Capstone Project: Car Accident Severity

1. Introduction/ Business Problem.

1.1. Background:

The global epidemic of road crash fatalities and disabilities is gradually being recognized as a major public health concern. The first step to being informed about global road safety and to developing effective road safety interventions is to have access to facts.

1.1.1. Annual Global Road Crash Statistics

- Approximately *1.35 million* people die in road crashes each year, on average 3,700 people lose their lives every day on the roads.
- An additional *20-50 million* suffer non-fatal injuries, often resulting in long-term disabilities.
- More than half of all road traffic deaths occur among vulnerable road users pedestrians, cyclists, and motorcyclists.
- Road traffic injuries are the leading cause of death among young people aged *5-29.* Young adults aged 15-44 account for more than half of all road deaths. More than *90%* of all road fatalities occur in low- and middle-income countries, even though these countries have approximately 60% of the world's vehicles.
- On average, road crashes cost countries *3%* of their gross domestic product.
- Road crashes are the single greatest annual cause of death of healthy U.S. citizens traveling abroad.

1.1.2. Annual United States Road Crash Statistics

- More than *38,000* people die every year in crashes on U.S. roadways. The U.S. traffic fatality rate is *12.4* deaths per 100,000 inhabitants.
- An additional 4.4 million are injured seriously enough to require medical attention.
- Road crashes are the leading cause of death in the U.S. for people aged *1-54*.
- The economic and societal impact of road crashes costs U.S. citizens *$871 billion*.
- Road crashes cost the U.S. more than *$380 million* in direct medical costs.
- The U.S. suffers the most road crash deaths of any high-income country, about *50%* higher than similar countries in Western Europe, Canada, Australia and Japan.
- Pedestrian and bicyclist fatalities continue to rise in the United States. According to the National Highway Traffic Safety Administration (NHTSA), more pedestrians and cyclists were killed in 2018 than in any year since 1990.

1.2. Target Audience:

1.2.1. *The Seattle administration:*

- By targeting areas prone to areas to speeding accidents, interventions such as speed bumps, stop signs etc. can be put in place to reduce accidents.

1.2.2. Car Insurance Companies:

- Areas where parked cars are prone to being damaged. Owners in those localities may be asked to pay more premium on their car insurance.

1.2.3. *Health-care workers and emergency services in Seattle:*

- Having enough data on the crash can predict the severity and therefore take action more quickly potentially saving lives.

1.3. Practical Uses of the Model:

- Speed reduction measures in areas prone to accidents due to speeding
- More accurate calculation of risk premiums by Car Insurance companies
- Proactive actions taken by Health-care by predicting severity of the accident.

1.4. Future Use Case:

- AI in self-driving cars can use such models to assess risk of accidents and change routes or ask the driver to be vigilant during autopilot.