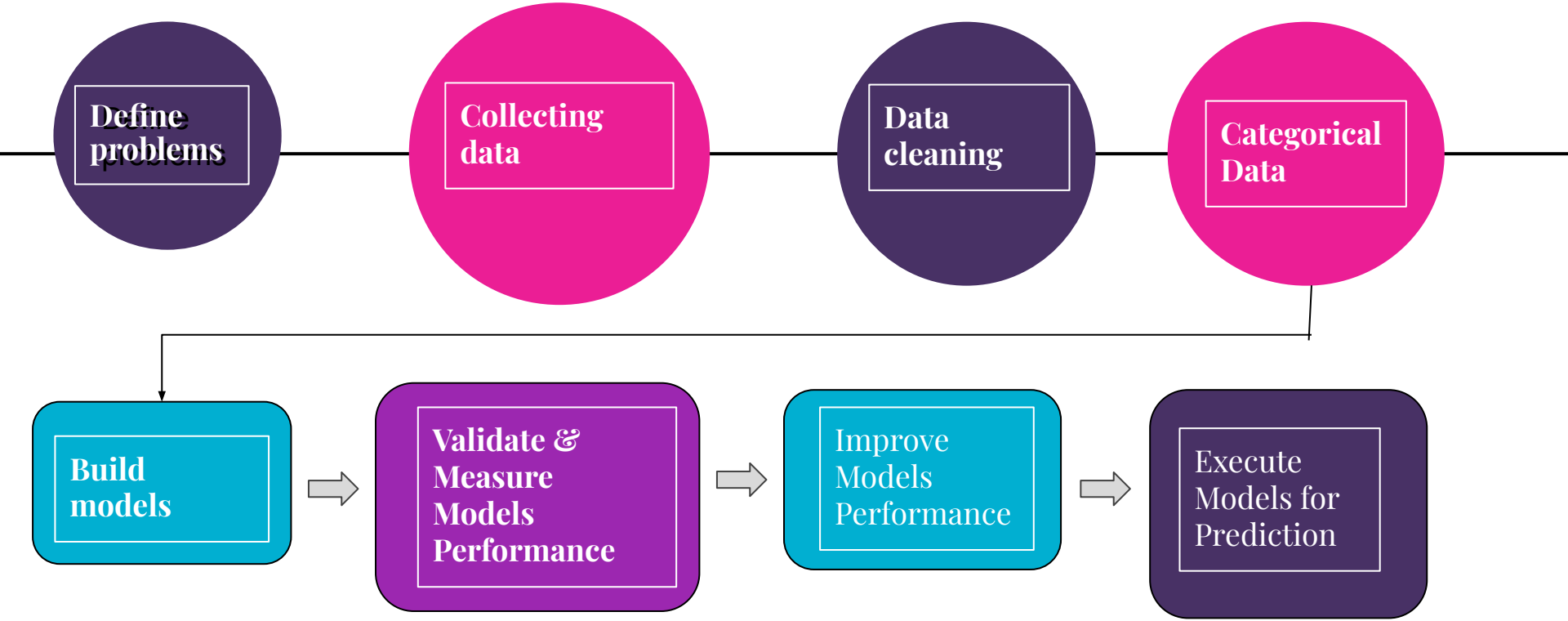
Telco Customer Churn

Project Description:

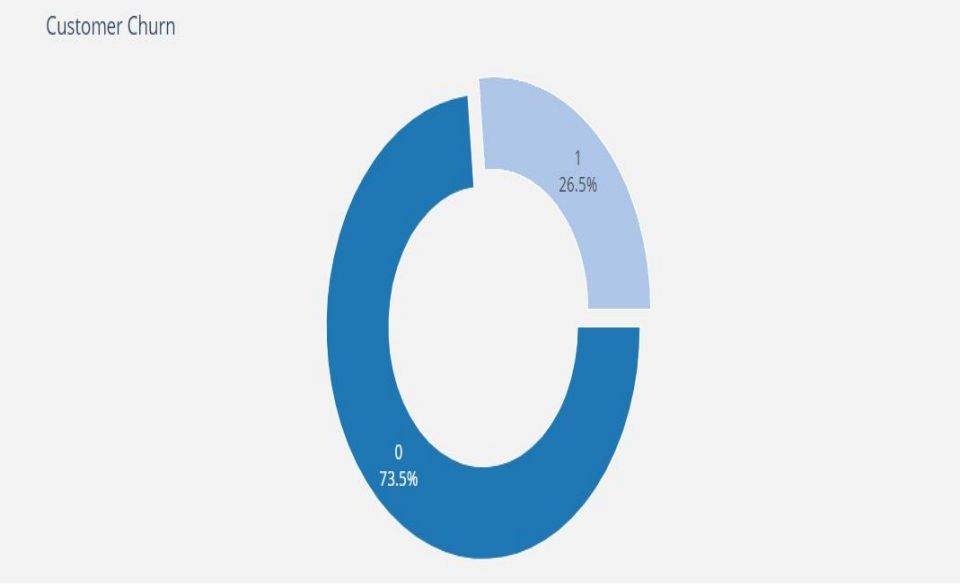
- **Objectives: Identify reasons for customer churn and develop prevention strategies using machine learning.**
- **Methods: Data exploration and visualization, data preprocessing, machine learning models (logistic regression, SVM, KNN, decision tree, and random forest), and model evaluation using confusion matrix.**
- **Outcomes: Probability of churn predicted for each customer, insights gained to develop effective strategies to reduce customer churn.**

Model Building Steps:



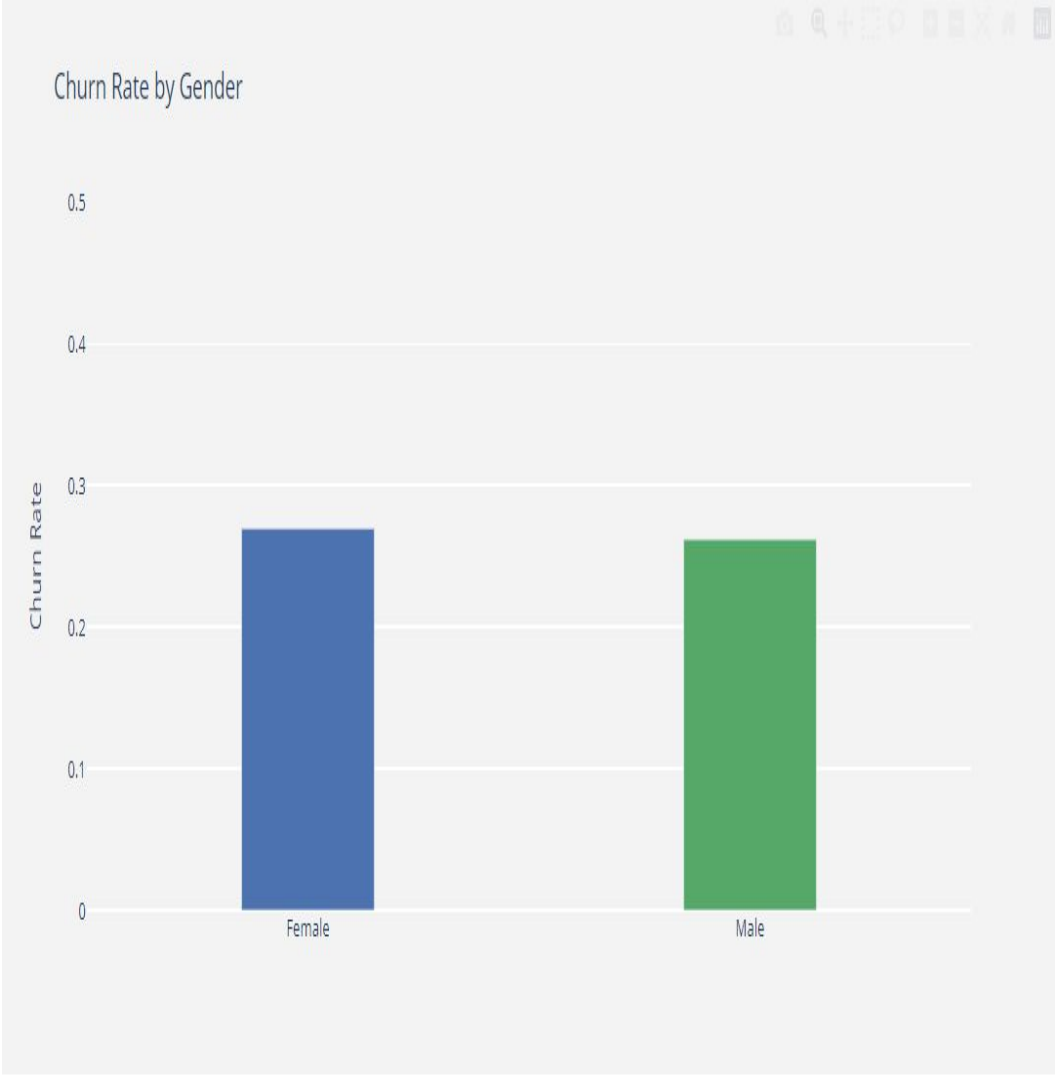
Analysis:

Our analysis includes several visualizations aimed at effectively conveying our findings, by using several machine learning models on the dataset, including logistic regression, support vector machines, k-nearest neighbors, decision trees, and random forests. We compared the models based on their accuracy using a confusion matrix.

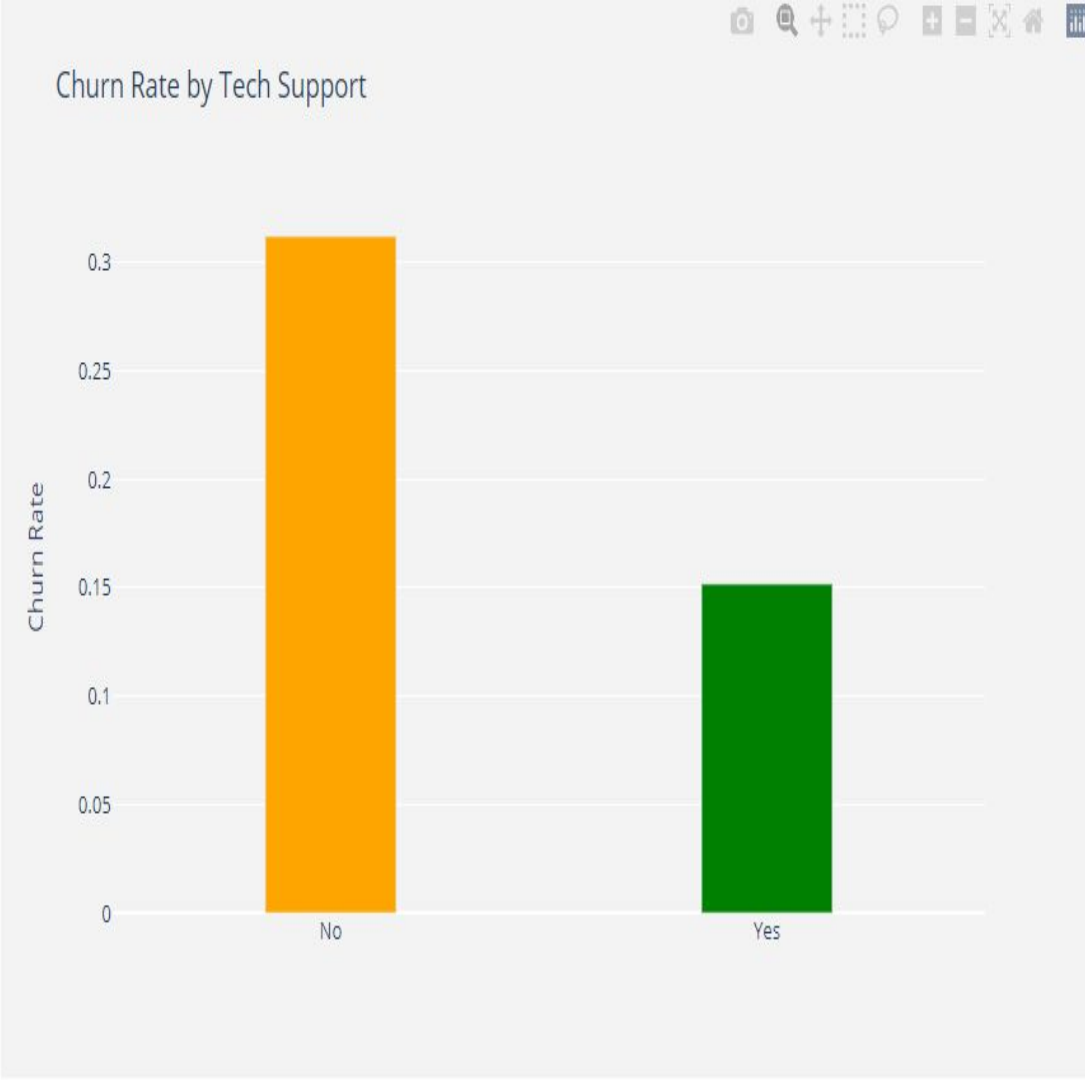


Churn Rate by Gender:

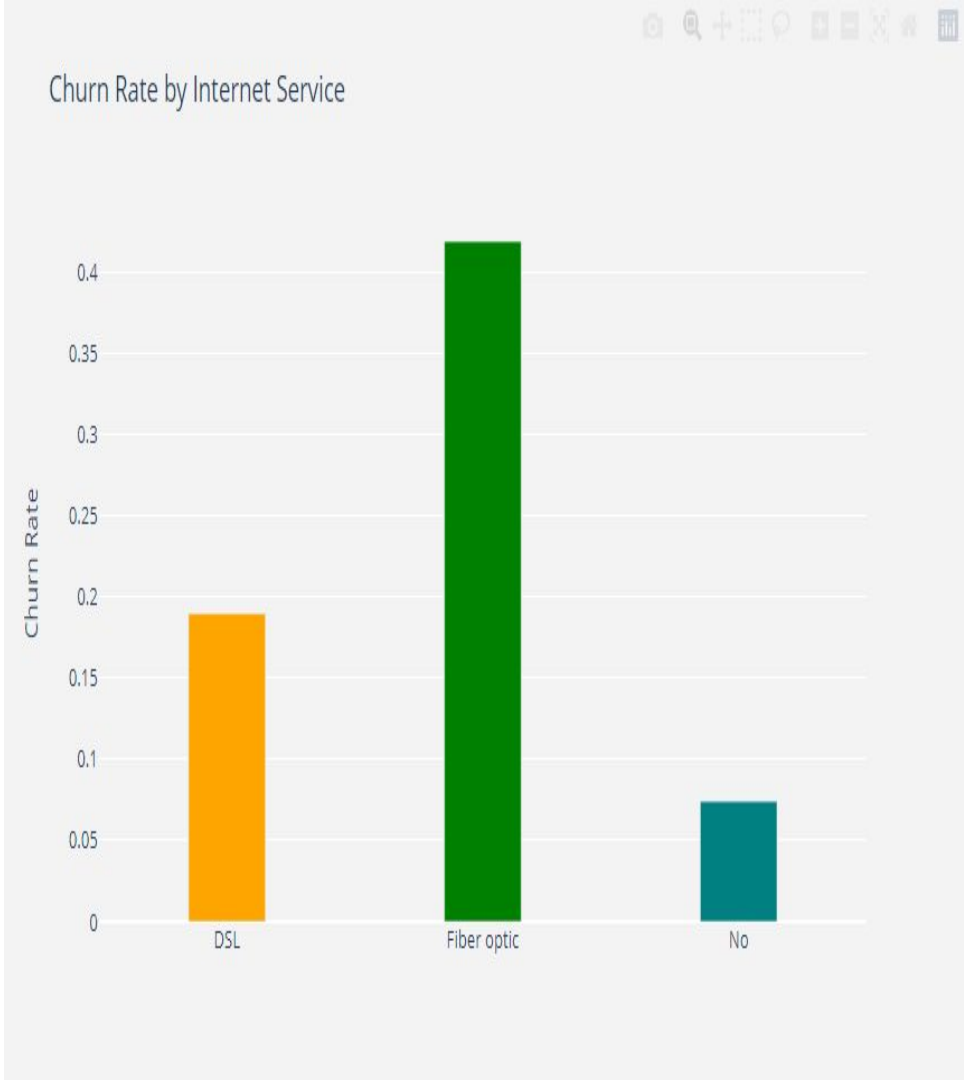
- Gender correlation to churn



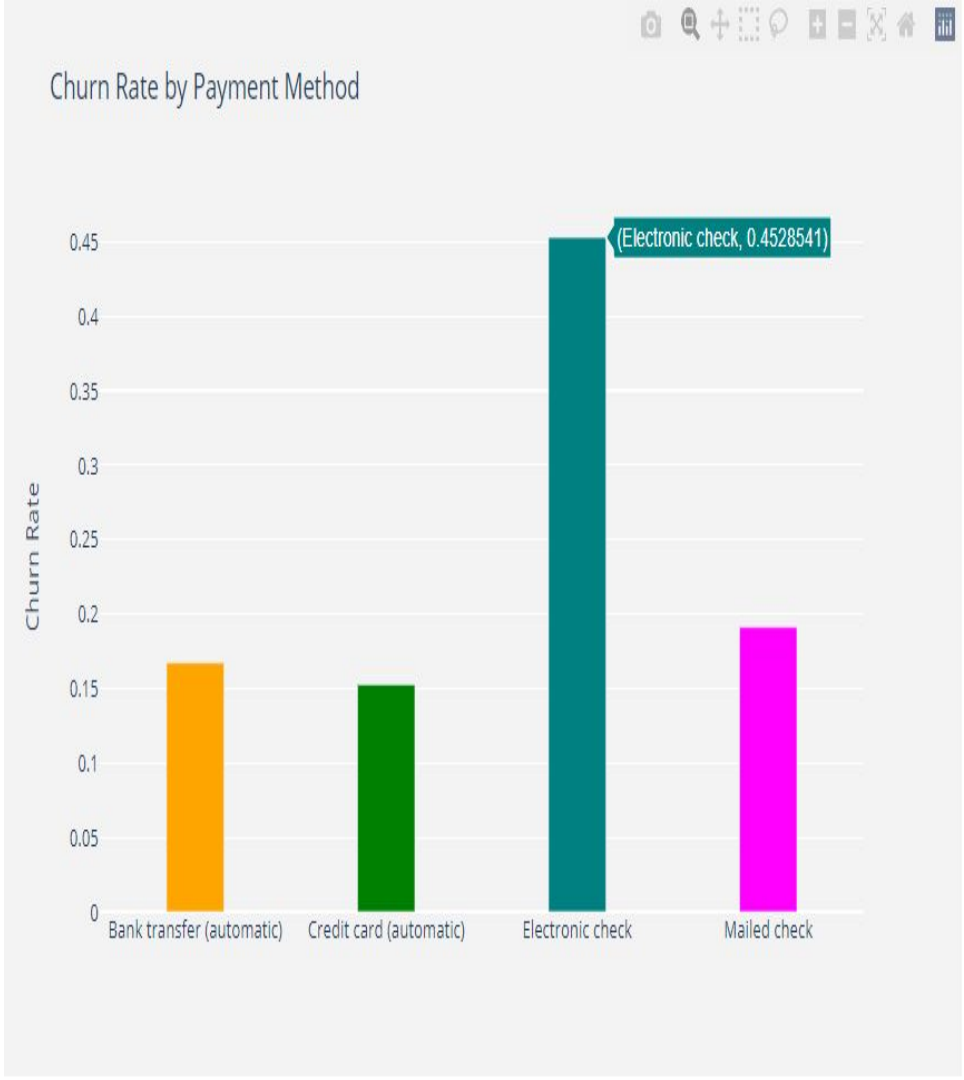
Churn Rate by Tech Support Bar Graph:



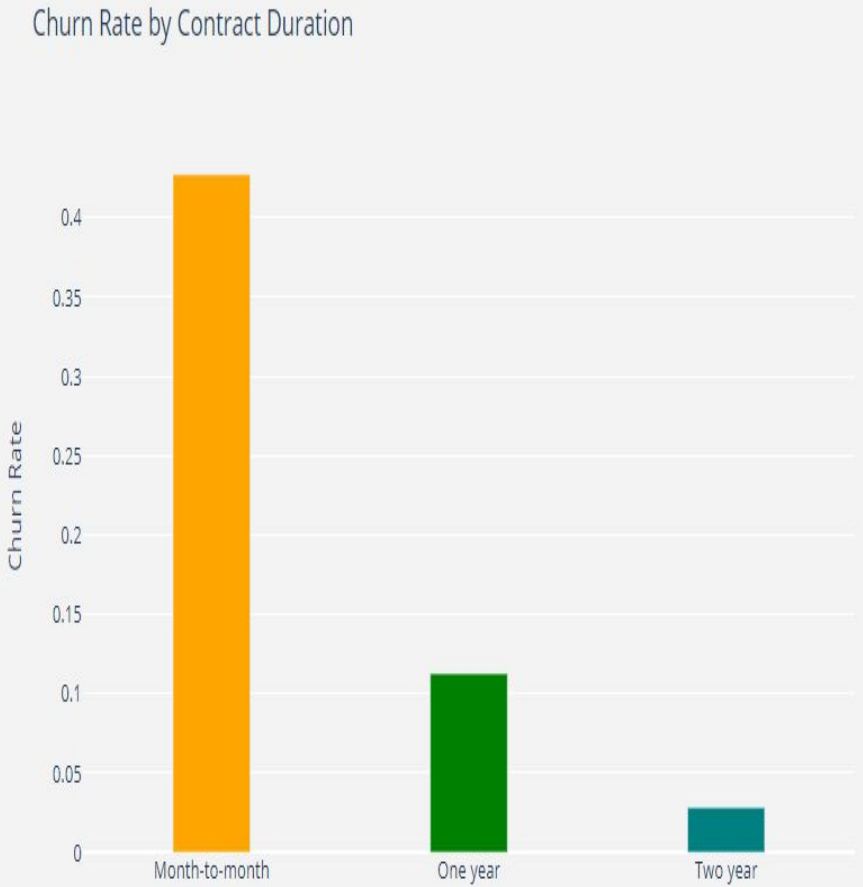
Churn Rate by Internet Service:



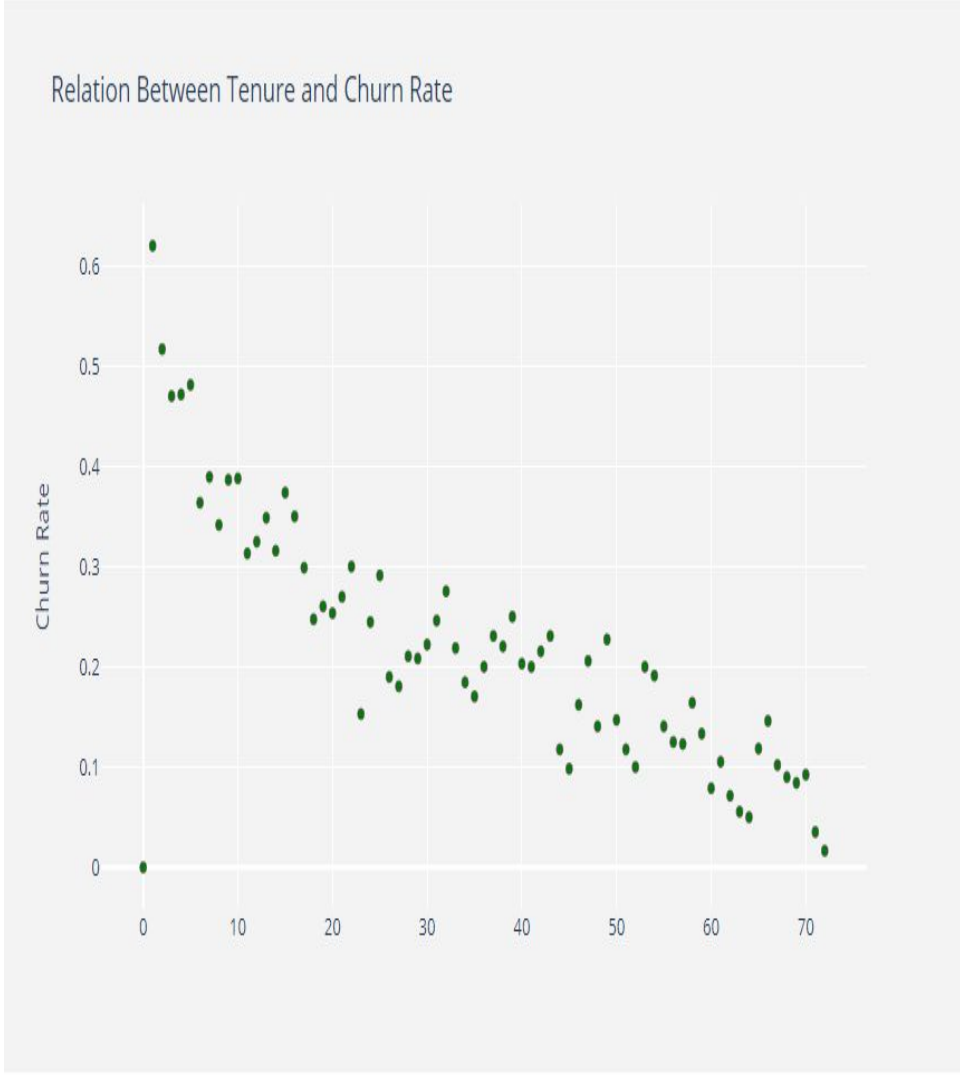
Churn by Payment Method Bar Graph:



Churn Rate by Contract Duration:



Relation Between Tenure and Churn Rate



Conclusion:

The importance of this type of research in the telecom market is to assist companies in increasing their profits. One way is to predict if churn has become one of the most important sources of revenue for telecom companies.

As a result, the goal of this study was to develop a system that predicts customer churn in a telecom company. These prediction models must have a high AUC. The sample data is divided into 70% for training and 30% for testing to test and train the model.

Finding and Suggestions

- Try to offer the better service for the churn customers, see how much this impact before and after.
- Take the feedback and suggestions with in period of time and improve it, strive for better communication.
- Overall charge comparison should be done with other competitors.

How to reduce customer churn

- Lean into your best customers.
- Be proactive with communication.
- Define a roadmap for your new customers.
- Offer incentives.
- Ask for feedback often.
- Analyze churn when it happens.
- Stay competitive.

Confusion Matrix

	Score	Model
0	80.03	Logistic Regression
1	79.37	Support Vector Machine
2	78.14	Random Forest
3	76.48	K-Nearest Neighbor
4	72.46	Decision Tree

Technologies Used

- We explored the dataset using various visualizations, including pie charts, bar graphs, and scatter plots. We analyzed the distribution of the features and cleaned any missing data. We also used several technologies in our analysis, including Python, Jupyter Notebook, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, one-hot encoding, feature scaling, logistic regression, support vector machines, k-nearest neighbors, decision trees, and random forests

Resources

We utilized the Telco Customer Churn dataset available on Kaggle

(https://www.kaggle.com/datasets/blastchar/telco-customer-churn).

Team members:

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