**Seattle City Accident Severity Prediction**

**Introduction/ Business Understanding**

Car accident severity is a big concern across all states in the US, including Washington. According to Washington State Department of Transport (WSDOT), there wat a total of 10,315 crashes in Seattle city in 2019. The crashes include 22 fatal car accidents, 190 suspected serious injury collisions, 834 suspected minor injuries, 2612 possible injuries, and 6657 no apparent injuries. This research mainly focuses on Seattle city of Washington for the period 2004-todate. This traffic safety research, which is based on the data obtained from Seattle Department of Transportation Traffic Management Division, aims not only at prevention but also at reducing the severity of car accident. Identifying the more probable factors that greatly contributes to accident severity is the first step in this research.

**Data Understanding**

In this research, the data set used was derived from sample of 194673 rows (collision events) and 37 columns(attributes) reported by WSDOT. This research aims at some of the key attributes such as weather condition, road condition, light condition, speeding, inattentiveness of driver(INATTENTIONIND) and driving under influence(UNDERINFL) that would enable to predict the severity of car accident in the city. Identifying high areas of accidents and high areas of accident severity can highlight areas of concern.

The research aims at predicting car accident severity in Seattle City considering the response variable 1, namely severity code , which is binary in nature- 0 if the accident involves ‘property damage only’ and 1 if the accident involve ‘physical injury’. While 0 indicates the least probable factor for car accident severity, 1 indicate key factor for sever car accident.

The data set from WSDOT is unbalanced. Therefore, dropping nonrelevant attributes, sorting out missing values, handling missing values and balancing the data set were made to accurately predict the severity of car accident while at the same time accurately analyzing accidents can help concerned Seattle City authority to improve the safety of the road and highways and other factors contributing to car accident in the city.