EXPLORE AI

INSURANCE CLAIM PREDICTION

BY TEAM 15

EXPLORE AI ACADEMY

AGENDA

01 Introduction

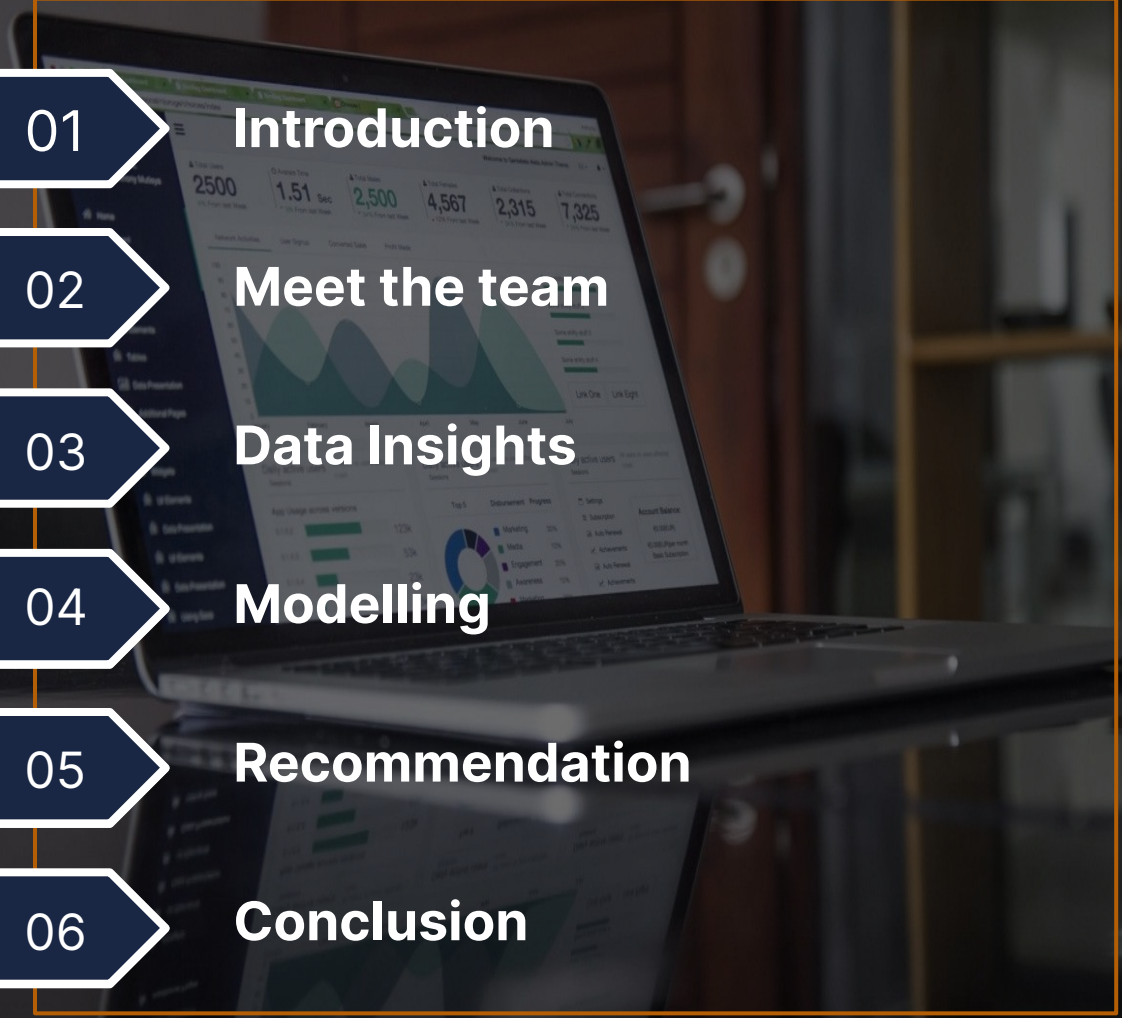
02 Meet the team

03 Data Insights

04 Modelling

05 Recommendation

06 Conclusion



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Introduction

01 Project definition

02 Details of the data set

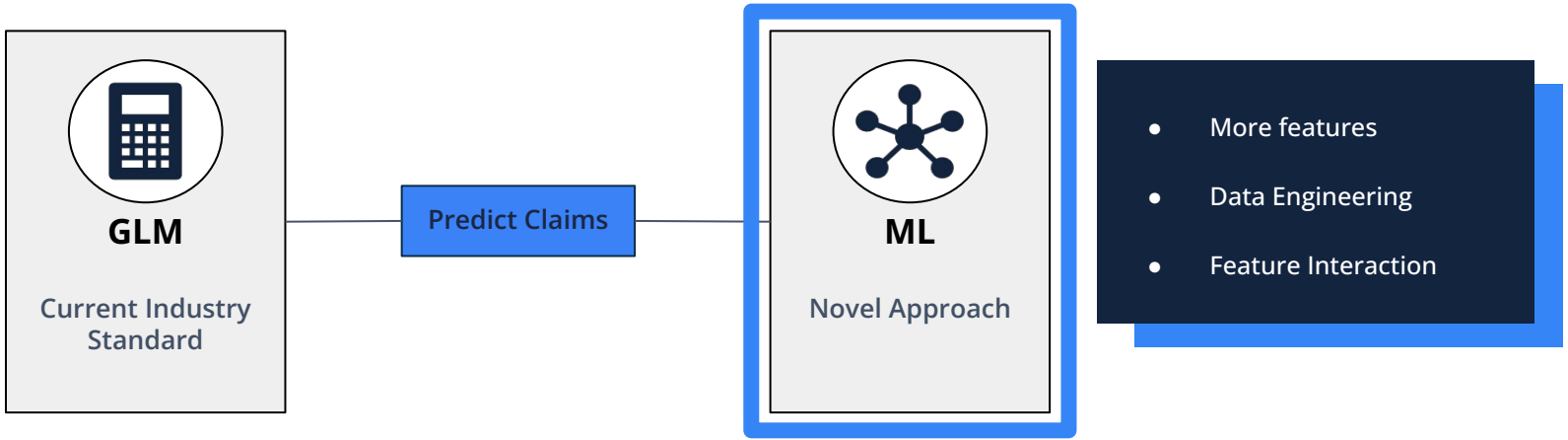
03 Summary of the data set

04 Observations

Project **Overview**

Aim

- Machine learning model **to Predict the claims** over the next year for a motor insurance client
- Using **personal** and **vehicle** information
- With a **non-conservative approach (Machine Learning models)**
- Instead of **simple Generalised Linear Models**
- Used to predict **claim severity of potential policyholders**

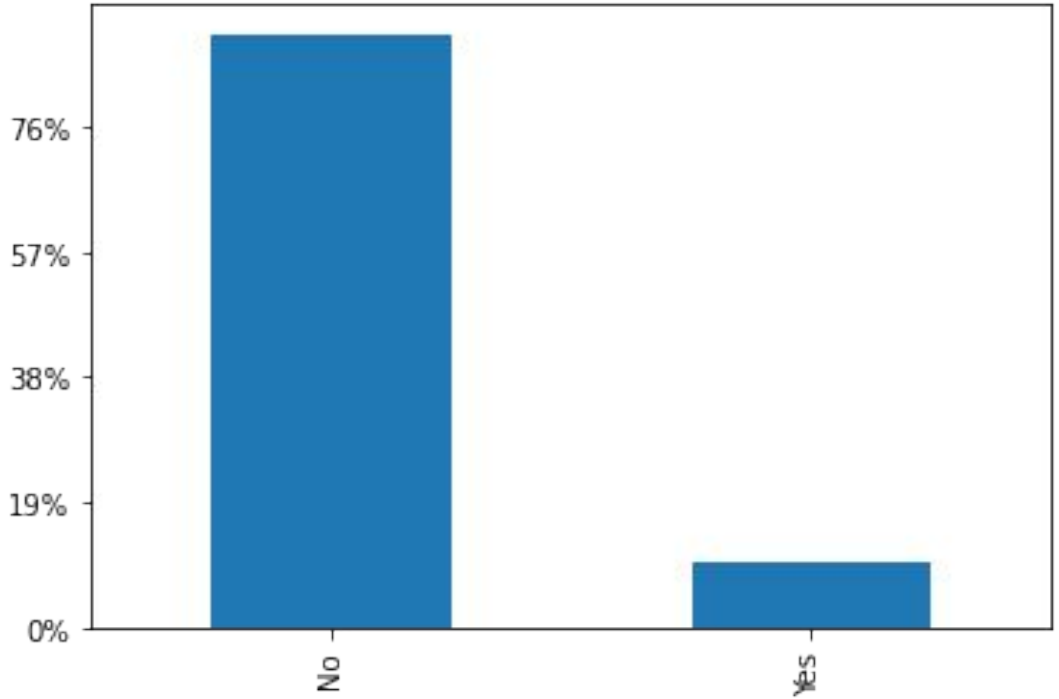


Exploratory Data **Analysis Overview**

Things we looked at

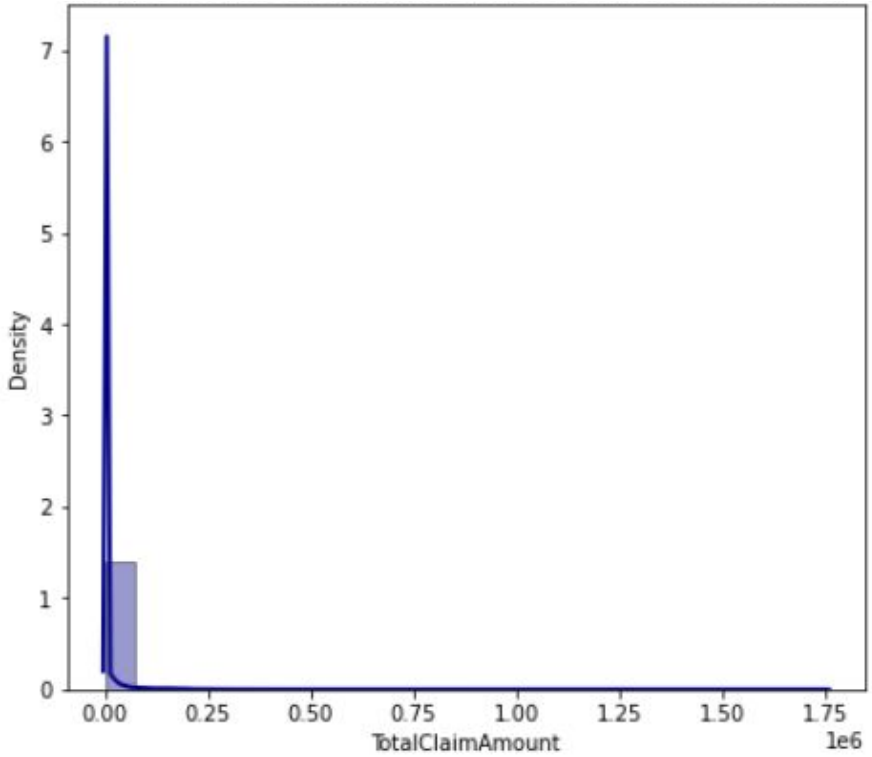
- Distribution of the data - claim counts and claim amounts
- Claim amounts for different categorical features
- Claim count percentages for different categorical features
- Relationships of numerical values with claim amount

Who made claims?

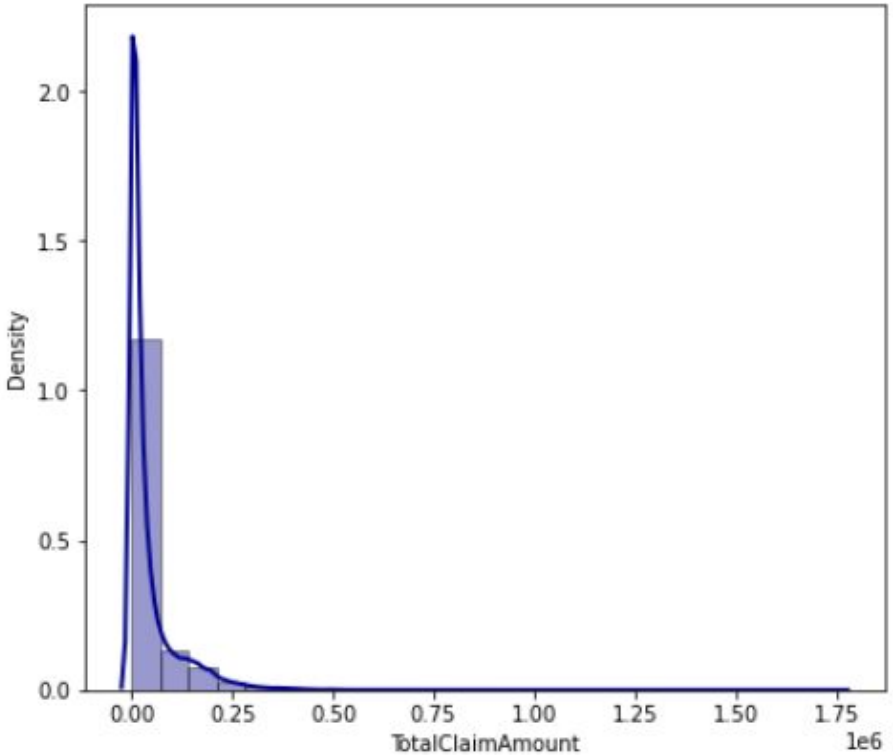


Claim amount **distribution**

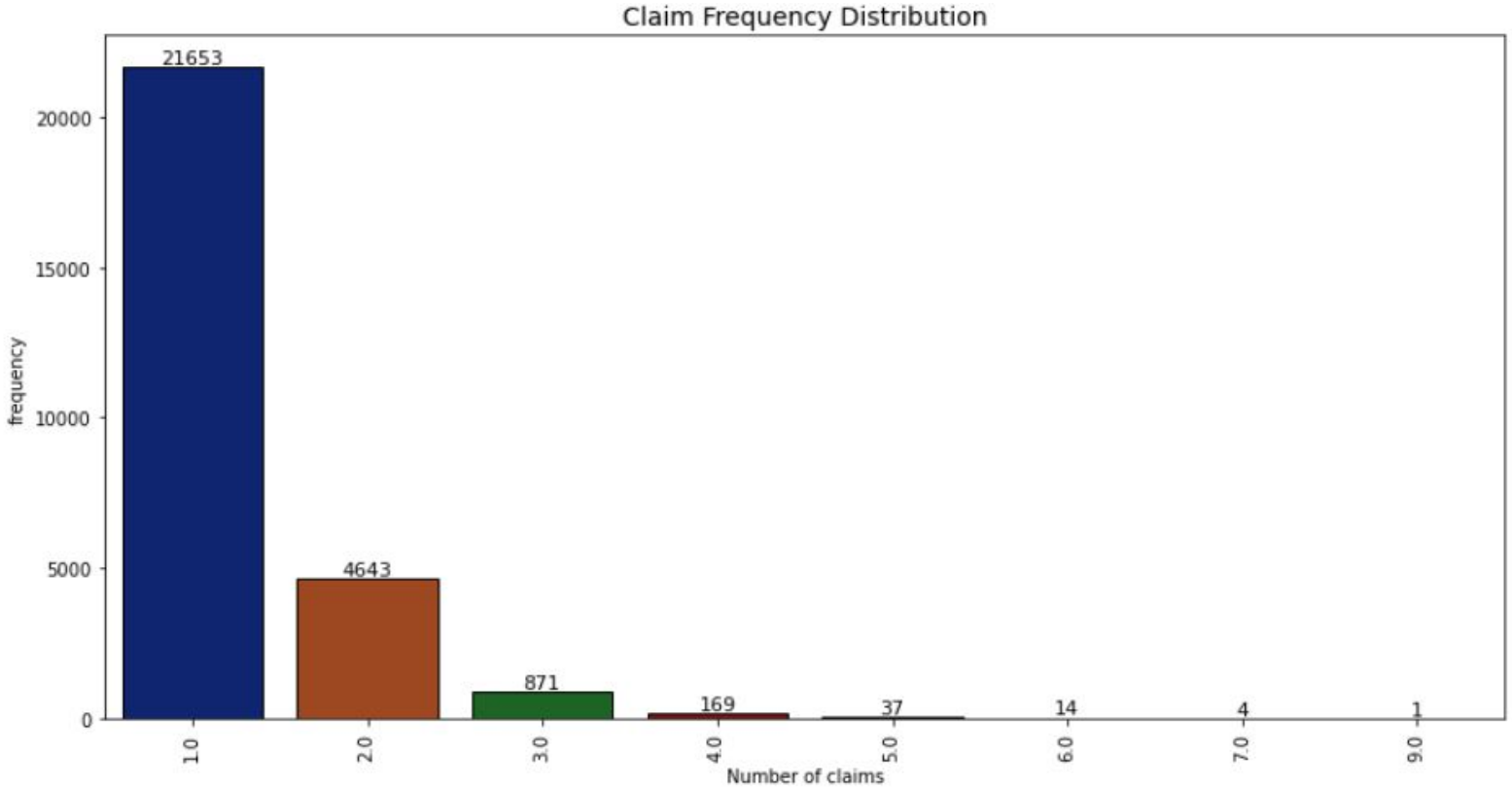
Claim amount (including zero claims)



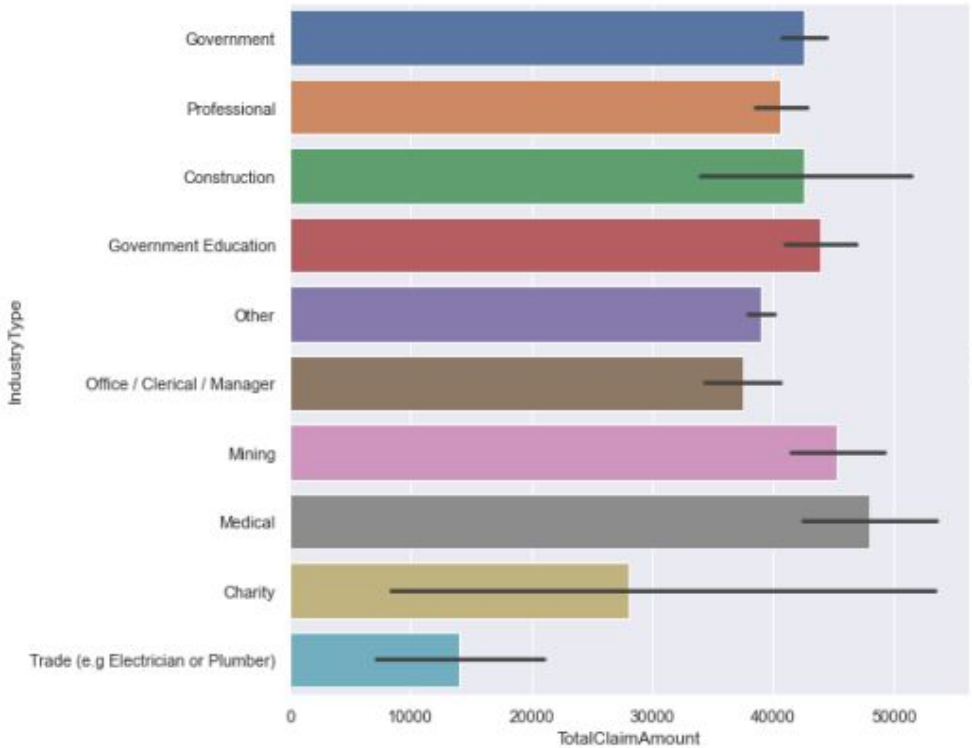
Claim amount (excluding zero claims)

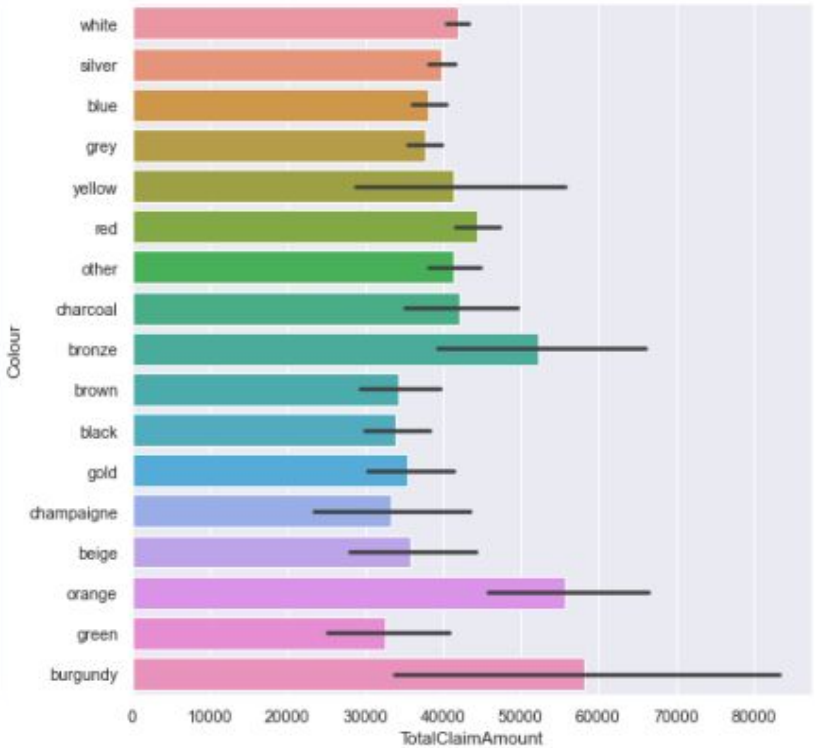


Claim count **distribution**

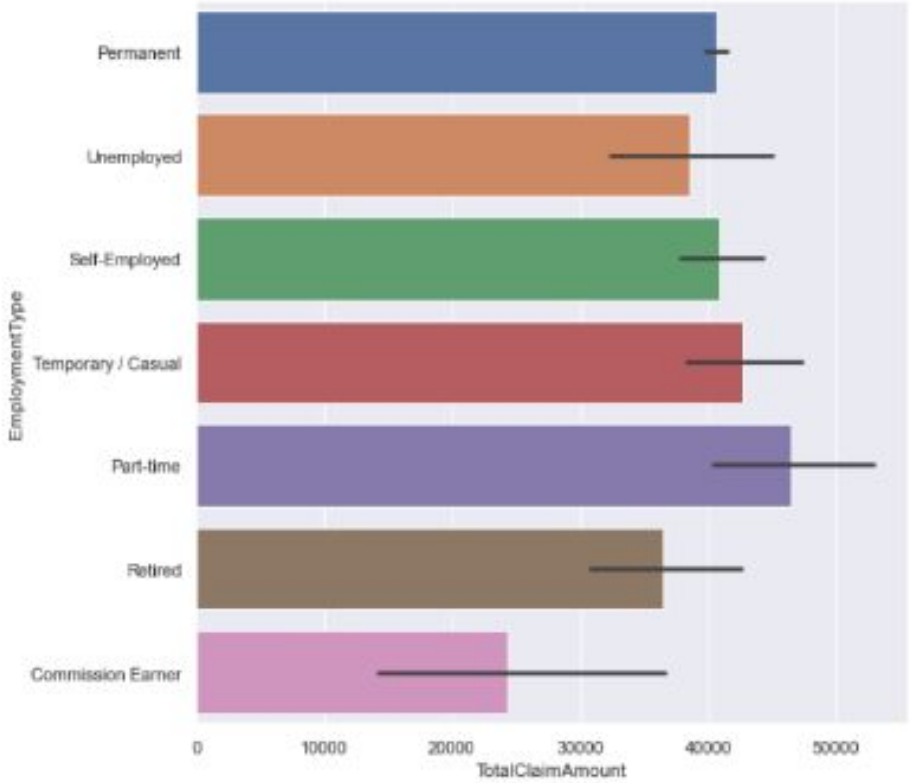


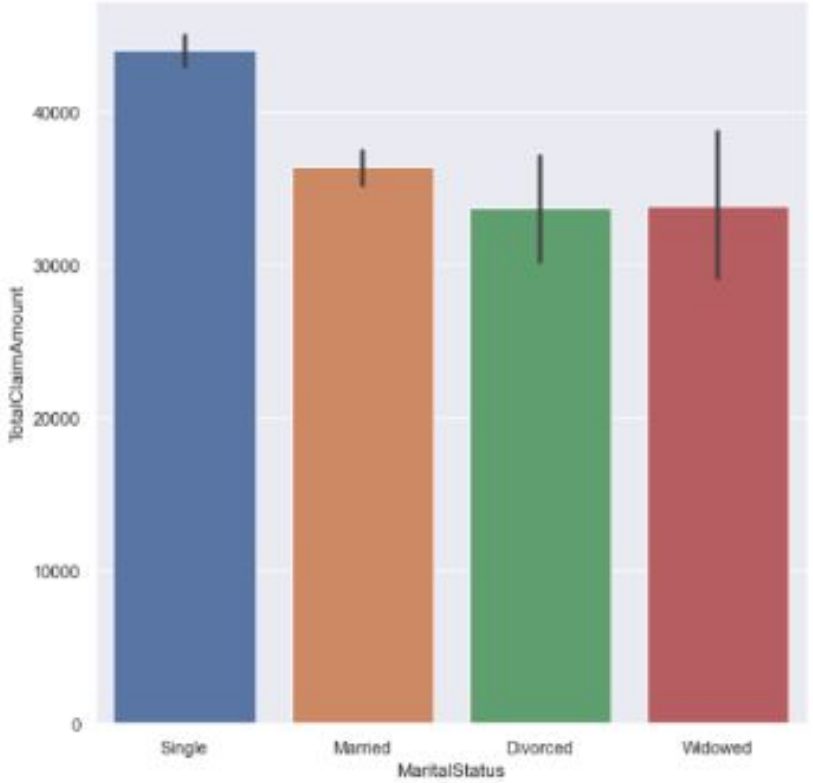
Claim amount **per category**





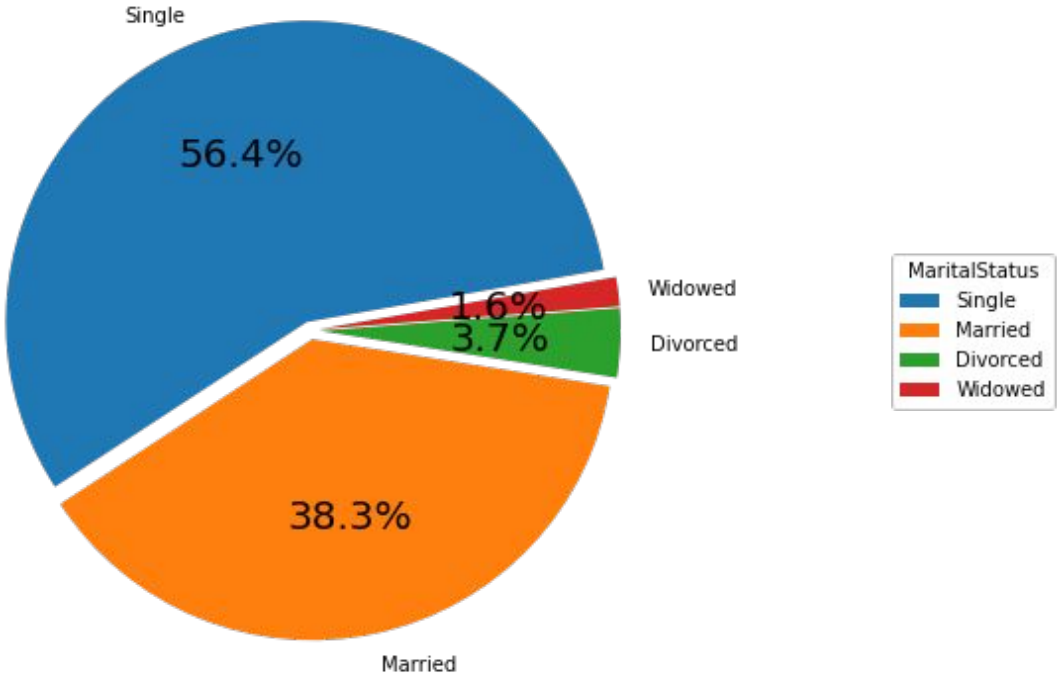
Claim amount **per category**





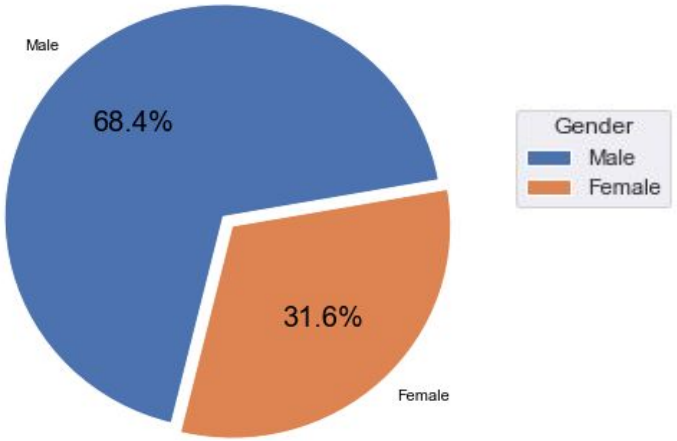
Categorical values **claim count differences**

Percentage claims per marital status

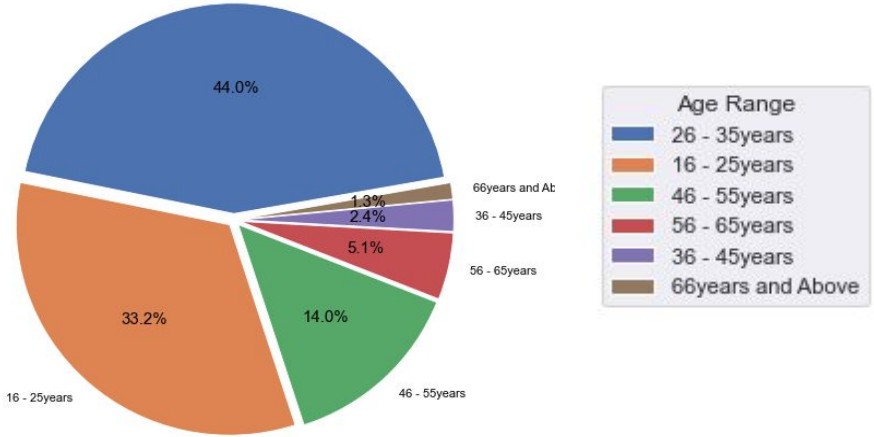


Claim count differences

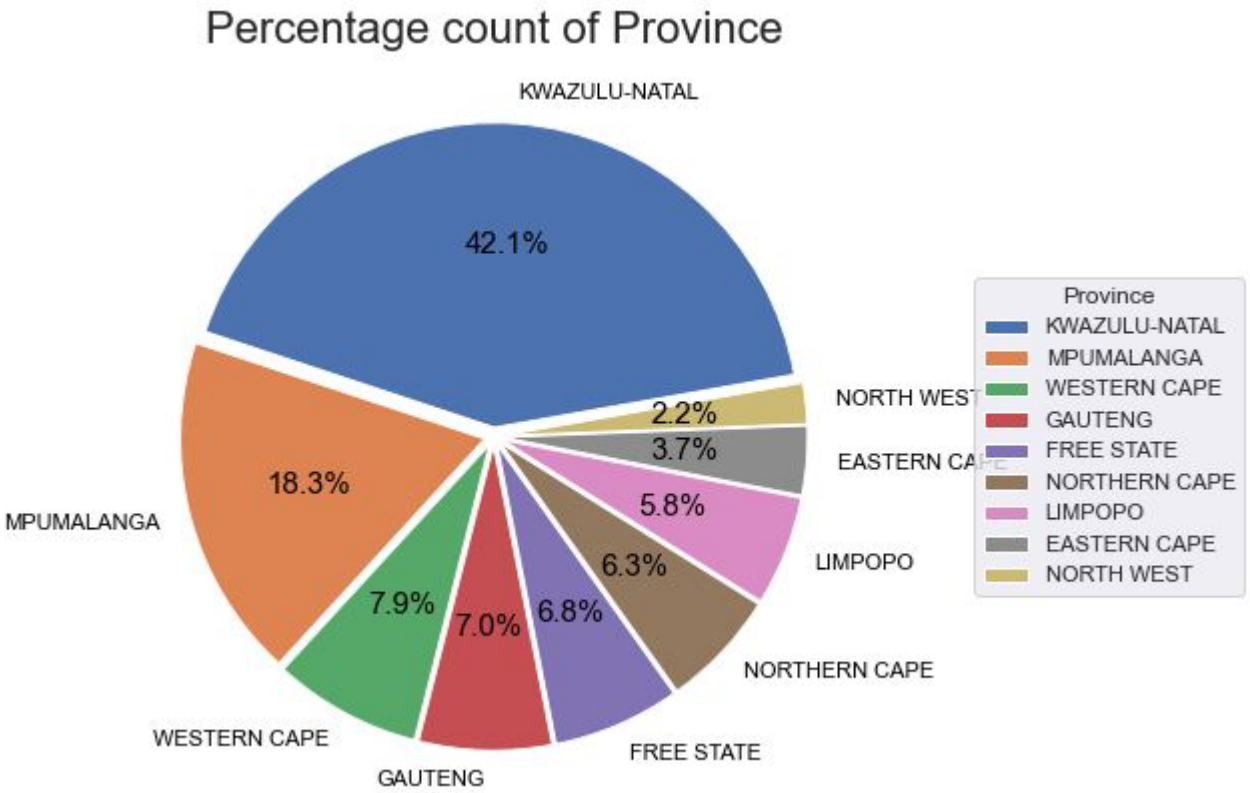
Percentage claims per Gender



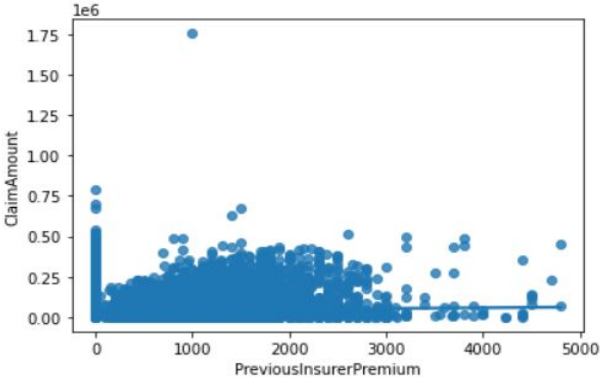
Percentage claims per Age Range

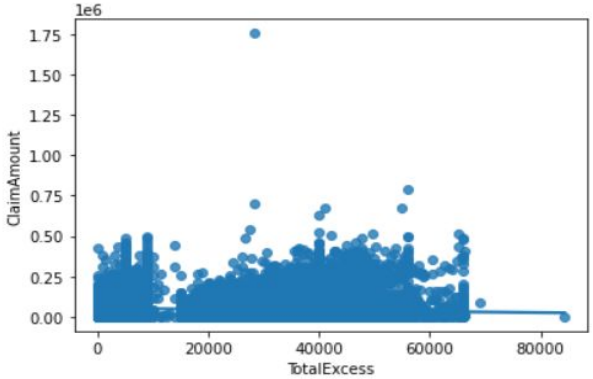


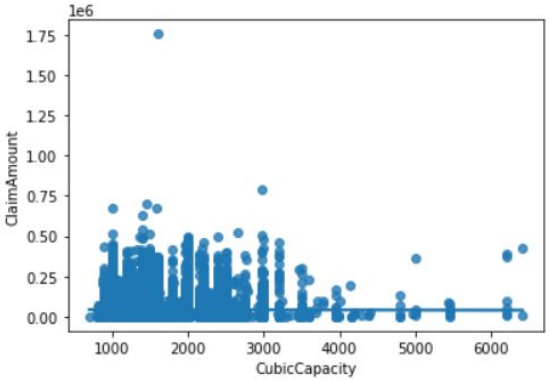
Claim count differences

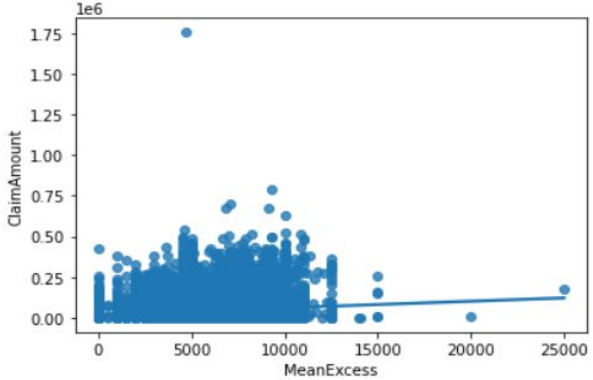


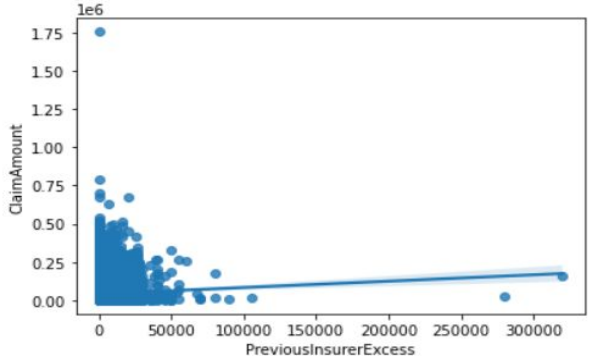
Numerical values claim **amount relationship**

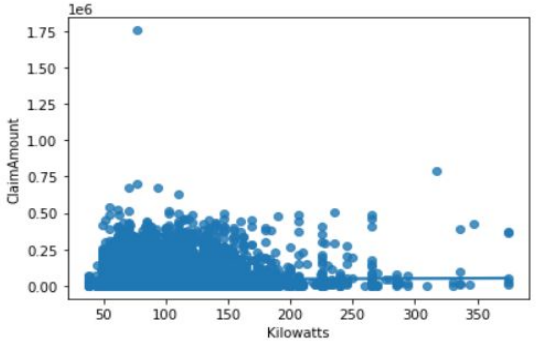




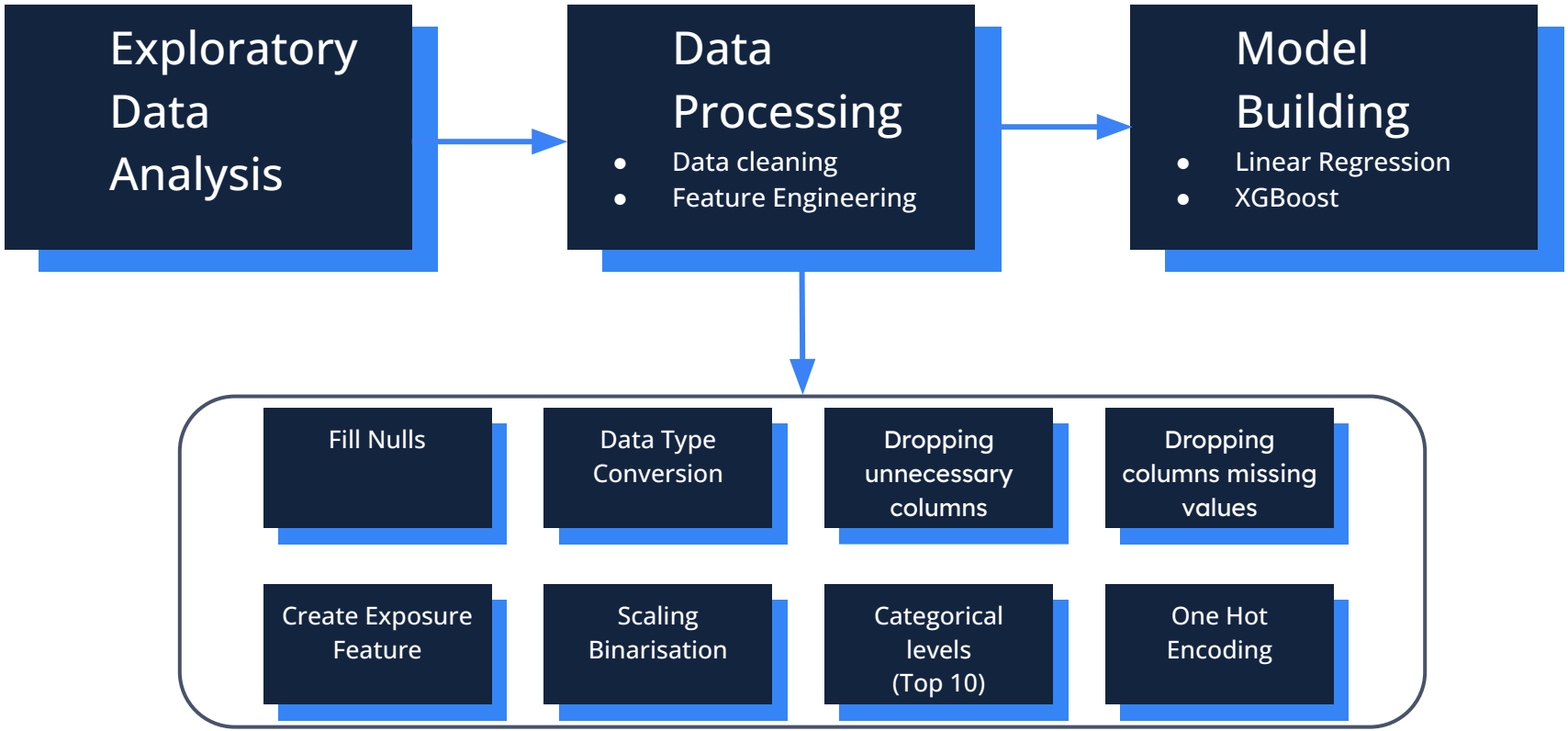








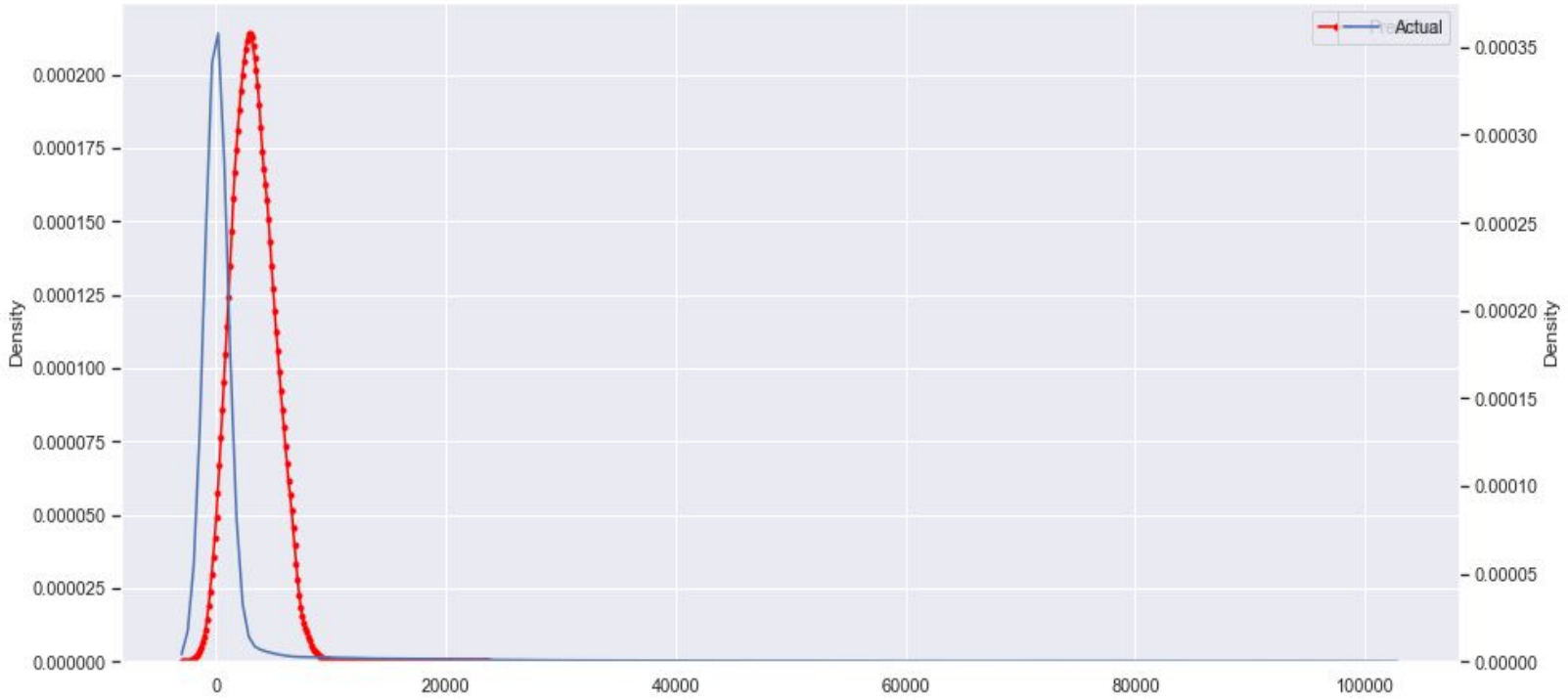
High Level Overview of **Modeling Process**



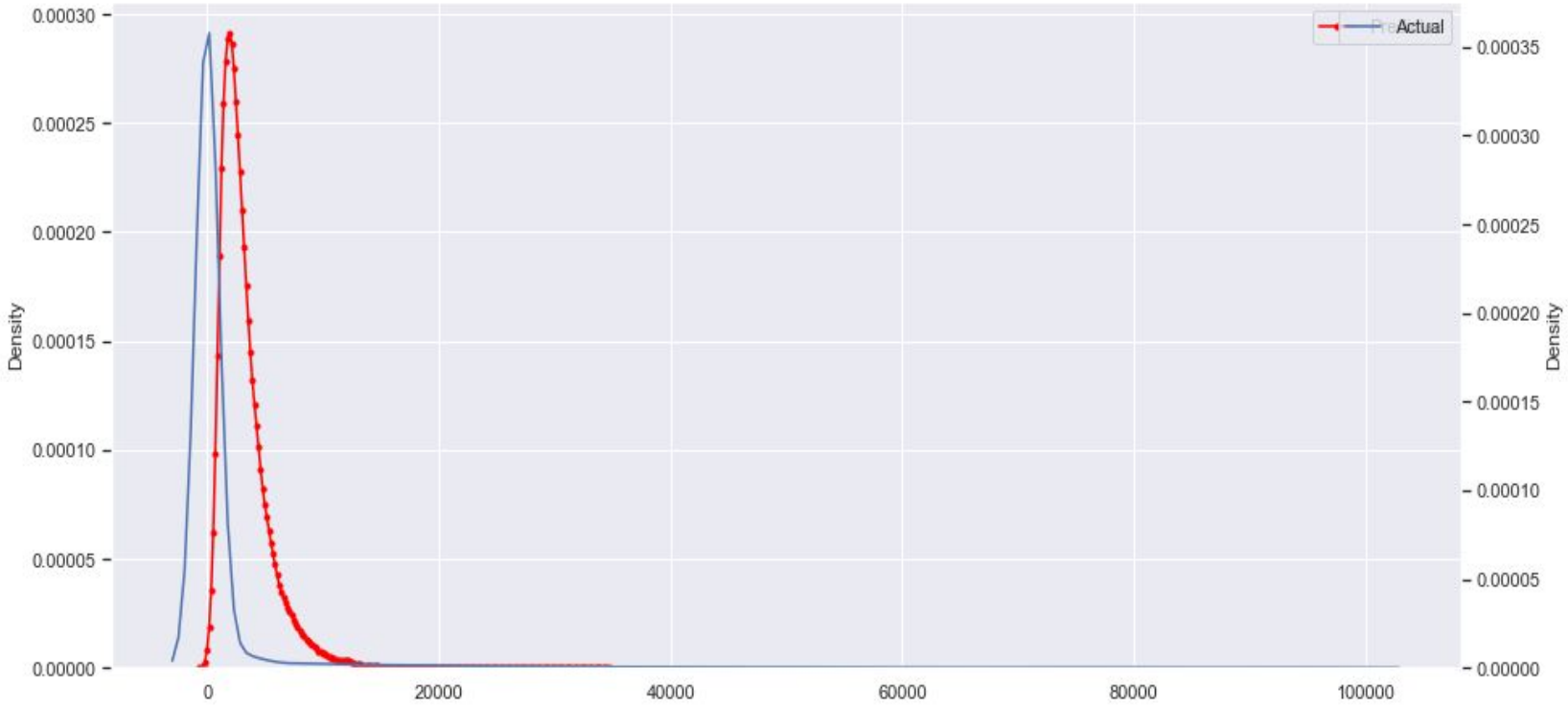
High Level Overview of **Modeling Metrics**

	Test MAE	Test RMSE
Linear Regression	5938	20035
XGBoost Regressor	5919	20003
FS Team	7400	24000

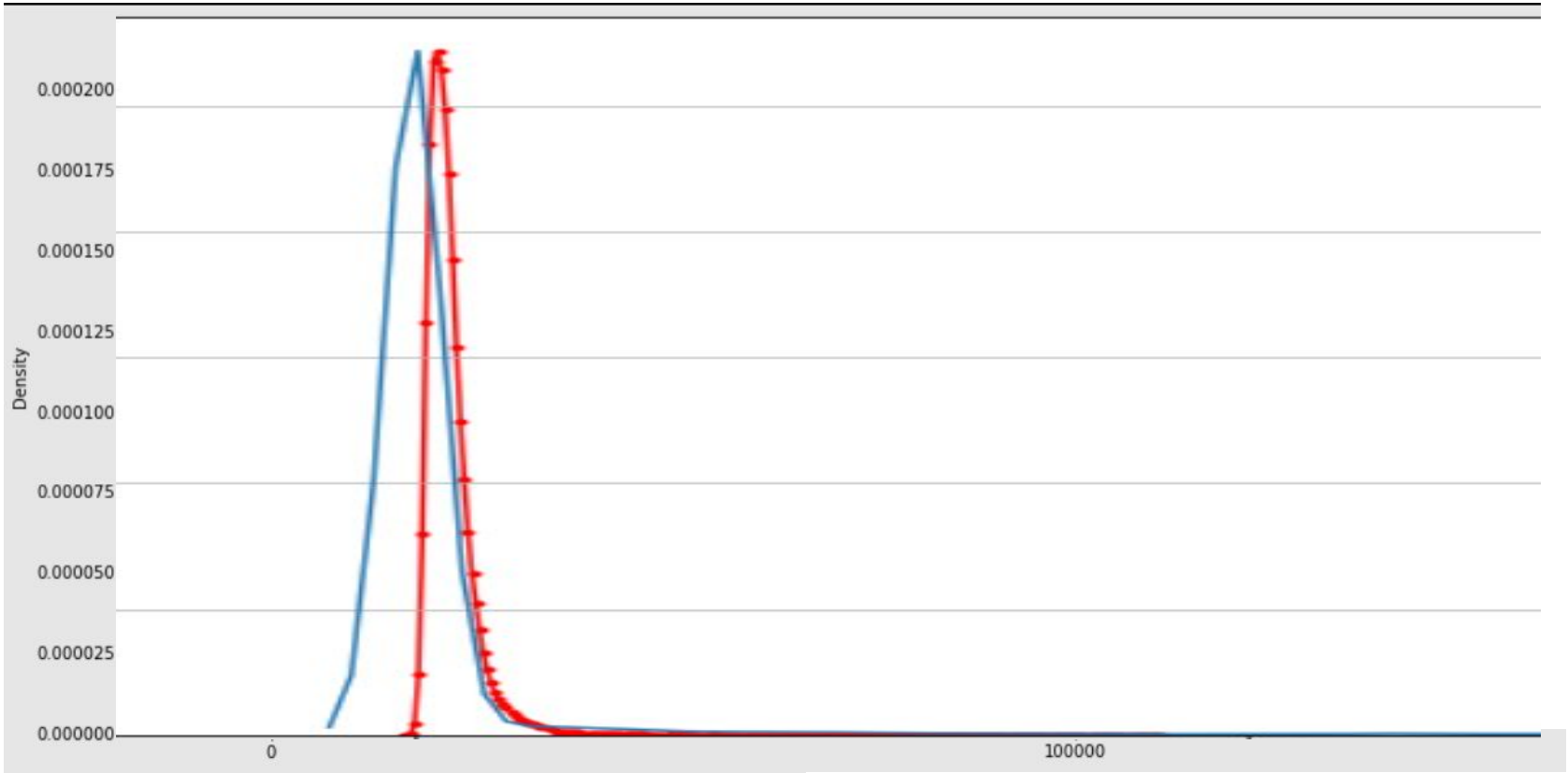
Linear Model **Predicted (Blue) vs Actual (Red)**



XGBoost Regressor **Predicted (Blue) vs Actual (Red)**



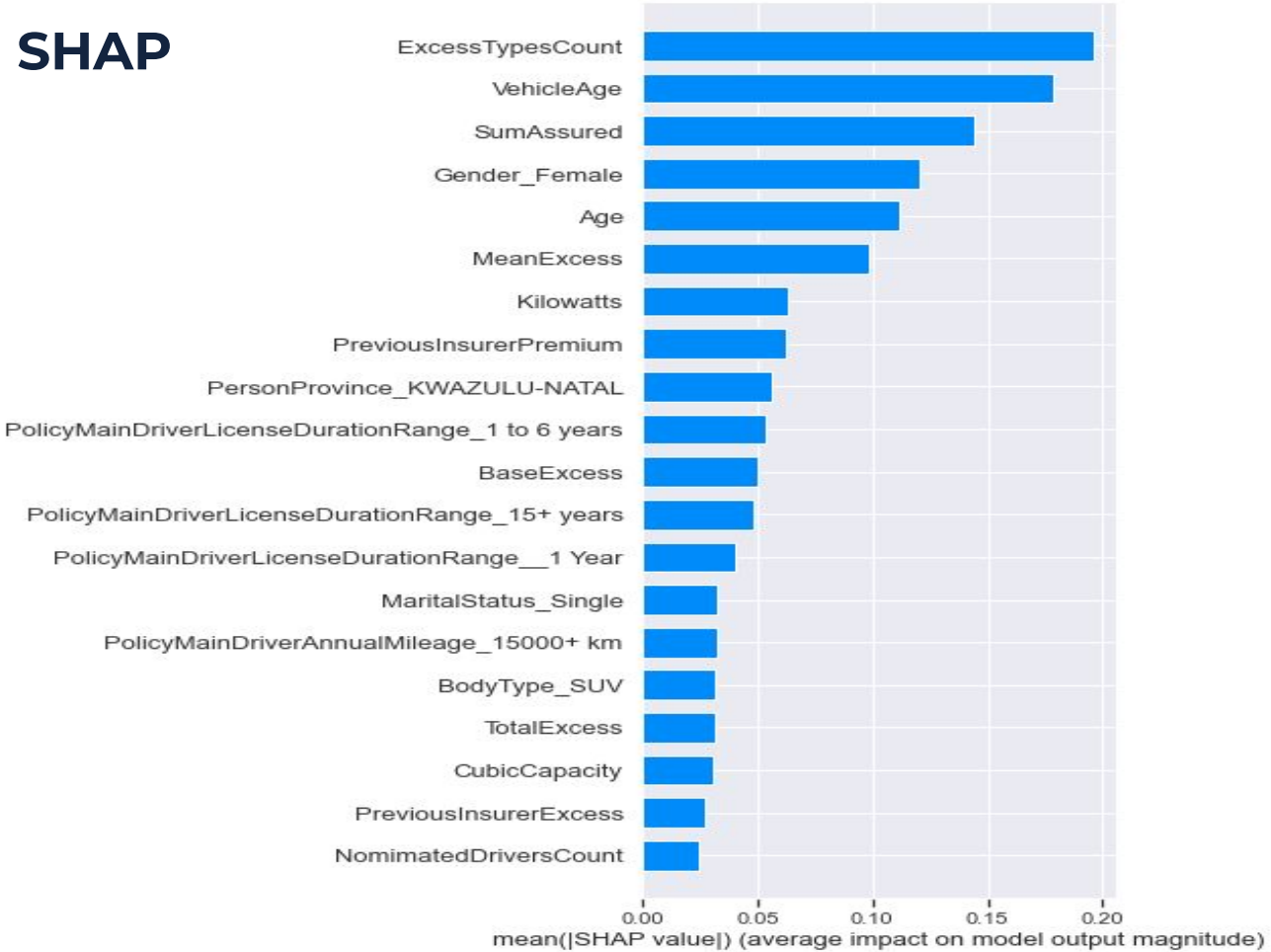
XGBoost Regressor **Predicted (Blue) vs Actual (Red)**



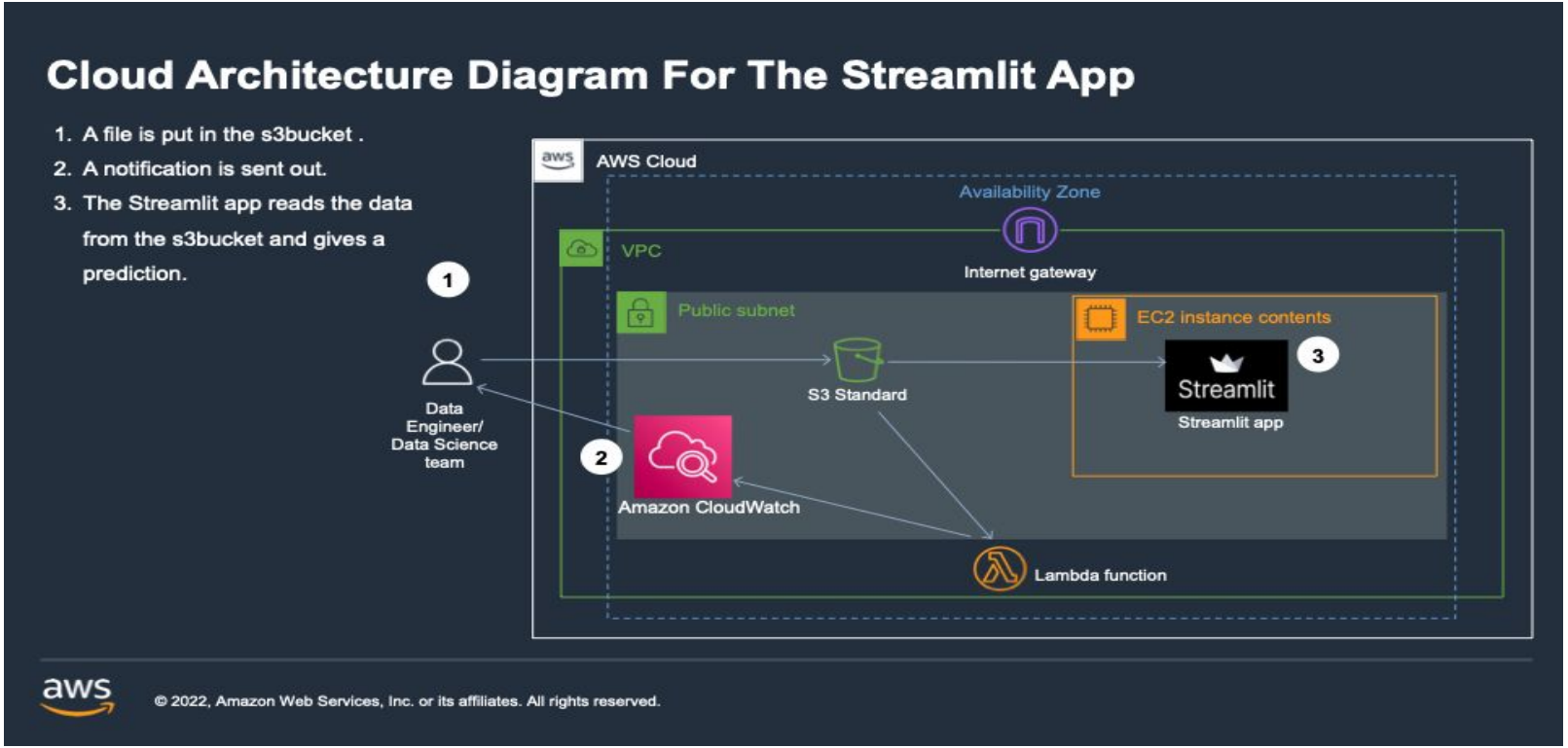
What has been **achieved by FS**

	Average Predicted Claim	Average Actual Claim	Average Difference
FS Team	**3.9K** Testing set	**4.5K** Testing set	**-600** Testing set
Team 15	**3.2K** Testing set	**3.4K** Testing set	**-200** Testing set

Best features **using SHAP**



AWS **Architecture**



Application **Demo**

Conclusion

01 Hypothesis Validation

02 Recommendations for Enhancement

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Thank you