

# Car Accident Severity

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# Introduction

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- Traffic accidents cause serious threat to the human life worldwide, the economy and reduces efficiency in transportation.
- Some factors that contribute to the risk of collisions are; vehicle design, speed of operation, road design, road environment, weather conditions, lighting conditions, driving skills, impairment due to alcohol or drugs, and behaviour, notably distracted driving, speeding, and street racing.



# Stakeholders

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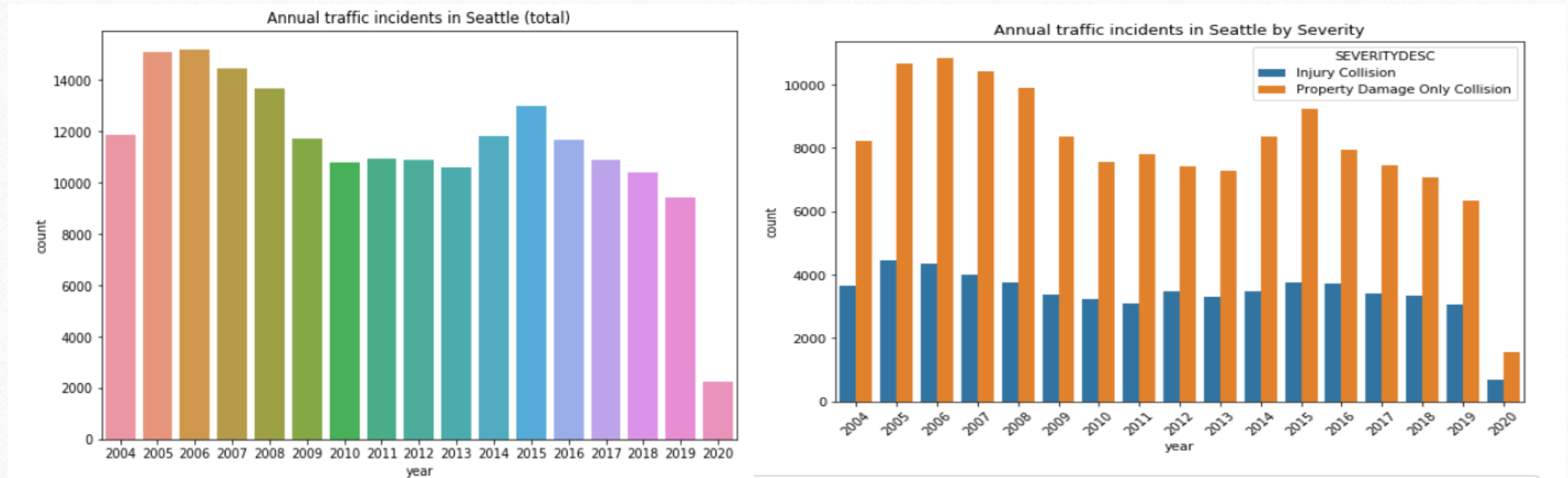
- Stakeholder involved in this includes:
- Car owners
- Healthcare workers
- Government
- Commuters
- Logistics
- Professional Drivers

# Data

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- The data to be used for this project is raw data from the SDOT Traffic Management Division, containing all types of collisions that occurred Seattle city from 2004 to 2020
- The data contains 194,673 samples and have 37 features.
- Target(Dependent Variable), y: SEVERITYCODE.
- Feature(Independent Variables), X: COLLISIONTYPE, WEATHER, ROADCOND,LIGHTCOND, UNDERINFL, ADDRTYPE

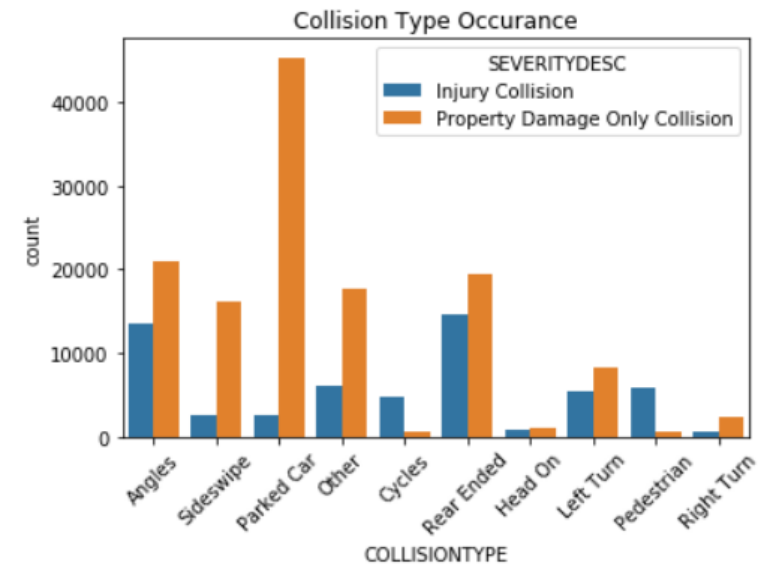
# Annual Traffic Incidents





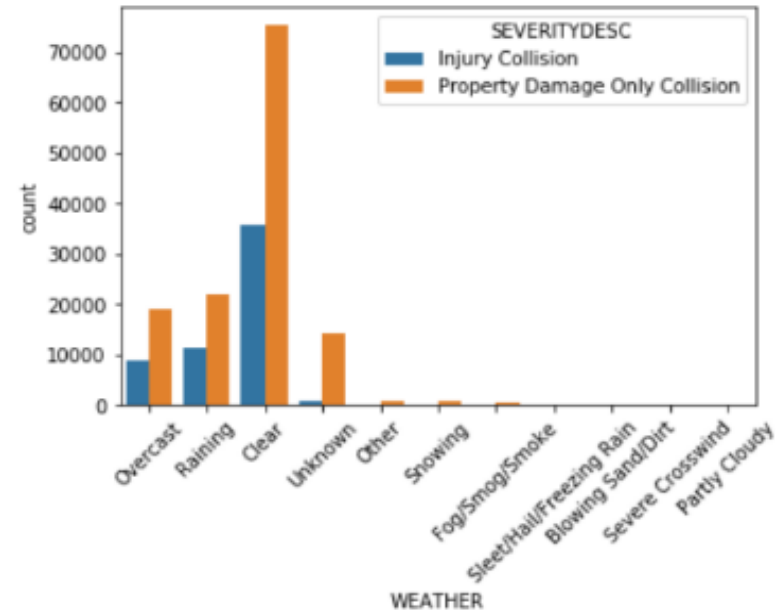
# Collision Type

COLLISIONTYPE	
Parked Car	47987
Angles	34674
Rear Ended	34090
Other	23703
Sideswipe	18609
Left Turn	13703
Pedestrian	6608
Cycles	5415
Right Turn	2956
Head On	2024



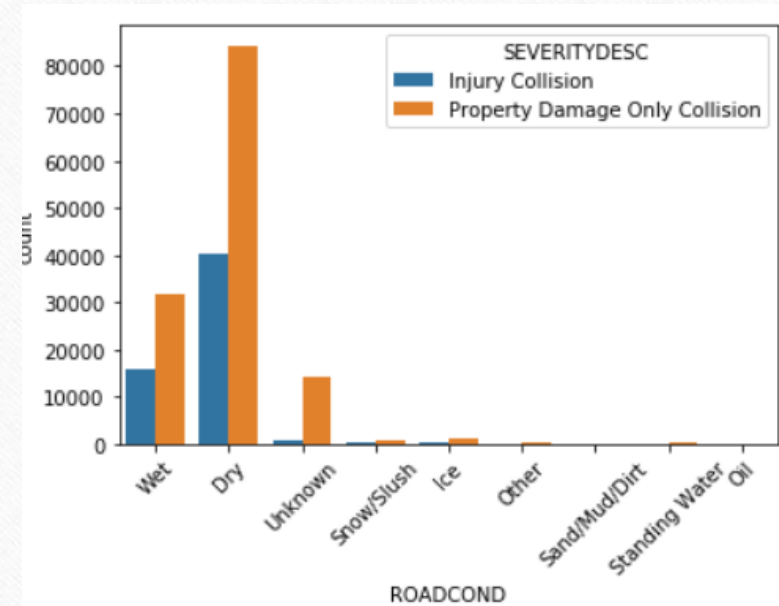
# Weather Condition

WEATHER	
Clear	111135
Raining	33145
Overcast	27714
Unknown	15091
Snowing	907
Other	832
Fog/Smog/Smoke	569
Sleet/Hail/Freezing Rain	113
Blowing Sand/Dirt	56
Severe Crosswind	25
Partly Cloudy	5



# Road Condition

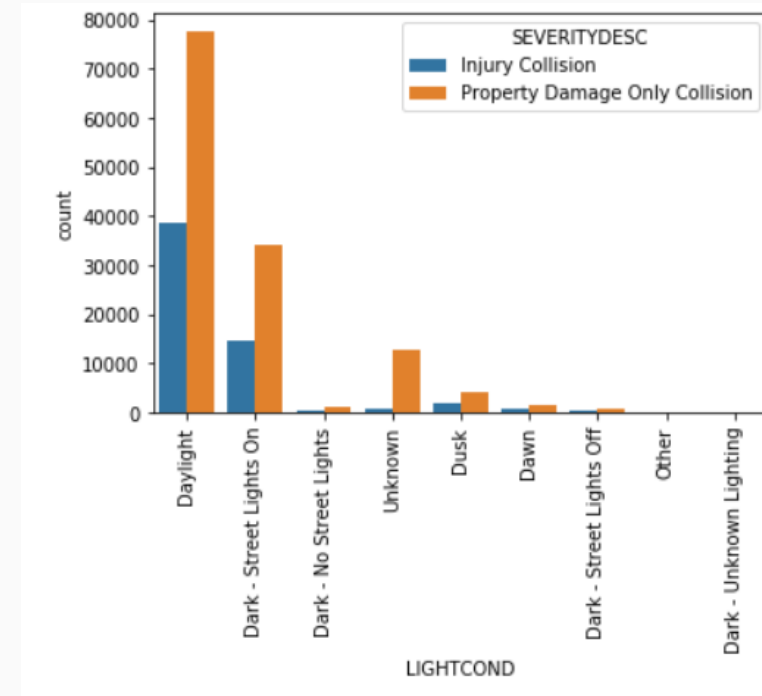
ROADCOND	
Dry	124510
Wet	47474
Unknown	15078
Ice	1209
Snow/Slush	1004
Other	132
Standing Water	115
Sand/Mud/Dirt	75
Oil	64





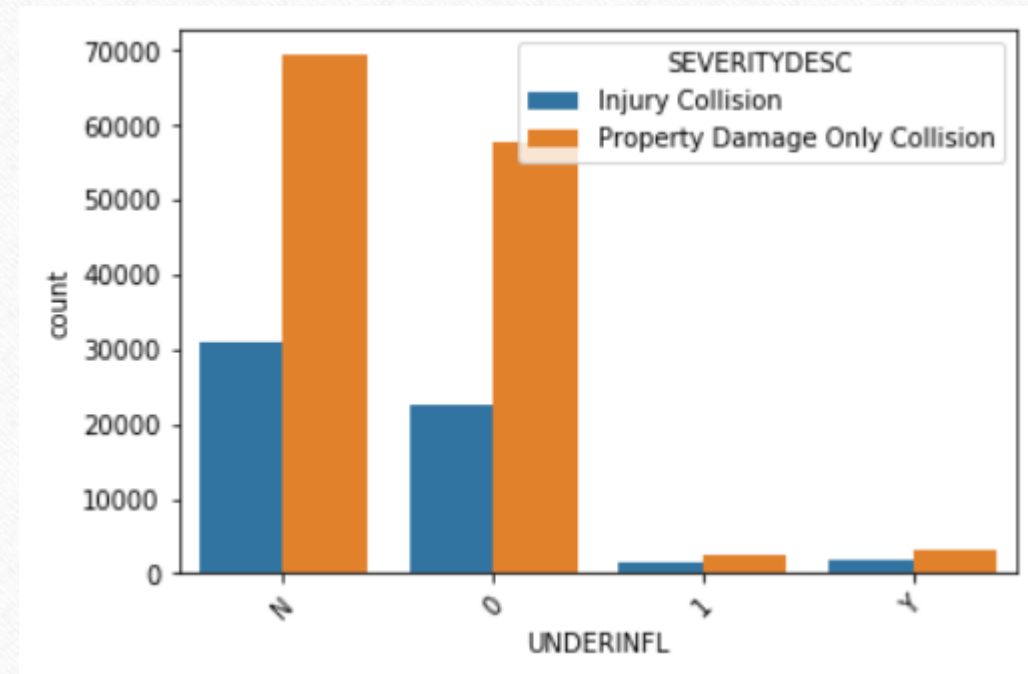
# Light Condition

LIGHTCOND	
Daylight	116137
Dark - Street Lights On	48507
Unknown	13473
Dusk	5902
Dawn	2502
Dark - No Street Lights	1537
Dark - Street Lights Off	1199
Other	235
Dark - Unknown Lighting	11



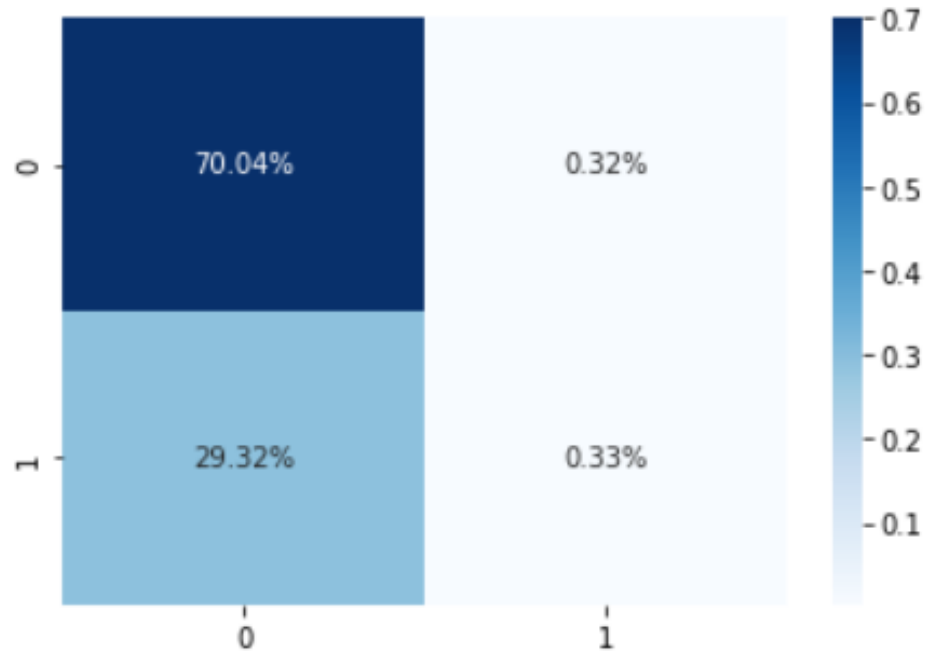
# Alcohol Influence

UNDERINFL	
N	100274
0	80394
Y	5126
1	3995





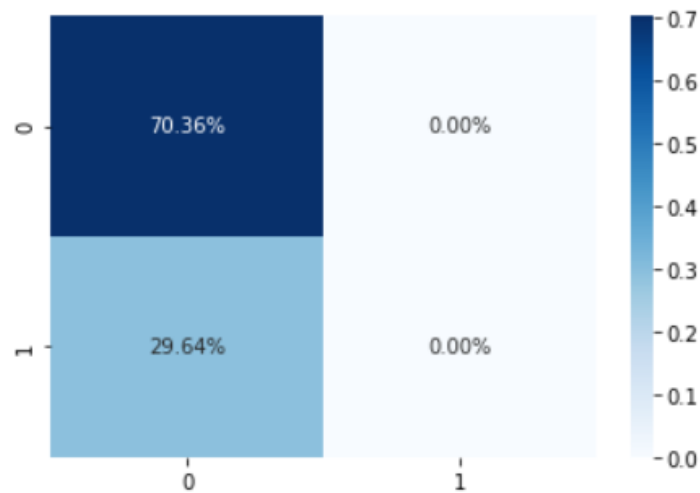
# Decision Tree



- 70.3% test score accuracy

# Logistic Regression

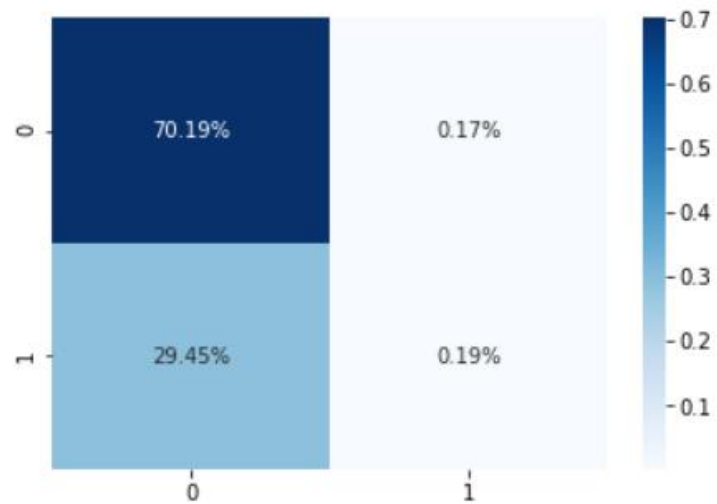
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- 70% test score accuracy



# SVM



- 70.4% test score accuracy

# Evaluation

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	Algorithm	Accuracy	Jaccard	F1-score	Precision
0	Decision Tree	0.7	0.0	0.6	0.6
1	Logistic Regression	0.7	0.0	0.58	0.5
2	SVM	0.704	0.006	0.585	0.652

- Among all three models, accuracy score's measures accuracy is above 70%. The highest accuracy model is the SVM Classifier. The same model also presents the best F1\_score , jaccard and precision



# Conclusion

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- Built useful model for accident severity
- . It was able to achieve 70.4% accuracy however there were still significant variances that could not be predicted by the models in this study
- Code can be found on:
- [https://github.com/JemimahAbah/Coursera\\_Capstone/blob/main/Accident%20Severity.ipynb](https://github.com/JemimahAbah/Coursera_Capstone/blob/main/Accident%20Severity.ipynb)