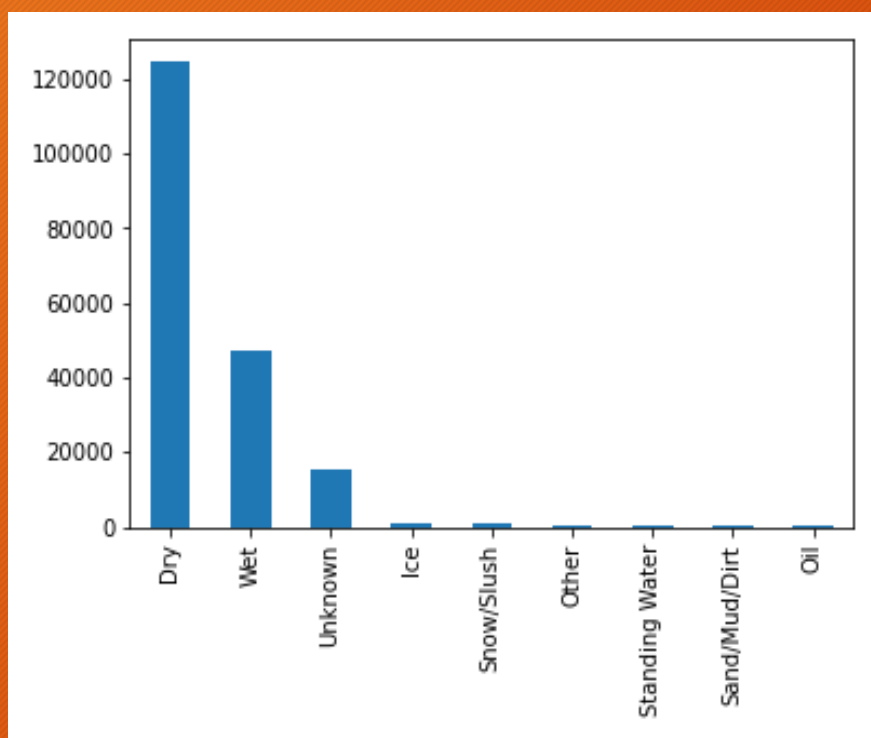
DATA

- Project uses data on Seattle city car accidents
- Source of the data is the SDOT Traffic Management Division of the Traffic Records Group
- 194,673 observations and 37 attributes
- Attributes the model uses to predict severity of car accidents: 'WEATHER', 'ROADCOND' and 'LIGHTCOND'

DESCRIPTIVE STATISTICS



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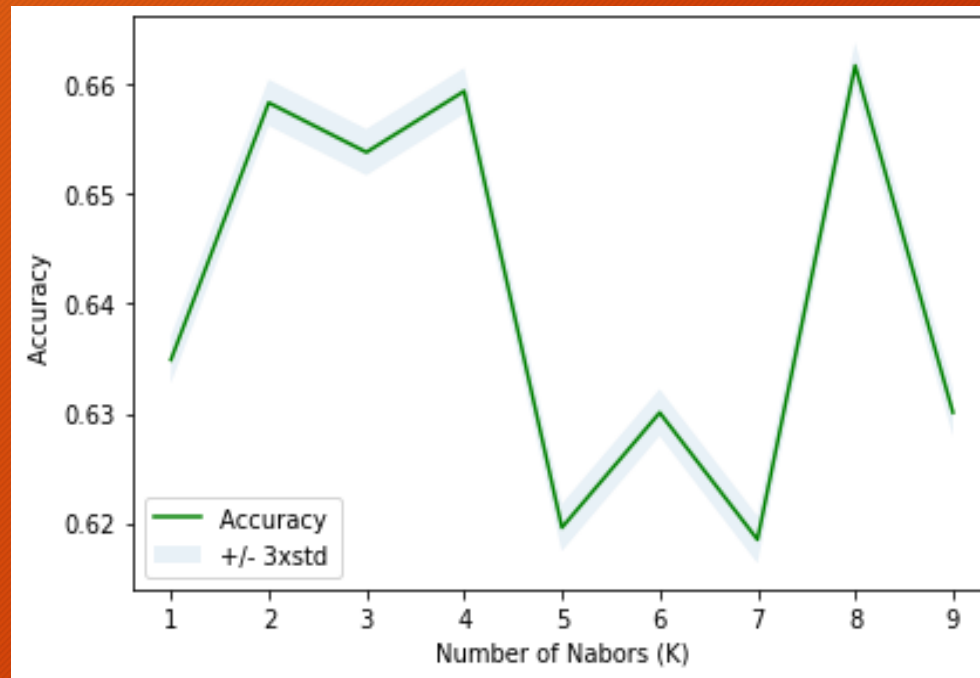


METHODOLOGY

- I use three models that predict the severity of car accidents:
 - KNN model
 - Decision Tree model
 - Logistic regression model
- I compare the performance of these models using scores such as Jaccard Score and Log loss Score
- I use 70% of data for training the model, and 30% for testing it

METHODOLOGY

- Performance of KNN model is highest when there are 8 K-nearest neighbours



RESULTS

- All models have predicted that weather, road and light conditions are important predictors of the severity of car accidents
- Estimates are robust: all models predict results in a very similar way and have a similar performance

DISCUSSION

- The findings of weather, road and light conditions being important drivers of the severity of accidents is important for drivers and policy-makers
- For drivers: should take into account weather, road and light conditions when driving
- For policy-makers: more money should be invested to improve road and light conditions as well as to improve weather forecasts so that the severity of accidents is reduced

CONCLUSION

- The analysis, based on three machine learning models, has concluded that weather, road and light conditions are important drivers of the severity of accidents