Predicting Car Accident Severity in Seattle

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1. Introduction

1.1 Background

According to the report published by US Department of Transportation, [NSHTA](https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812013), there were 33,000 fatalities, 3.9 million injuries, 24 million vehicles damaged and 242 billion economic loss due to road accidents in US in 2010 alone. This economic loss includes productivity loss, medical costs for injuries, legal and court costs due to law suits, emergency service costs (EMS) for emergencies, insurance administration costs for the claims, congestion costs (including traffic delay, fuel wastage, greenhouse gas emissions etc.,), property damage, and workplace losses. There is a tremendous non-economic impact such as pain, emotional distress, PTSD and life valuations on societal harm amounts to $836 billion just for 2010. Hence, analyzing existing accident reports for patterns can help identify high accident zones, accident safety laws and predict possible accidents before it occurs. For our study we will be analyzing traffic accident reports of Seattle, Washington, US. Seattle is a very busy downtown and home of very big Tech companies like Microsoft, Facebook etc., Seattle downtown streets are very busy and prone to high accidents.

1.2 Problem

From the traffic accident report, information such as accident location, collision type, weather condition, road condition, light condition, severity type etc., are recorded and public can utilize this data to predict if a collision or injury will occur in Seattle given the suitable conditions. Hence, this data science project's goal is to predict if an accident will occur and what will be its severity when suitable conditions occur.

1.3 Interest

Such Machine Learning models will be useful for many companies.

1. These models can be used by city planning officials to plan road markers, traffic light lengths, traffic patterns and routing etc.,
2. Digital map providing companies and traffic advising companies like Google Maps, Waze etc., can utilize the prediction to warn their customers of perfect storm conditions of an accident when they are driving in those areas.
3. Vehicle Insurance companies can use these models to evaluate claims for vehicle accidents.