# Predict the Severity of An Accident

Kahfi's Coursera Capstone Project

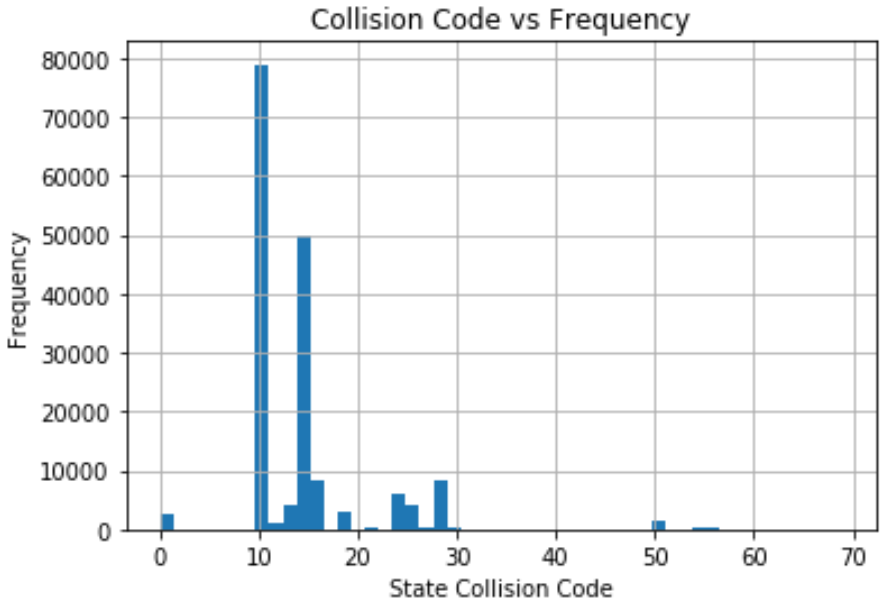
# Introduction

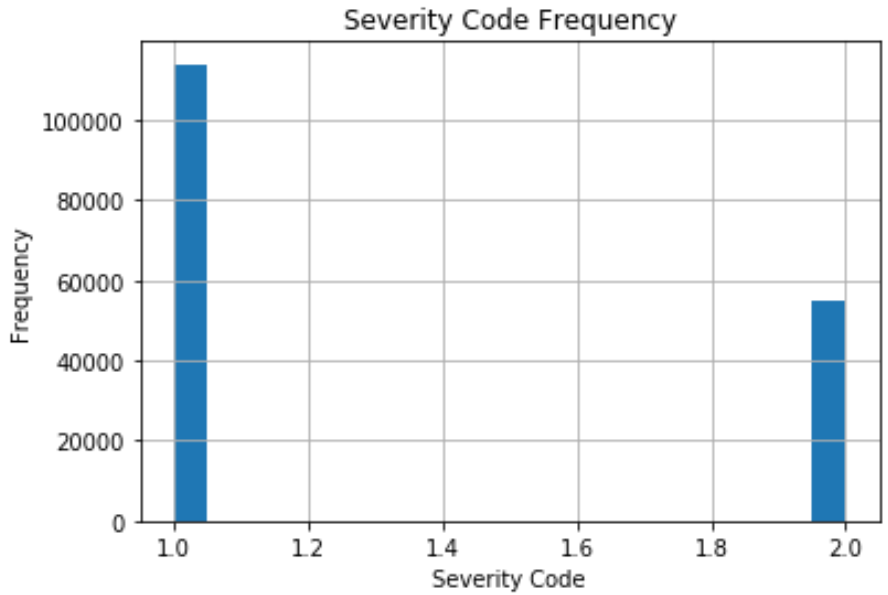
- We need a system to could warn that the weather and the road conditions about the possibility of we getting into a car accident and how severe it would be, so that we would drive more carefully or even change our travel if we are able to.
- All driver personal car or public transportation should be need interested audience for this solution solving problem and maybe any factory will make device tool for warning system installed at vehicle.

# Data

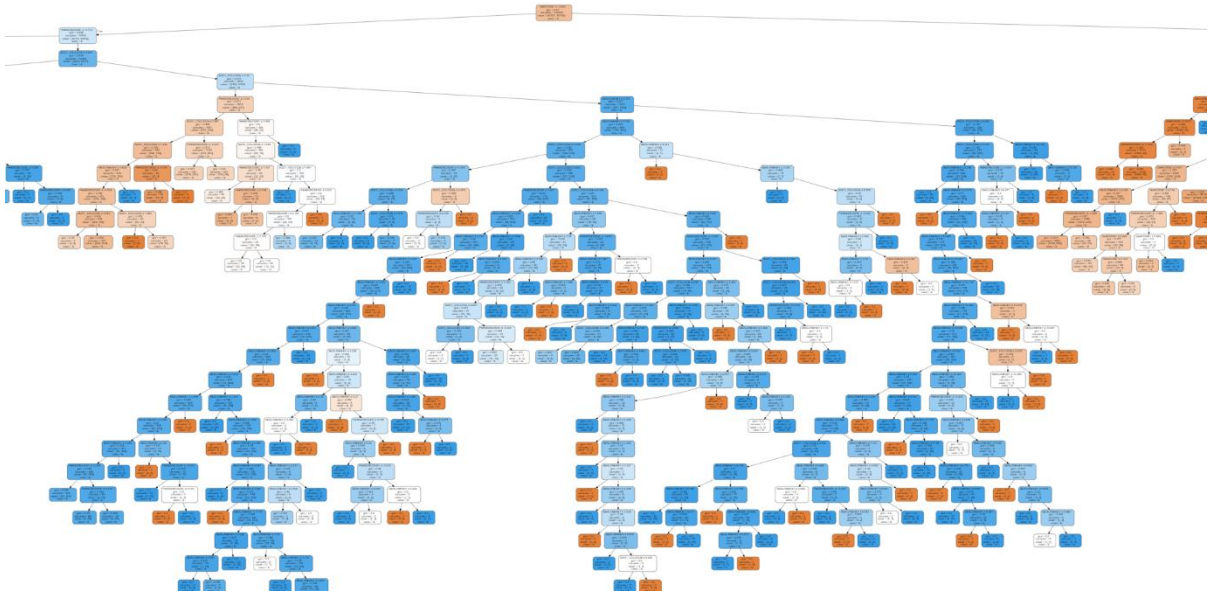
- To provide the stakeholders the necessary information, I use dataset collision all year download from https://s3.us.cloud-object-storage.appdomain.cloud/cf-courses-data/CognitiveClass/DP0701EN/version-2/Data-Collisions.csv which this dataset collisions provided by SPD and recorded by Traffic Records including all types of collisions. Collisions will display at the intersection or mid-block of a segment. Timeframe dataset contain data from 2004 to present.
- For detail attribute dataset we can find at https://s3.us.cloud-object-storage.appdomain.cloud/cf-courses-data/CognitiveClass/DP0701EN/version-2/Metadata.pdf

# Exploratory Data Analysis



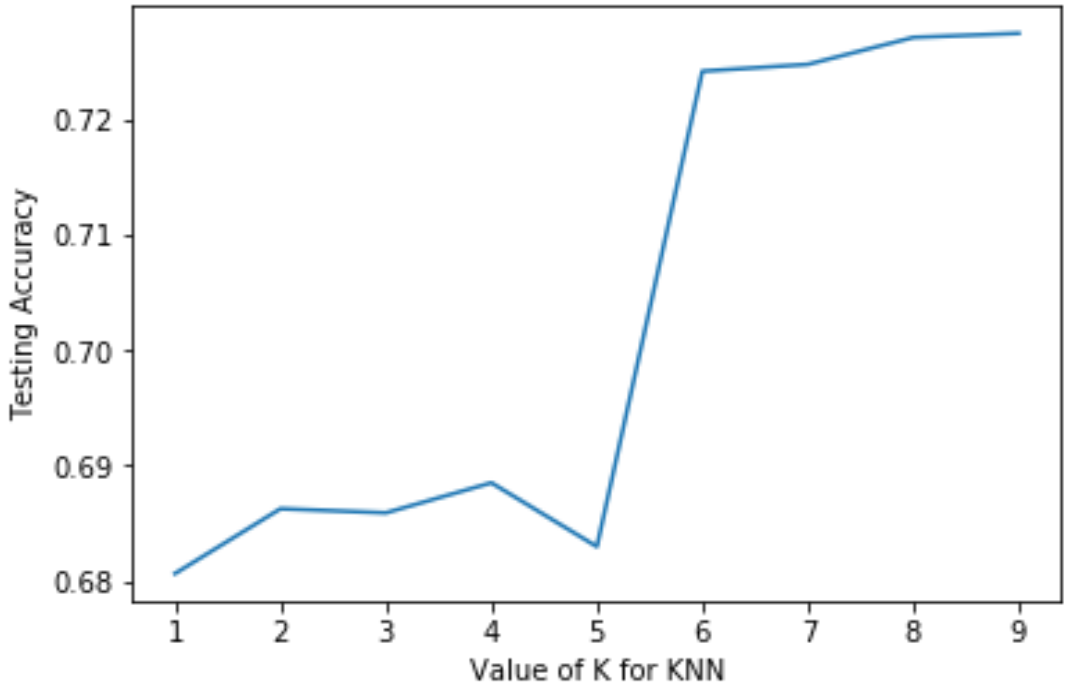



# Predictive Modeling – Decision Tree



Predicted values [2 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1]
F1-Score : 0.6902247634772901
Jaccard : 0.7383739837398374

# Predictive Modeling – kNN




Accuracy Test with K= 1: 0.6806598474546207
Accuracy Test with K= 2: 0.6862768284751375
Accuracy Test with K= 3: 0.6859220717791048
Accuracy Test with K= 4: 0.6885236208833442
Accuracy Test with K= 5: 0.6829953290368356
Accuracy Test with K= 6: 0.7241766688346243
Accuracy Test with K= 7: 0.7247679299946787
Accuracy Test with K= 8: 0.7271034115768935
Jacard: 0.05

Predicted using k = 9: [1 1 2 1 1 1 1 2 1 1 1 1 1 1 1 2 2 1 1 2]
F1-Score : 0.6952661826753996
Jaccard Score : 0.7204096354197462

# Conclusion

This report may be helpful for someone who drive a personal car or public transportation, so it shall not be used as a single decision-making tool or some factory will make a device tool for warn device installed at vehicle.

# Feature Direction

Models in this study mainly focused on driver, vehicle and weather features. However, interactions with traffic signs might also contribute to decrease accident could bring significant improvements to the models.