SYRIATEL CUSTOMER CHURN ANALYSIS

Professional Pitching presentation

BY ISAAC MUTURI

INTRODUCTION

BUSINESS UNDERSTANDING

STAKEHOLDERS

- SyriaTel executives and management team
- Customer retention and loyalty teams

BUSINESS PROBLEM

- High customer churn rate leading to financial losses and reduced customer base

OBJECTIVES

- develop a predictive classifier that can accurately determine whether a customer is likely to churn.
- Understanding underlying patterns and reasons behind customer churn
- Provide actionable insights
- reducing financial losses
- Implementing targeted retention strategies.

DATA UNDERSTANDING

SUMMARY

the dataset, encompassing customer demographics, usage patterns, billing information, and customer service interactions.

SHAPE OF DATASET

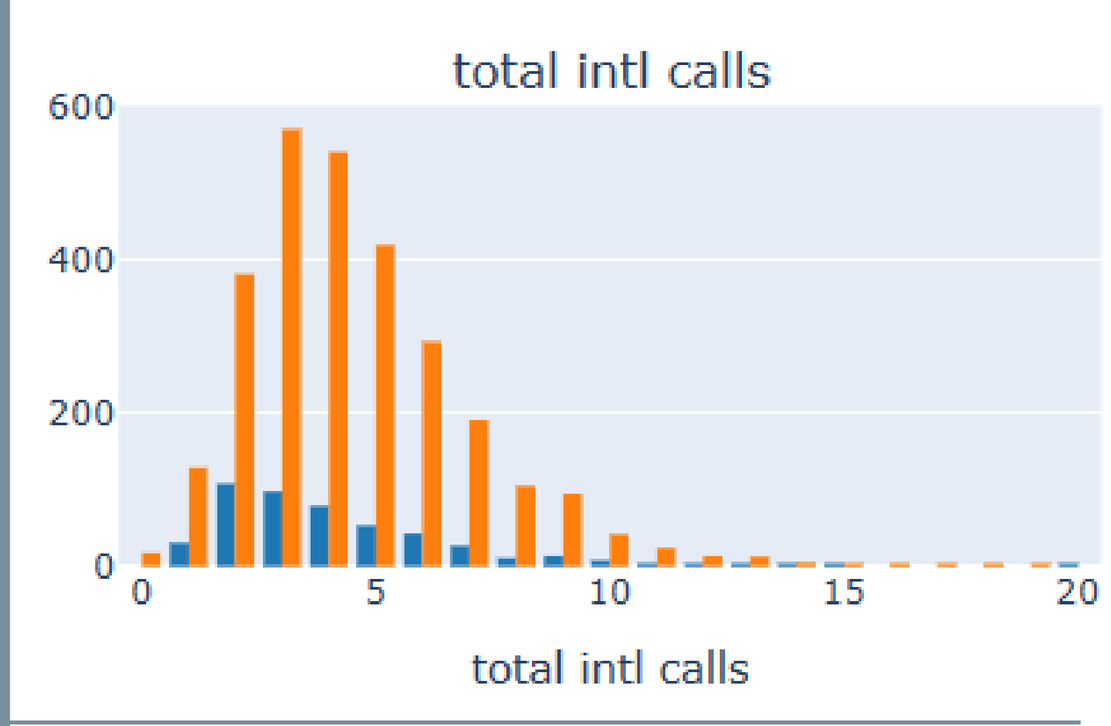
The dataset consists of 3333 entries and 21 columns..

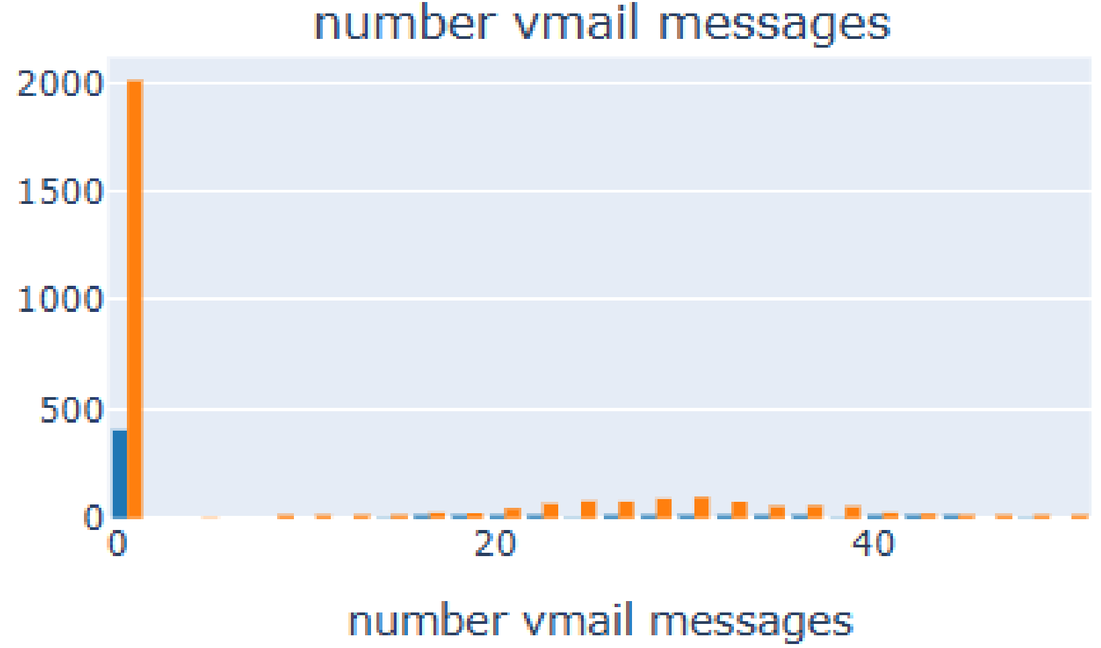
FEATURE COLUMNS

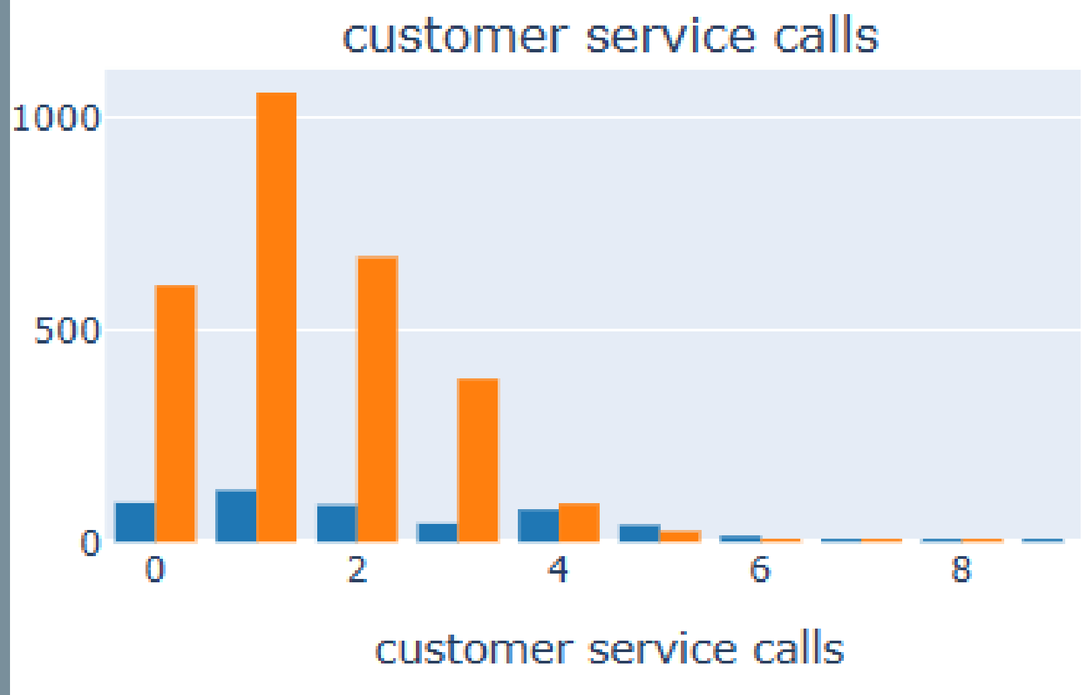
state, account length, area code, phone number, international plan, voice mail plan, number vmail messages, total day minutes, total day calls, total day charge, total eve minutes, total eve calls, total eve charge, total night minutes, total night calls, total night charge, total intl minutes, total intl calls, total intl charge, customer service calls, churn

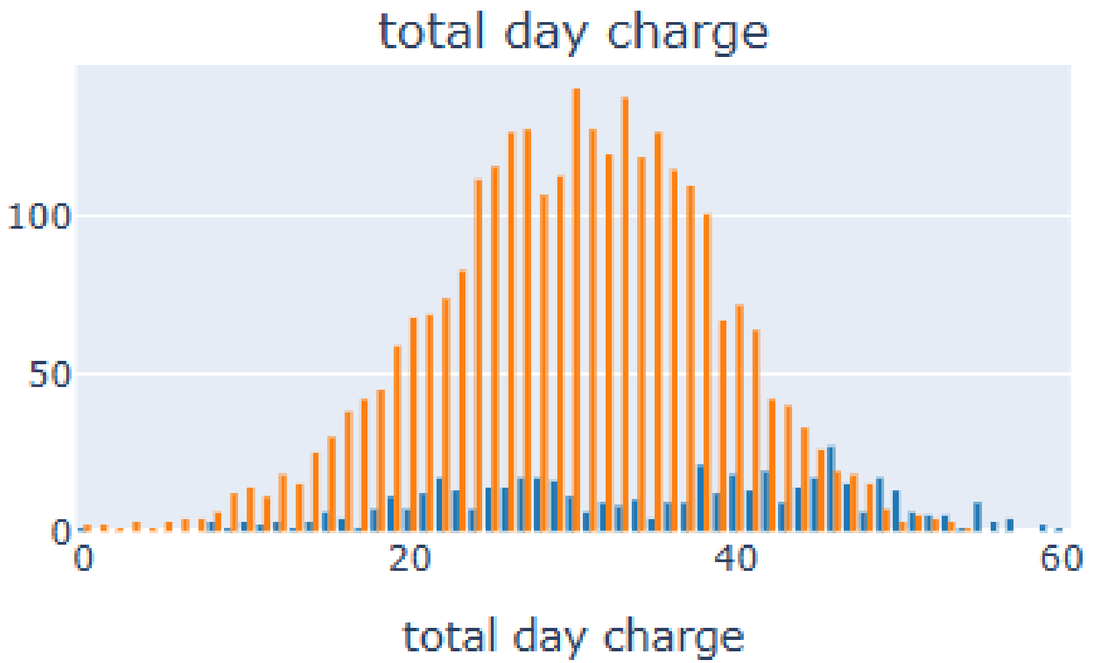
EDA: EXPLORATORY DATA ANALYSIS

NUMERICAL FEATURES DISTIBUTIONS

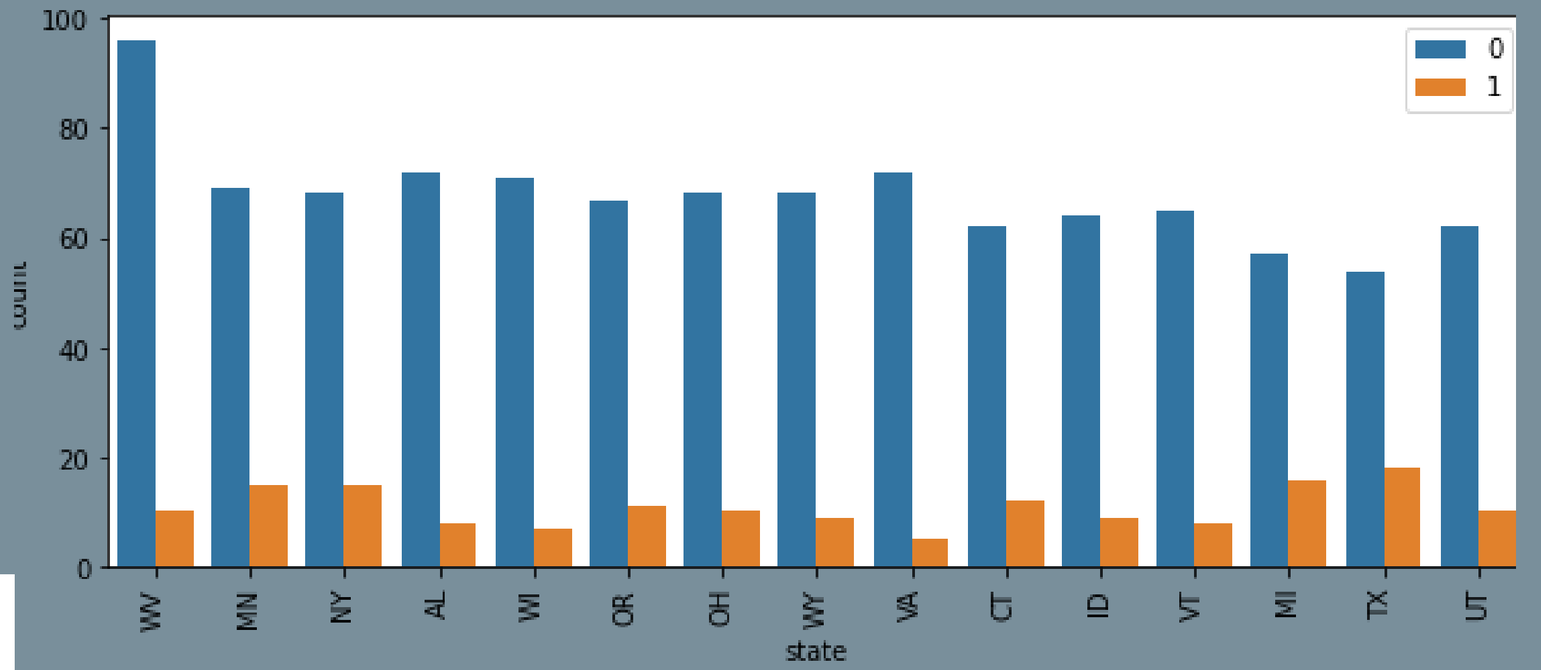


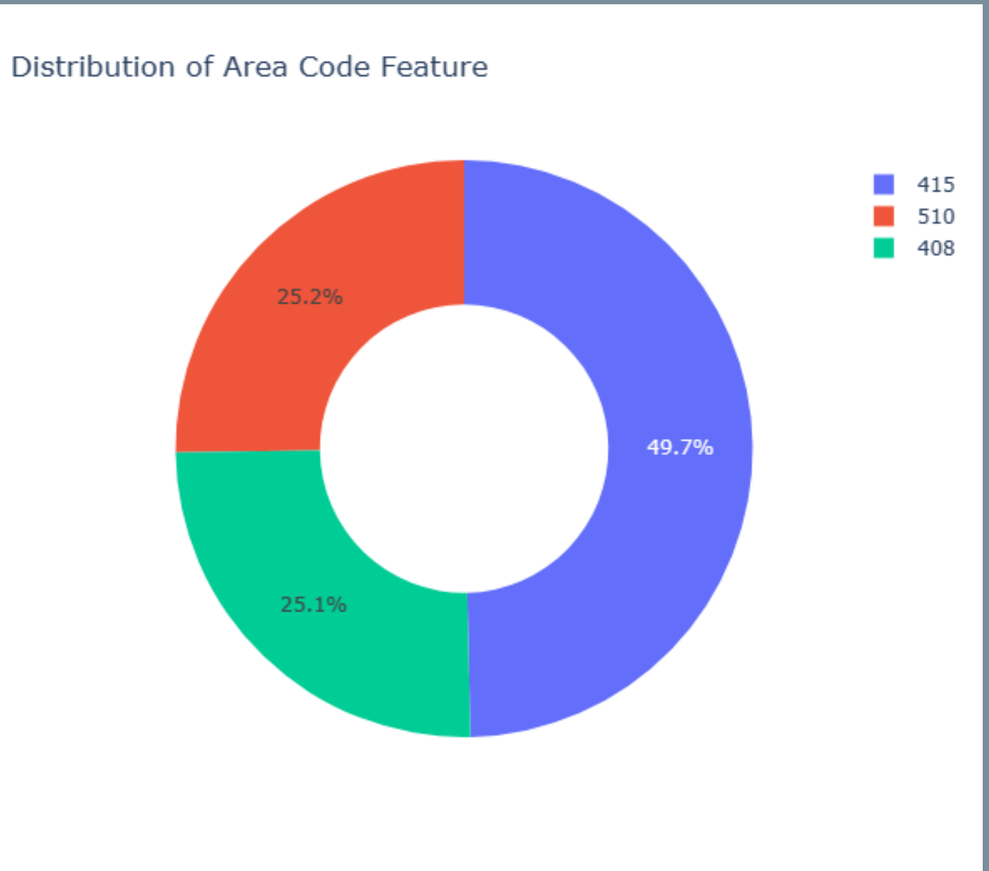






CATEGORICAL FEATURES DISTIBUTIONS





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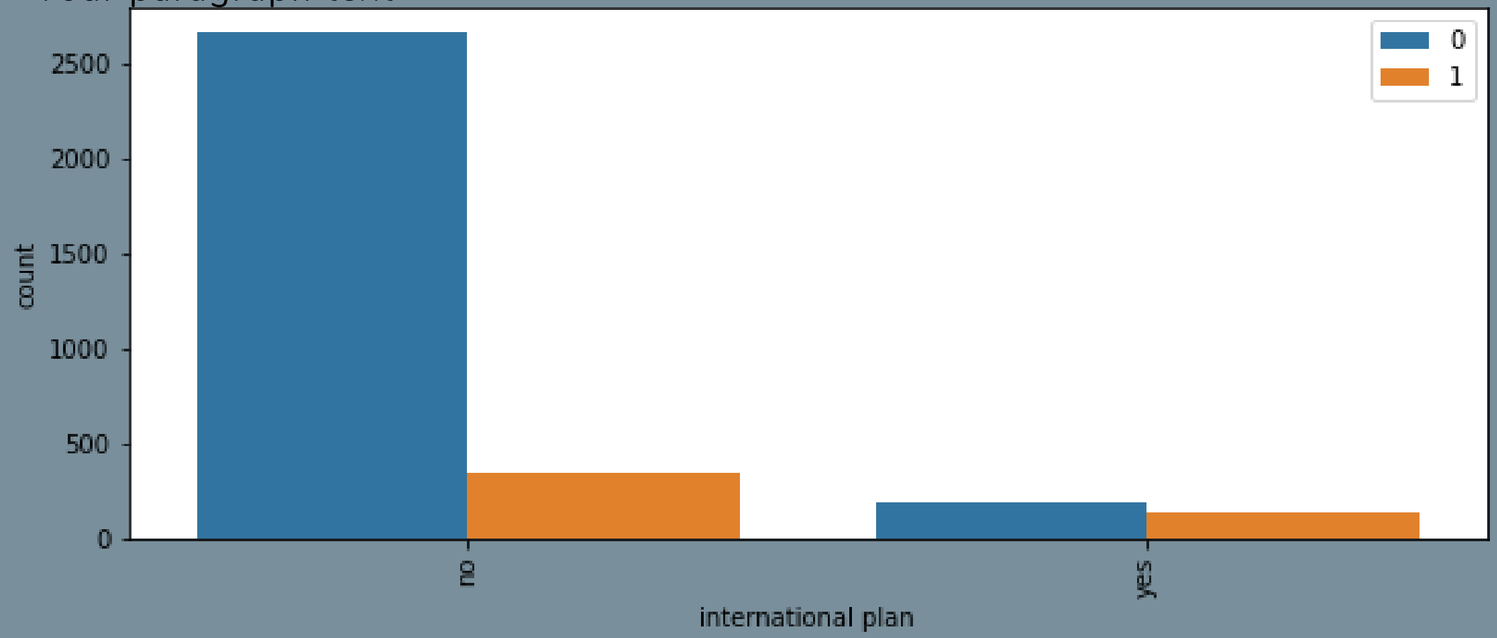


MODELLING

CLASSIFIER MODEL RESULTS

LOGISTIC REGRESSION MODEL

Accuracy	Precision	Recall	F1 score
74%	23.4%	76.5%	35.9%

CLASSIFIER MODEL RESULTS

RANDOM FOREST MODEL

Accuracy	Precision	Recall	F1 score
94.6%	72.1%	72.1%	72.1%

CLASSIFIER MODEL RESULTS

DECISION TREE MODEL

Accuracy	Precision	Recall	F1 score
87.4%	39.4%	60.3%	47.7%

CLASSIFIER MODEL RESULTS

K-NEAREST NEIGHBORS (KNN) MODEL

Accuracy	Precision	Recall	F1 score
77.8%	25.4%	69.1%	37.2%

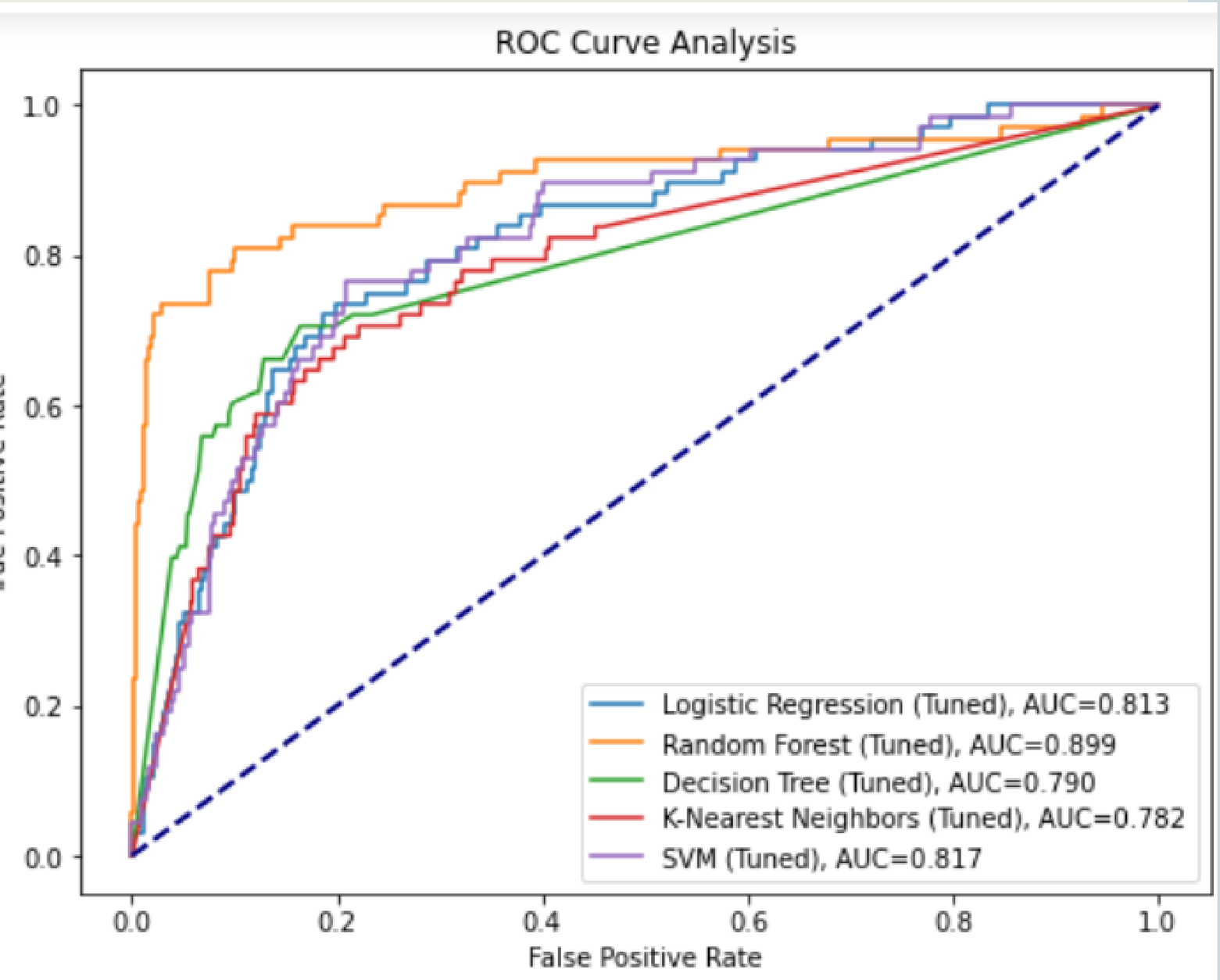
CLASSIFIER MODEL RESULTS

SUPPORT VECTOR MACHINE (SVM) MODEL

Accuracy	Precision	Recall	F1 score
75.3%	24.5%	76.4%	37.1%

EVALUATION

ROC CURVE ANALYSIS



Results

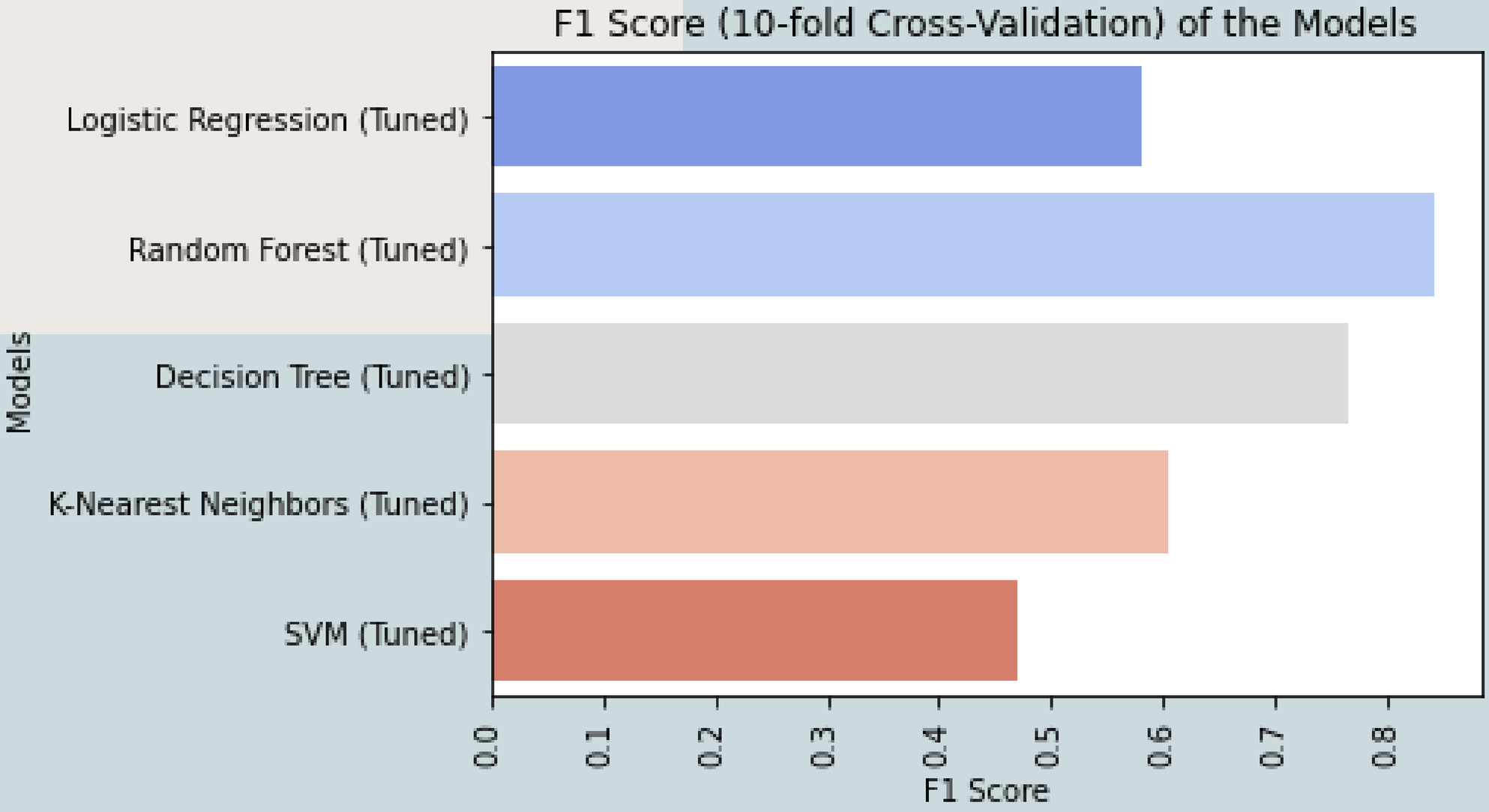
A model with a higher ROC curve that is closer to the top-left corner indicates better predictive accuracy. The area under the ROC curve (AUC) is also calculated. A higher AUC indicates better discrimination power.

Models sorted by Area Under the ROC Curve (AUC)

1. Random Forest (Tuned)
2. SVM (Tuned)
3. Logistic Regression (Tuned)
4. Decision Tree (Tuned)
5. K-Nearest Neighbors (Tuned)

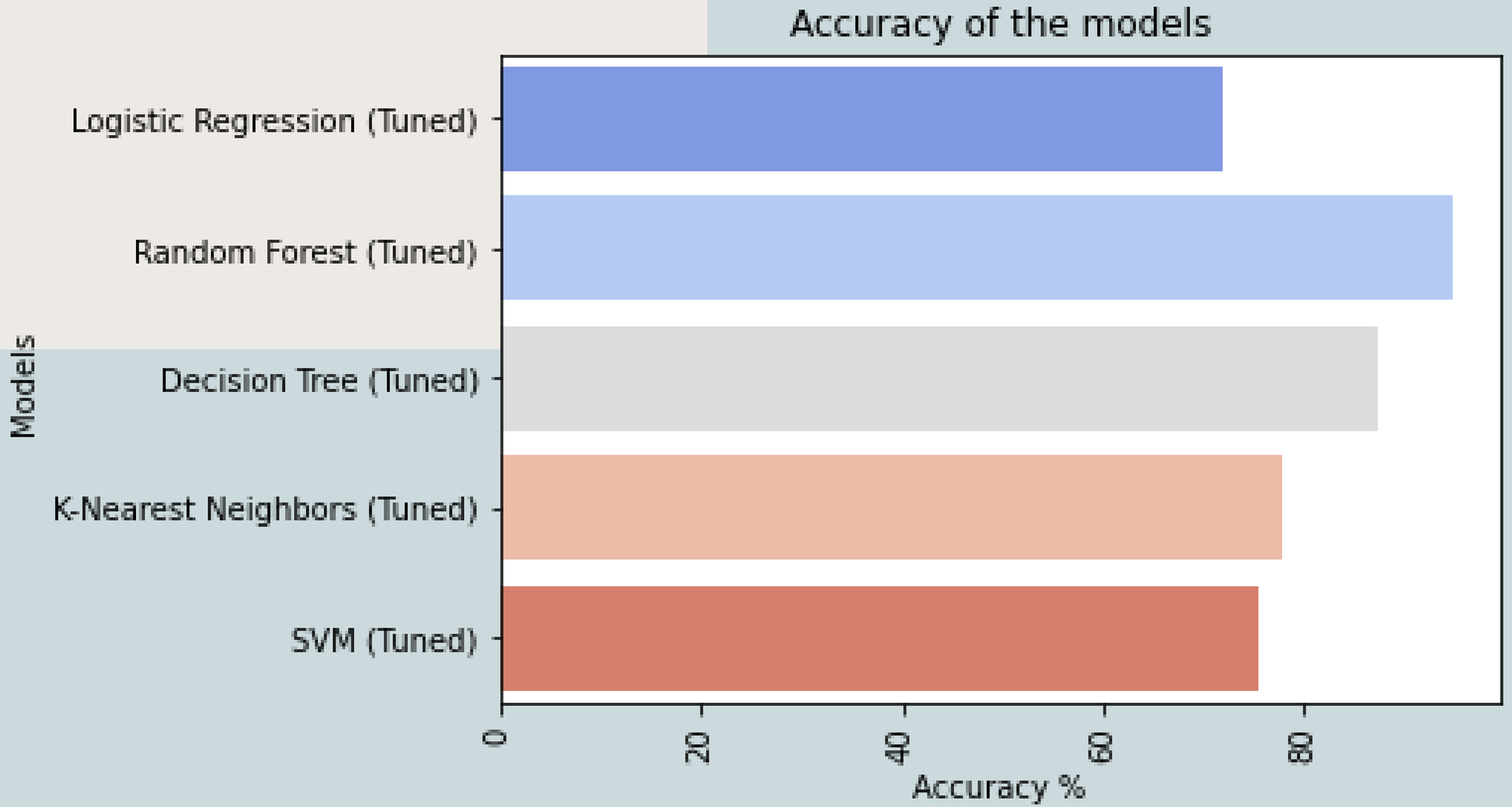
MODEL COMPARISONS - F1 SCORE

The Random Forest model achieved the highest F1 score of 0.8409, indicating a strong balance between precision and recall.



MODEL COMPARISONS - ACCURACY

The Random Forest model achieved the highest accuracy of 94.68%, followed by the Decision Tree model with 87.41% accuracy.

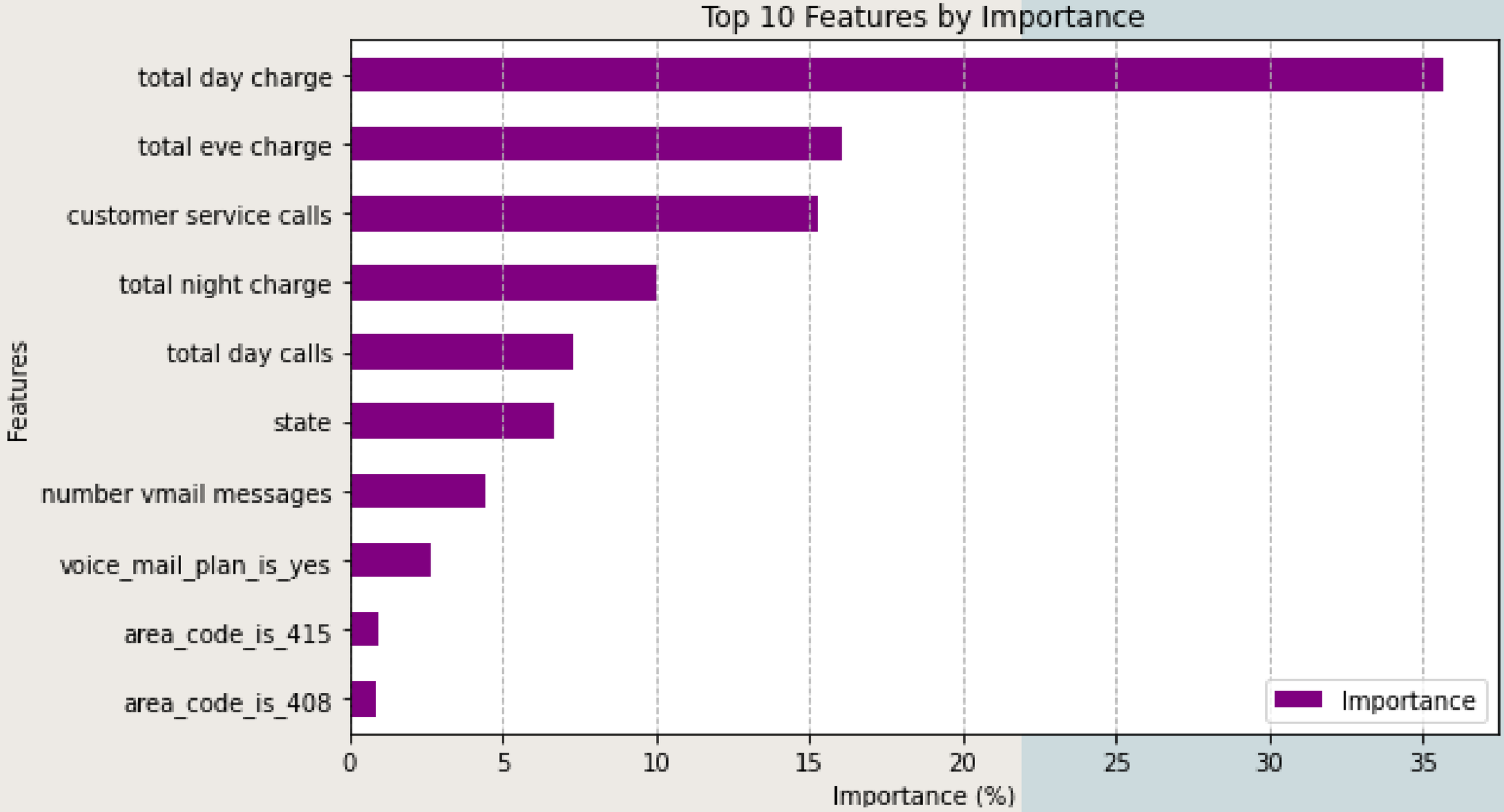


SELECTING OUR MODEL

The Random Forest model is suitable choice due to its strong performance in terms of accuracy, F1 score, and feature importance.

It achieved an accuracy of 94.685% and an F1 score of 0.841, indicating its ability to accurately classify instances and achieve a balance between precision and recall.

TOP 10 FEATURES BY IMPORTANCE USING RANDOM FOREST MODEL



MOST SIGNIFICANT FACTORS DETERMINING CHURN?

- Charges incurred during daytime and evening usage.
- Number of customer service calls made by customers
- Charges related to nighttime usage
- Total number of day calls
- Presence or absence of a voicemail plan and its usage
- Geographical location, specifically the area codes "415" and "408,"

CONCLUSION

RECCOMMENDATIONS

1. Manage and reduce charges during daytime and evening usage to retain customers.
2. Address root causes behind frequent customer service calls and proactively resolve customer issues.
3. Optimize nighttime charges to align with customer expectations and market standards.
4. Evaluate and enhance voicemail plans to increase customer loyalty.
5. Analyze churn patterns in different geographical areas and develop targeted retention strategies.
6. Tailor marketing efforts and retention initiatives based on specific factors related to each state.

NEXT STEPS

1

Leverage predictive models

Continuously update and refine the model in real-time improve its accuracy and effectiveness.

2

Tailor marketing strategies

Develop targeted marketing campaigns to address customer needs and preferences more effectively.

3

Monitor customer satisfaction

Through surveys, feedback mechanisms, and customer interactions.

Yours sincerely,

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