Predicting car accident severity

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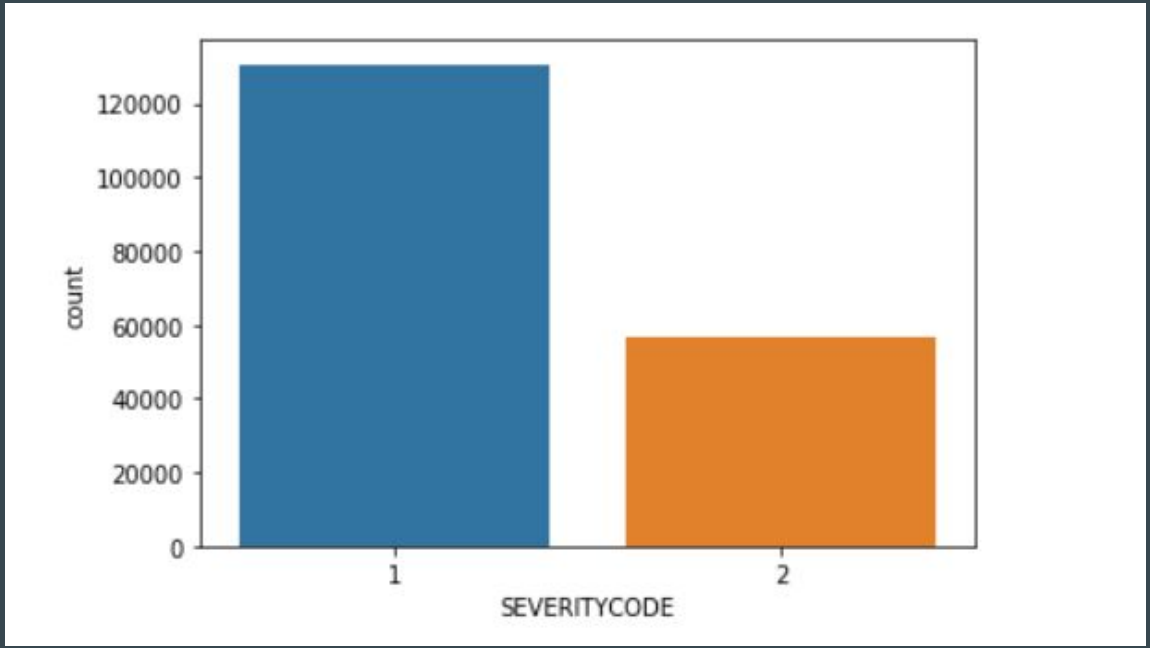
Predicting car accident severity is important

- Car accident severity changes based on a lot of features like light condition,road condition, weather, address ,collision type .
- If we studied each feature and its impact , then we will be able to predict car accident severity.
- Studying the impact of features that we can change , can help us reduce the severity of car accidents , by changing the causes.

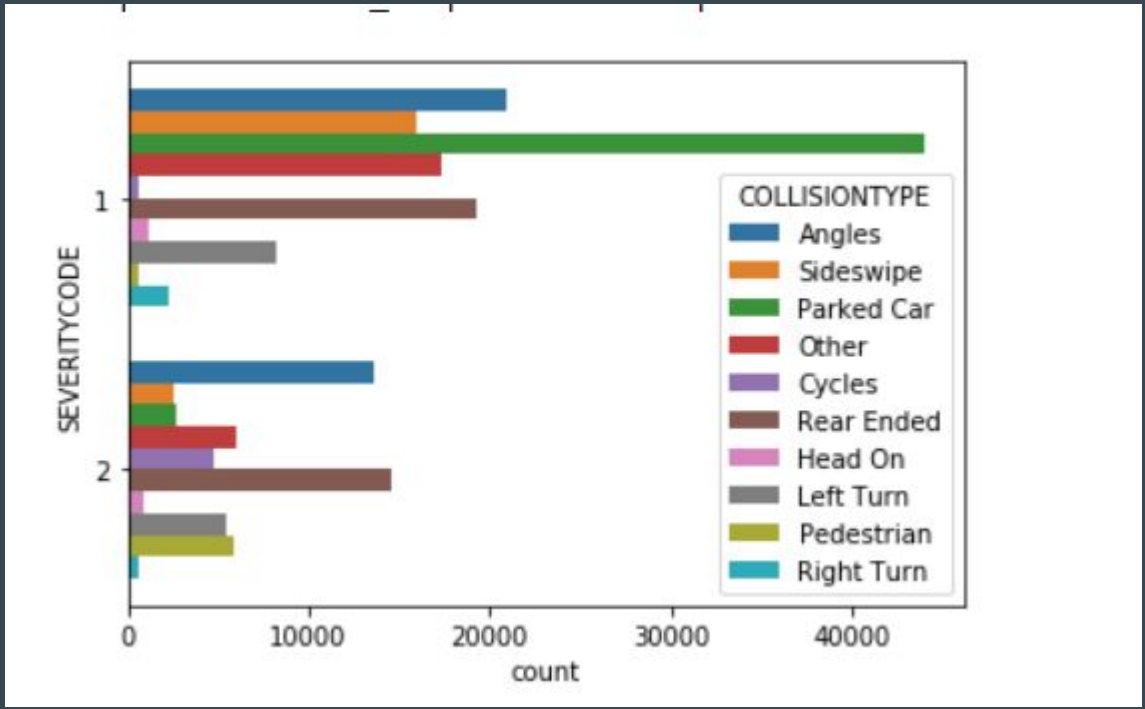
Data acquisition and cleaning

- The dataset include collisions provided by SPD and recorded by Traffic Records from 2004 to present.
- The dataset has 38 columns and 194672 rows.
- After dropping the missing values the dataset has 38 columns and 187504 rows.
- Finally we kept only 7 columns that seems impacting the car accident severity.

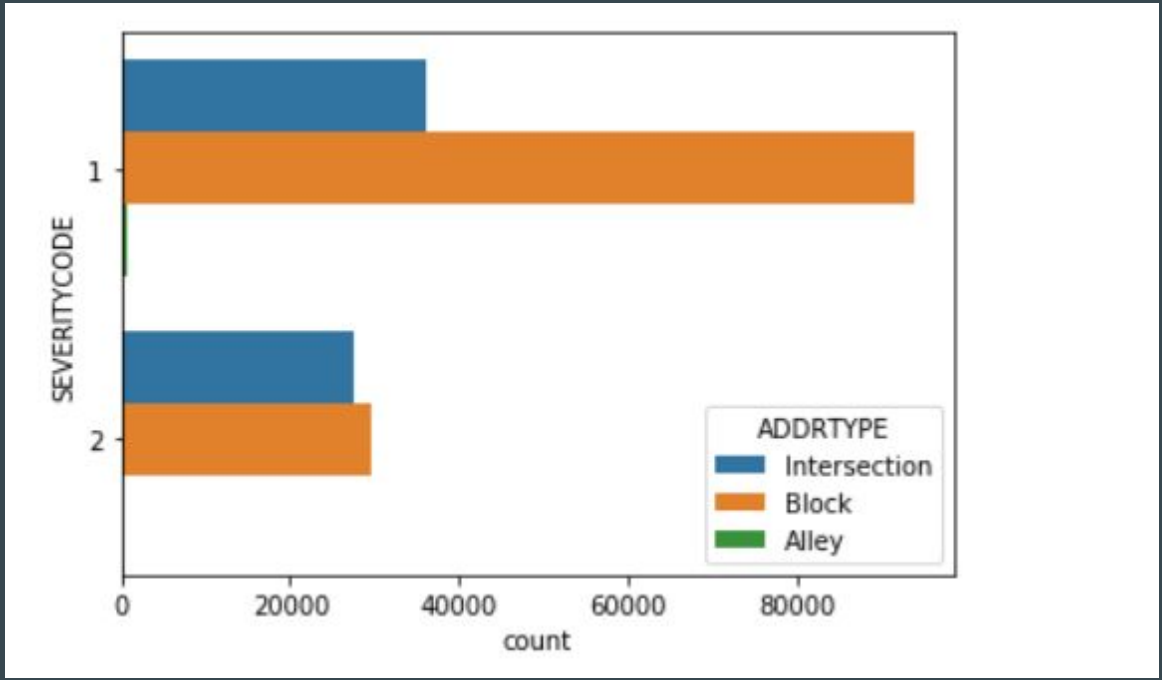
Severity distribution



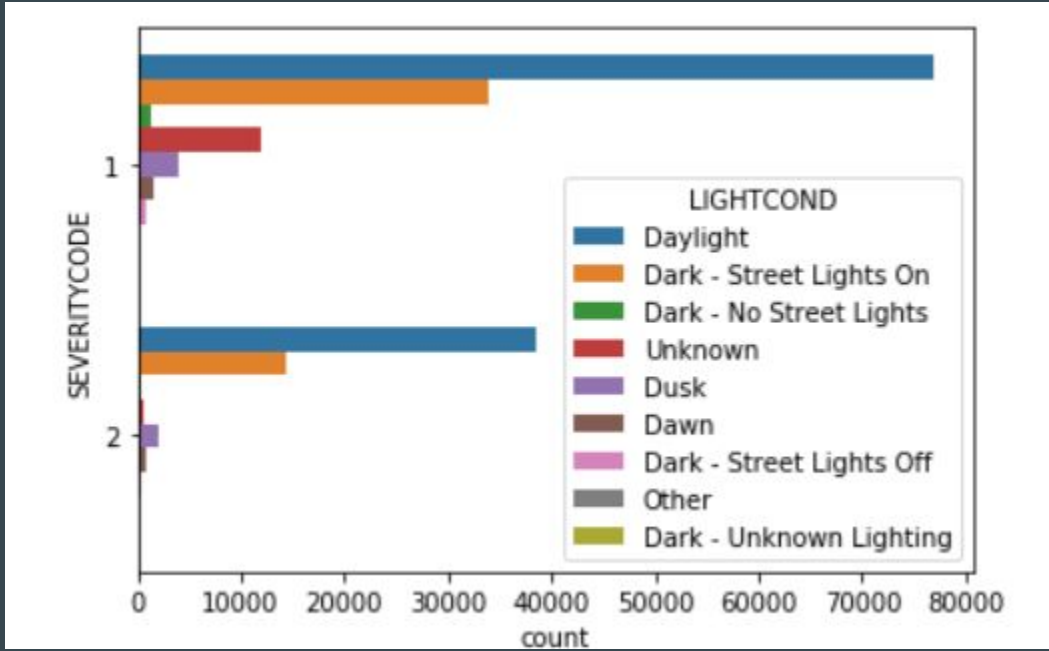
Relationship between severity and collision type



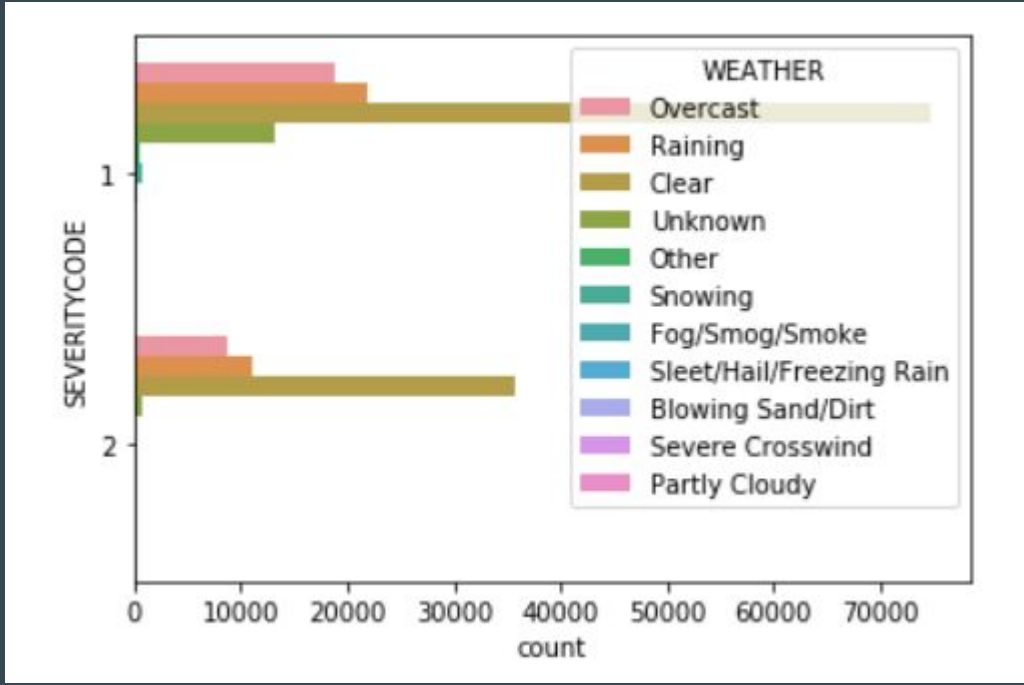
Relationship between severity and address type



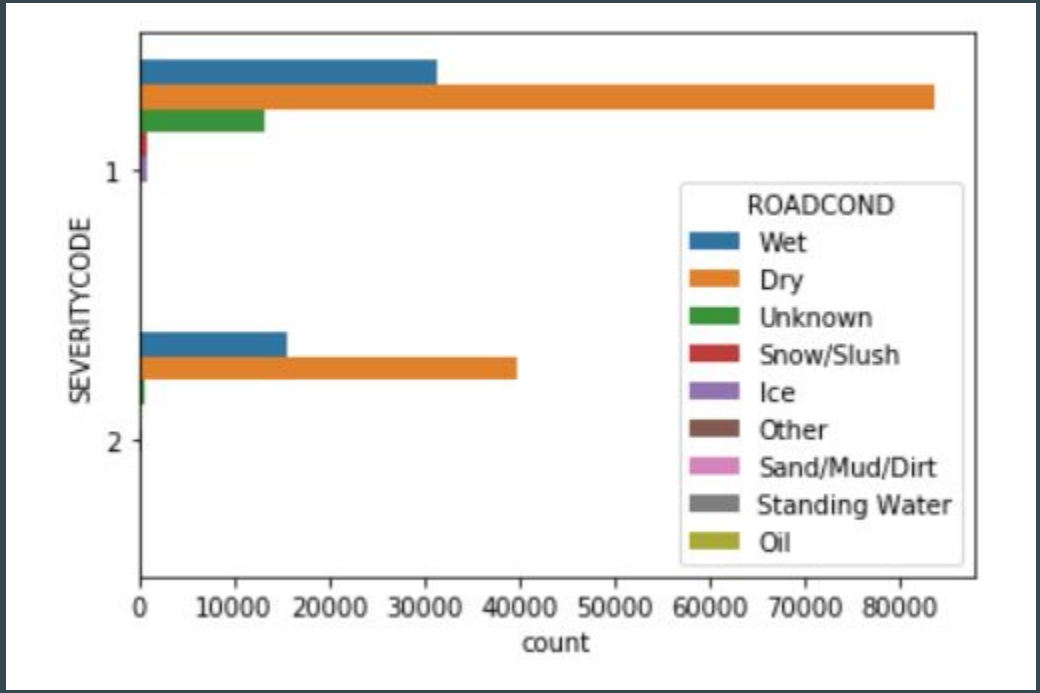
Relationship between severity and light condition



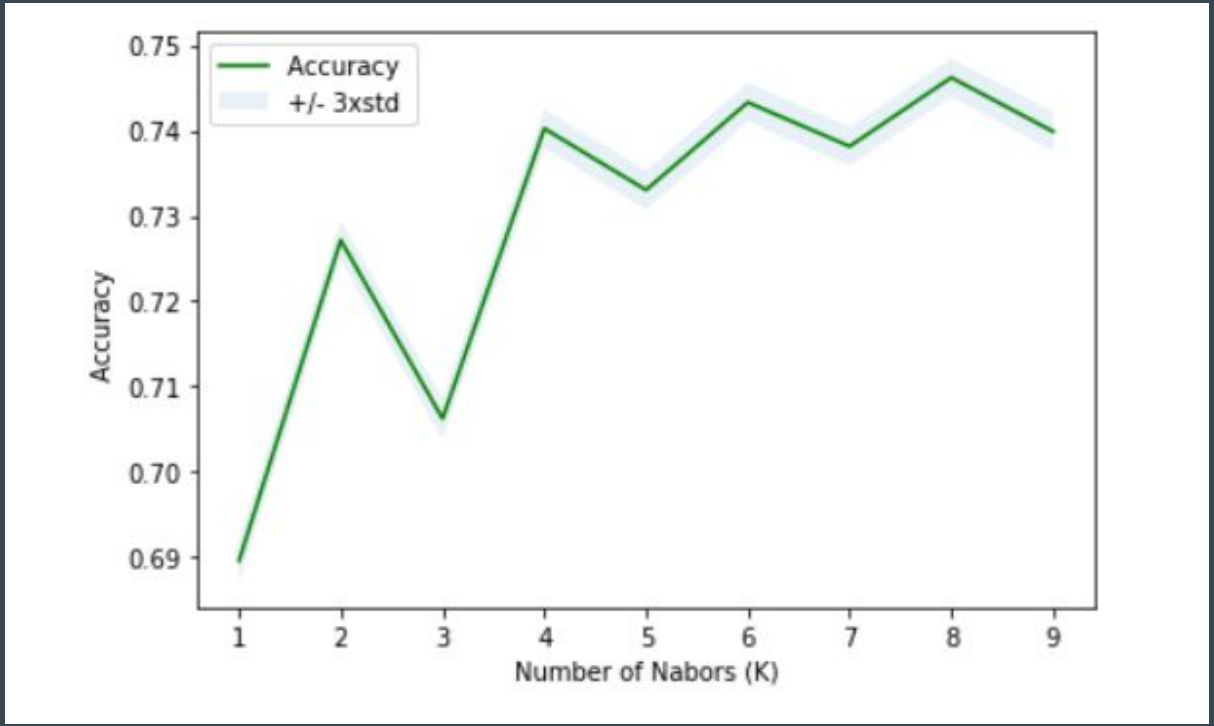
Relationship between severity and weather



Relationship between severity and road condition



Best number of neighbors



Evaluating models

Algorithm	Jaccard	F1-score	LogLoss
KNN	0.75	0.69	NA
Decision Tree	0.75	0.69	NA
SVM	0.74	0.68	NA
LogisticRegression	0.7145	0.6735	0.56

Conclusion

- Analyzing the relationship between features like light ,road ,weather,address, and collision type and the severity of an accident.
- Identifying the impact of each value of a feature ,on the severity.
- Trying to predict if a car accident will have only property damage or will cause injuries ,based on different features using some classification algorithms like knn and tree decision