

## **Coursera Applied Data Science Capstone**

This project is for the Applied Data Science Capstone-car accident severity, this is the final project for Data Science Professional certificate by IBM.

### **Introduction**

Every year the lives of approximately 1.35 million people are cut short as a result of a road traffic crash. Between 20 and 50 million more people suffer non-fatal injuries, with many incurring a disability as a result of their injury.

Road traffic injuries cause considerable economic losses to individuals, their families, and to nations. These losses arise from the cost of treatment as well as lost productivity for those killed or disabled by their injuries, and for family members who need to take time off work or school to care for the injured. Road traffic crashes cost most countries 3% of their gross domestic product.

Analyzing a significant range of factors, including weather conditions, special events, roadworks, traffic jams among others, an accurate prediction of the severity of the accidents can be performed.

These insights, could allow law enforcement bodies to allocate their resources more effectively in advance of potential accidents, preventing when and where a severe accident can occur as well as saving both, time and money. In addition, this knowledge of a severe accident situation can be warned to drivers so that they would drive more carefully or even change their route if it is possible or to hospital which could have set everything ready for a severe intervention in advance.

Governments should be highly interested in accurate predictions of the severity of an accident, in order to reduce the time of arrival and thus save a significant amount of people each year. Others interested could be private companies investing in technologies aiming to improve road safeness.

For many travelers, having the freedom to explore the city to experience and enjoy various aspects is a great way to relax and enjoy weekends. Similarly, traveling via a vehicle, cycling, or walking are the

most prominent ways for one to journey throughout the city for your everyday errands. Due to the large

population that uses public roads, safety has become a top priority for the municipal government to ensure they are able to reduce the number of accidents that occur. Therefore, analyzing the various factors that could help predict accident severity can guide the board to implement changes in a timely manner that may reduce the number of fatalities & serious injuries. Consequently, this will ultimately lower the economic costs that would trickle into other fields within the economy.

### **Business Problem**

The objective of this capstone project is to analyze the collision data set for Seattle, WA and determine the most pertinent factors including weather, road conditions, visibility, and various other factors that best predict accident severity. Using various analytical techniques and machine learning algorithms such as logistic regression. This project will be used to answer the business question: How can the city of Seattle, Washington best predict the severity of collisions that occur?

The intended audience for this project will be the Department of Transportation of Seattle, Washington. Due to the danger of vehicle collisions, providing solutions that may reduce the amount of accidents can significantly improve the quality of life of pedestrians & overall ensure public safety. Similarly, companies whose business model rely on customer transportation can benefit and alter their algorithms to avoid certain high-risk areas.