

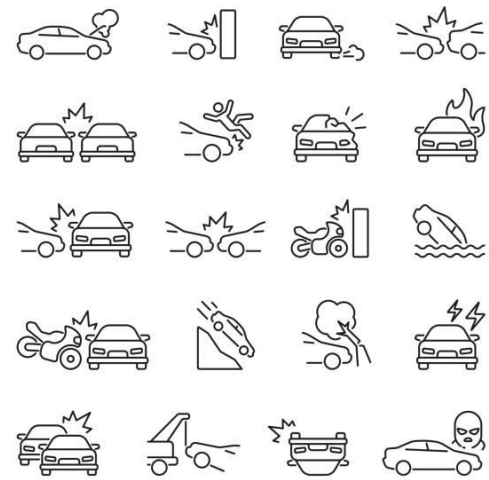
VISION ZERO: What causes Road Fatalities?



**A METIS Classification Project:
Ipsita Banerjee, DSE**

40,000

Each year more than 40,000 people are needlessly killed on American Streets



Motivation

Client

National Highway
Traffic Safety
Administration
(NHTSA)

Goal

“eliminate all **traffic fatalities** & **severe injuries**”



Product

Interpretable
classification model
identify key aspects of
potentially fatal crash
to be corrected
through policy

Data

The screenshot shows the Google Cloud Platform console interface. At the top, there's a blue header with the Google Cloud Platform logo, 'My First Project', and a search bar. Below the header, there's a navigation bar with 'FEATURES & INFO', 'SHORTCUT', and 'DISABLE EDITOR TABS'. The main content area is divided into two panes. The left pane is the 'Explorer' view, showing a search bar and a list of pinned projects. The right pane is the 'Details' view for the 'person_2016' table, showing its schema, details, and preview. The table details include its ID, size, storage size, number of rows, creation and modification dates, expiration, and location.

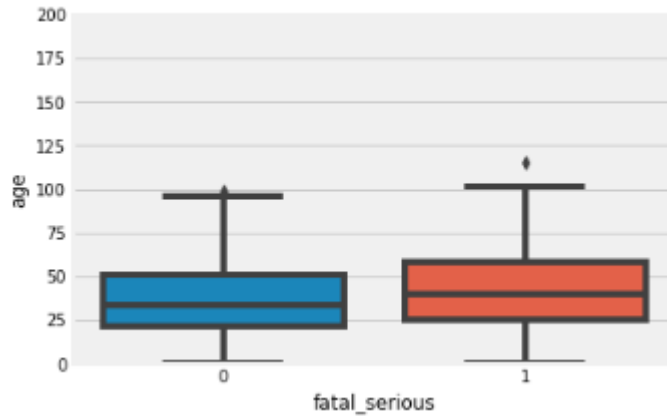
tempor.

Google BigQuery Public Data:

86474 rows
91 columns

Tools & Method

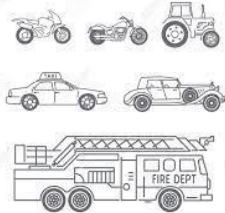
- ◎ Pandas, Numpy
- ◎ Sklearn, Statsmodel
- ◎ Seaborn, Matplotlib



Logistic Regression Model with features based on feature importance of Random Forest Classifier

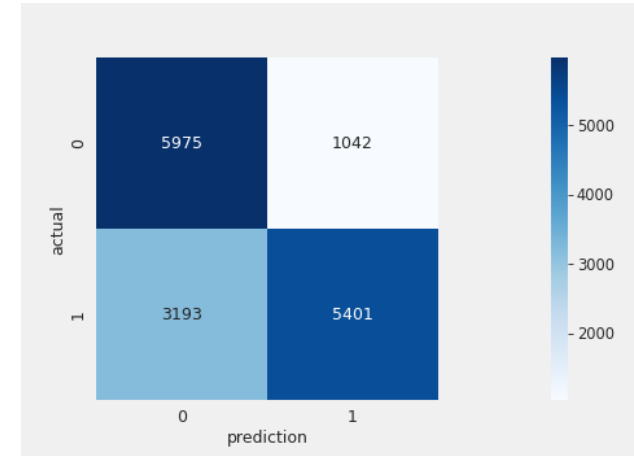
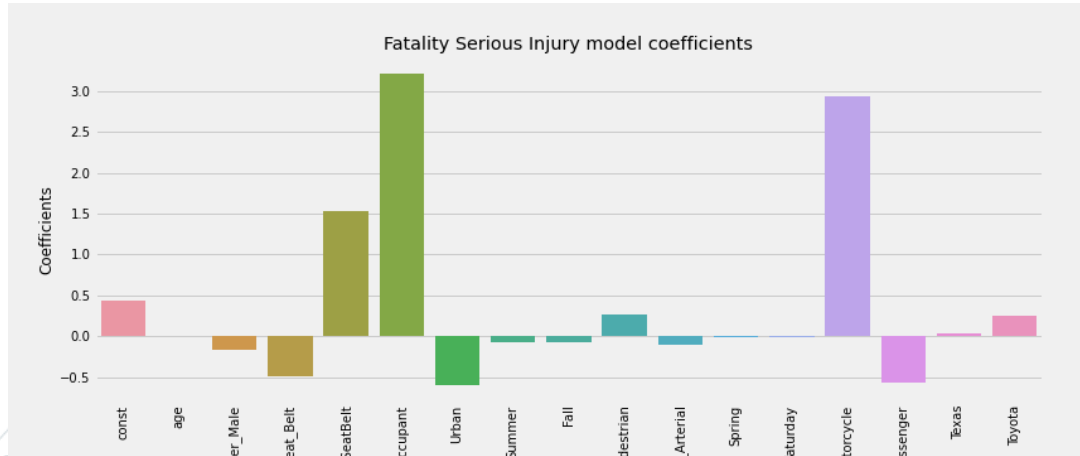
Target & Features

Balanced dataset



Results

- Accuracy: 0.732 (0.004)
- Precision: 0.8383
- Recall: 0.6285
- F1: 0.7184





Impact

Achieving Vision Zero by identifying features leading to fatalities

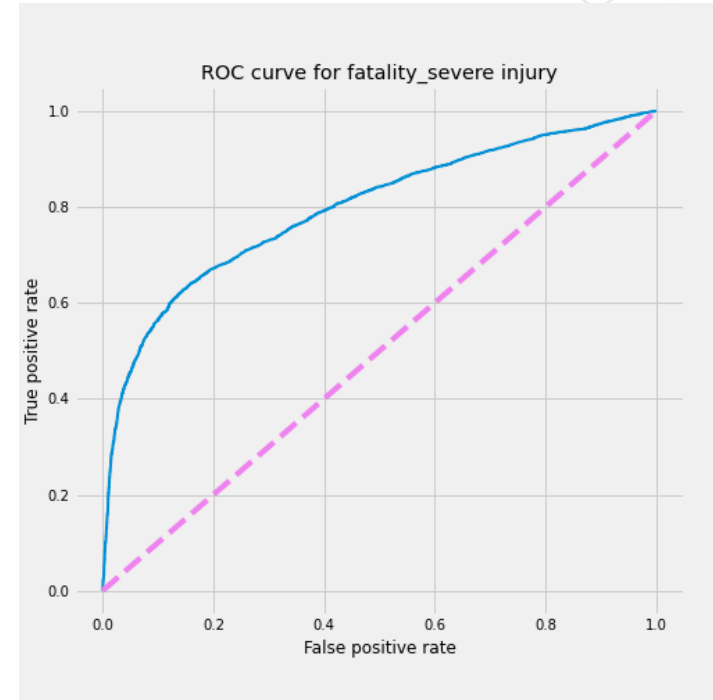
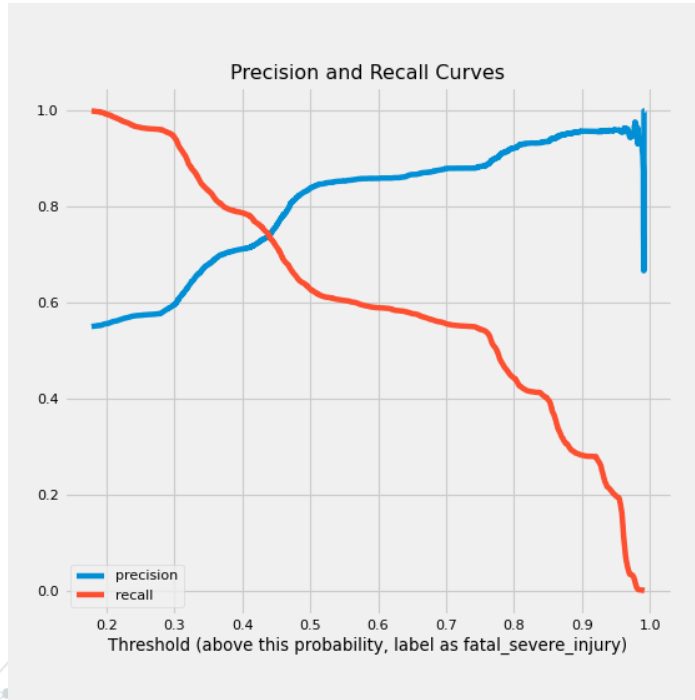
Future work

Add more features

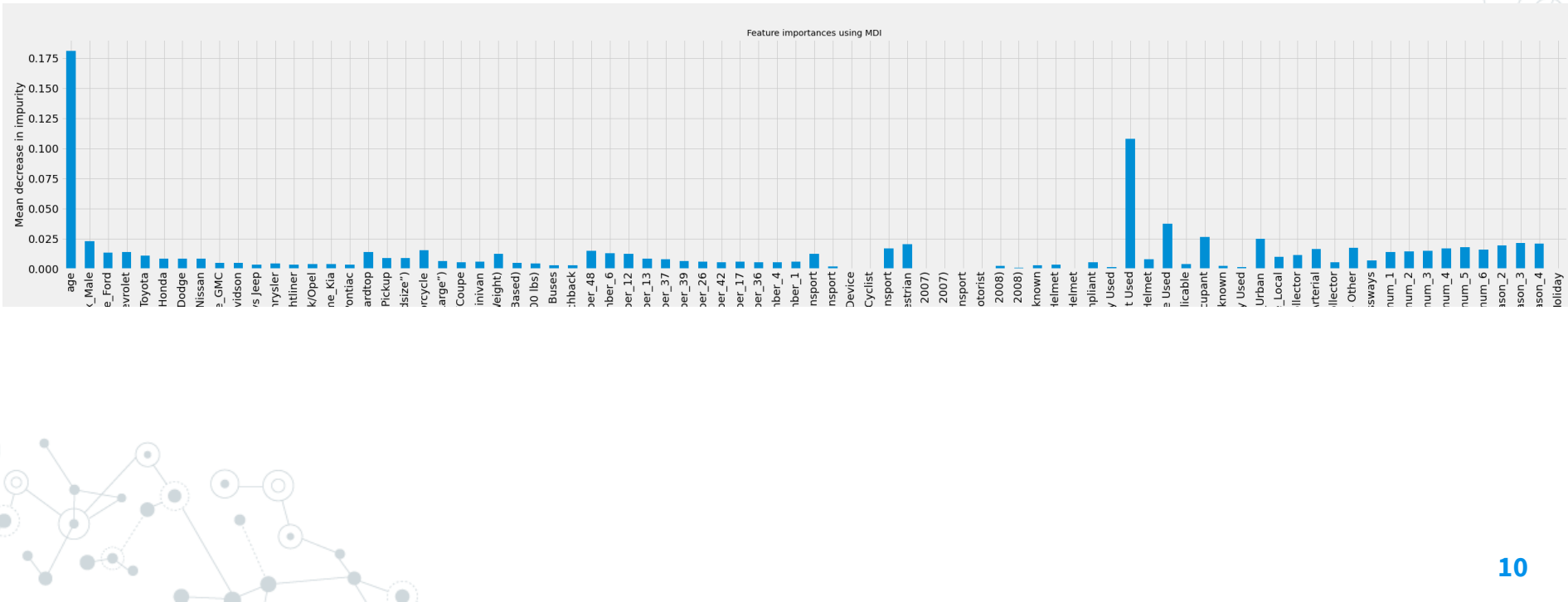
More feature engineering



Appendix: Precision-Recall, ROC curves



Appendix: Random Forest Feature Importance





Questions?