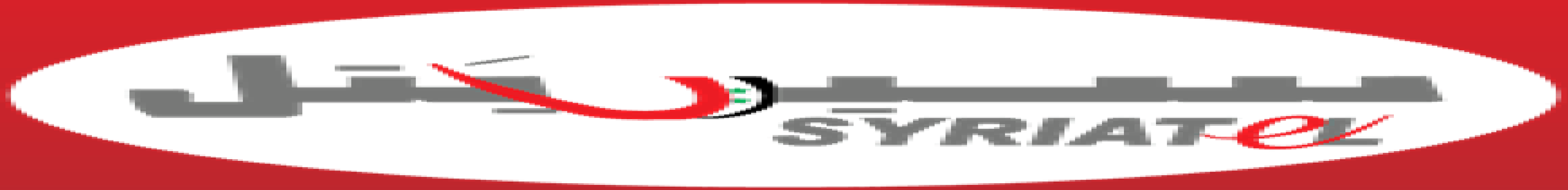
SyriaTel Customer Churn Analysis



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PROJECT OVERVIEW

In the competitive telecom market, Syriatel aims to retain customers and ensure satisfaction by identifying at-risk customers and offering personalized services. Without data analytics and machine learning, Syriatel risks losing market share to competitors using these technologies for better customer experiences and loyalty.

BUSINESS PROBLEM

Customer churn undermines Syriatel's growth by reducing revenue and inflating acquisition costs. To secure its future, Syriatel must swiftly address customer departures, fostering loyalty for sustained success.

PROJECT OBJECTIVES

01

Use predictive models to find at-risk customers and take action to keep them, reducing churn for Syriatel.

02

Analyze customer data to customize services and enhance satisfaction.

03

Develop targeted retention strategies, such as personalized promotions and loyalty programs, to mitigate churn.

04

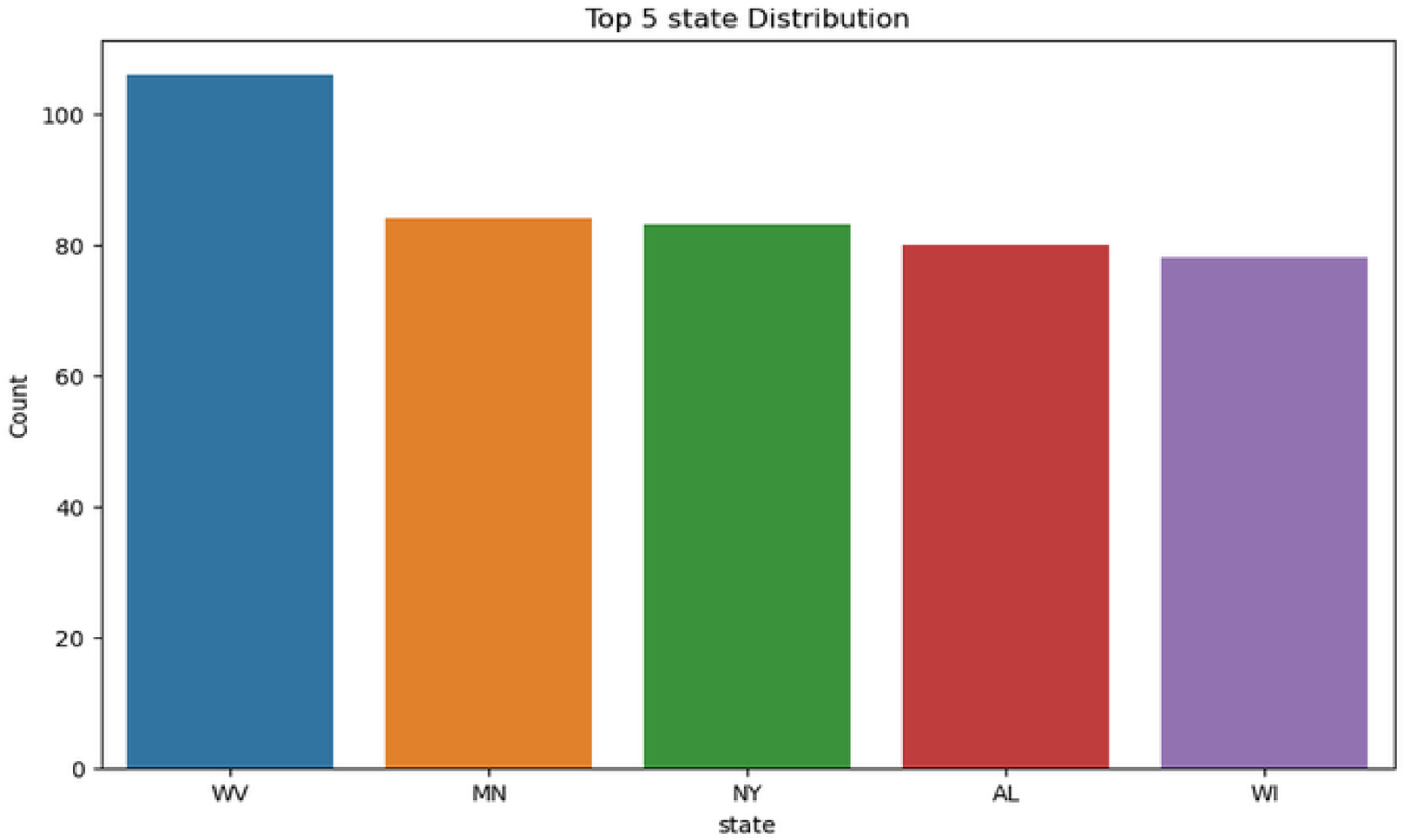
Improve customer support to boost satisfaction levels at Syriatel..

DATA UNDERSTANDING

The SyriaTel Dataset, sourced from Kaggle, encompasses data on around 3333 customers of a telecommunications company. It features various customer details including their geographical location, tenure with the company, subscription to international plans or voicemail services, frequency of customer service calls, and more. Additionally, the dataset includes a crucial target variable indicating whether each customer has churned, providing insights into customer retention efforts within the telecommunications industry.

EXPLORATORY DATA ANALYSIS

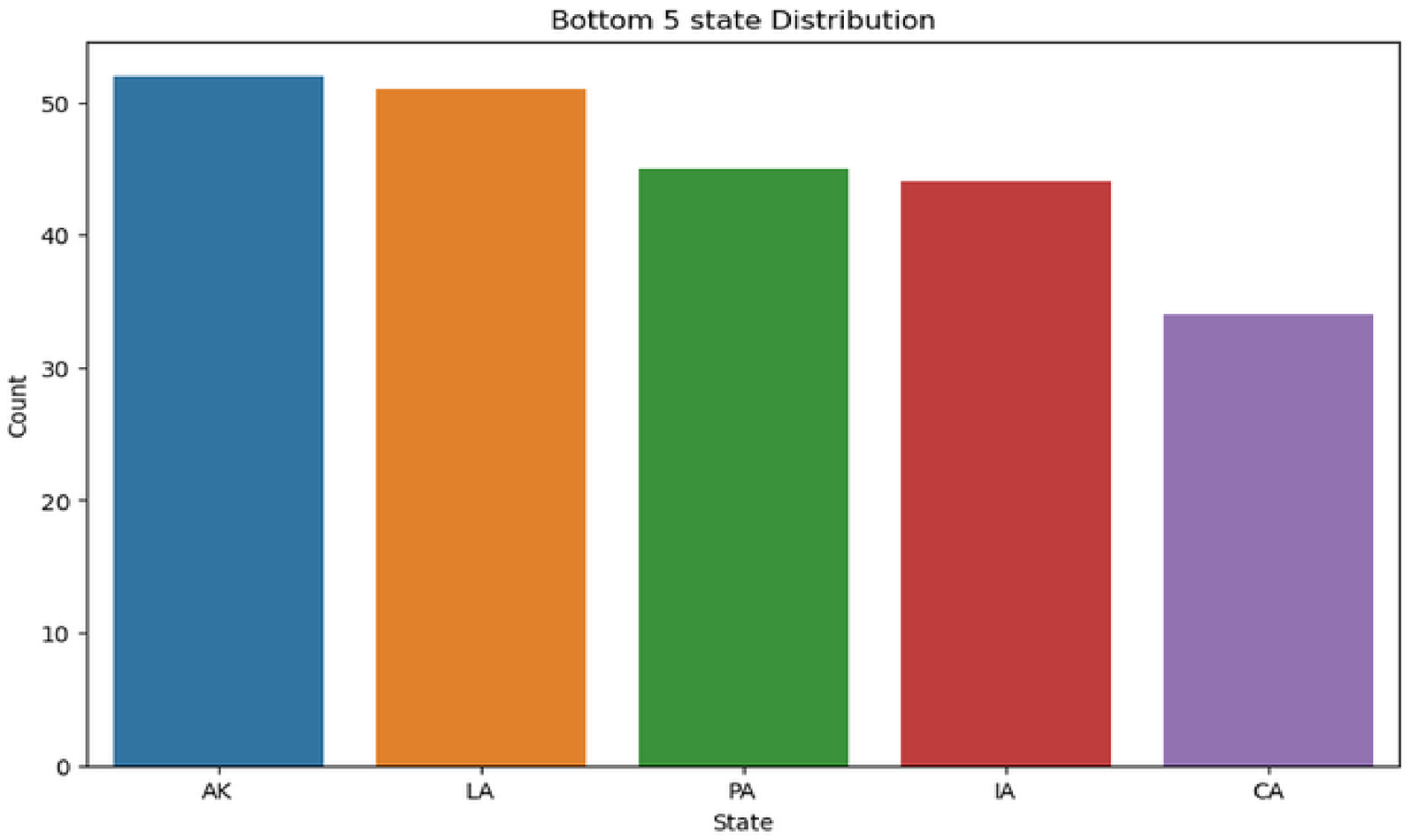
Customer Distribution By State.



The visual highlights the distribution of customers across states, with a focus on the top five states contributing the highest customer volume.

EXPLORATORY DATA ANALYSIS

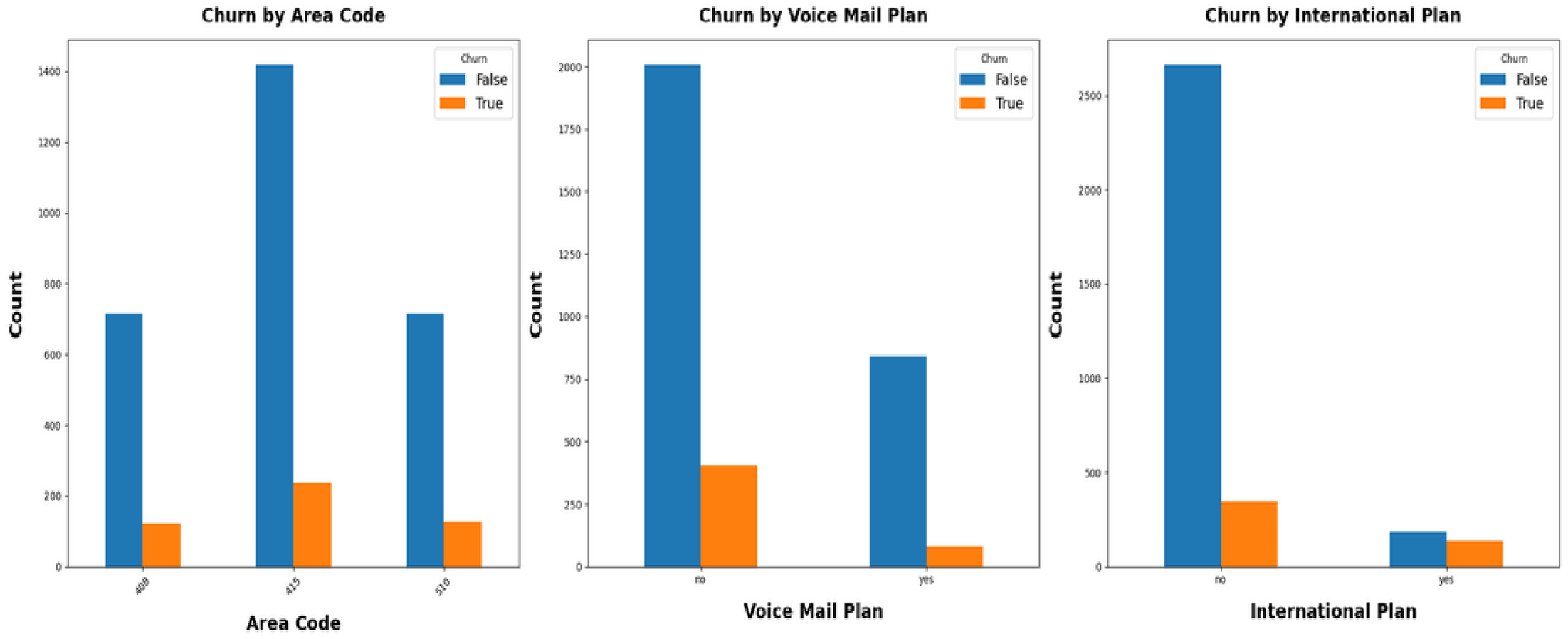
Customer Distribution By State.



The visual depicts the distribution of customers across states, emphasizing the bottom five states with the lowest customer representation.

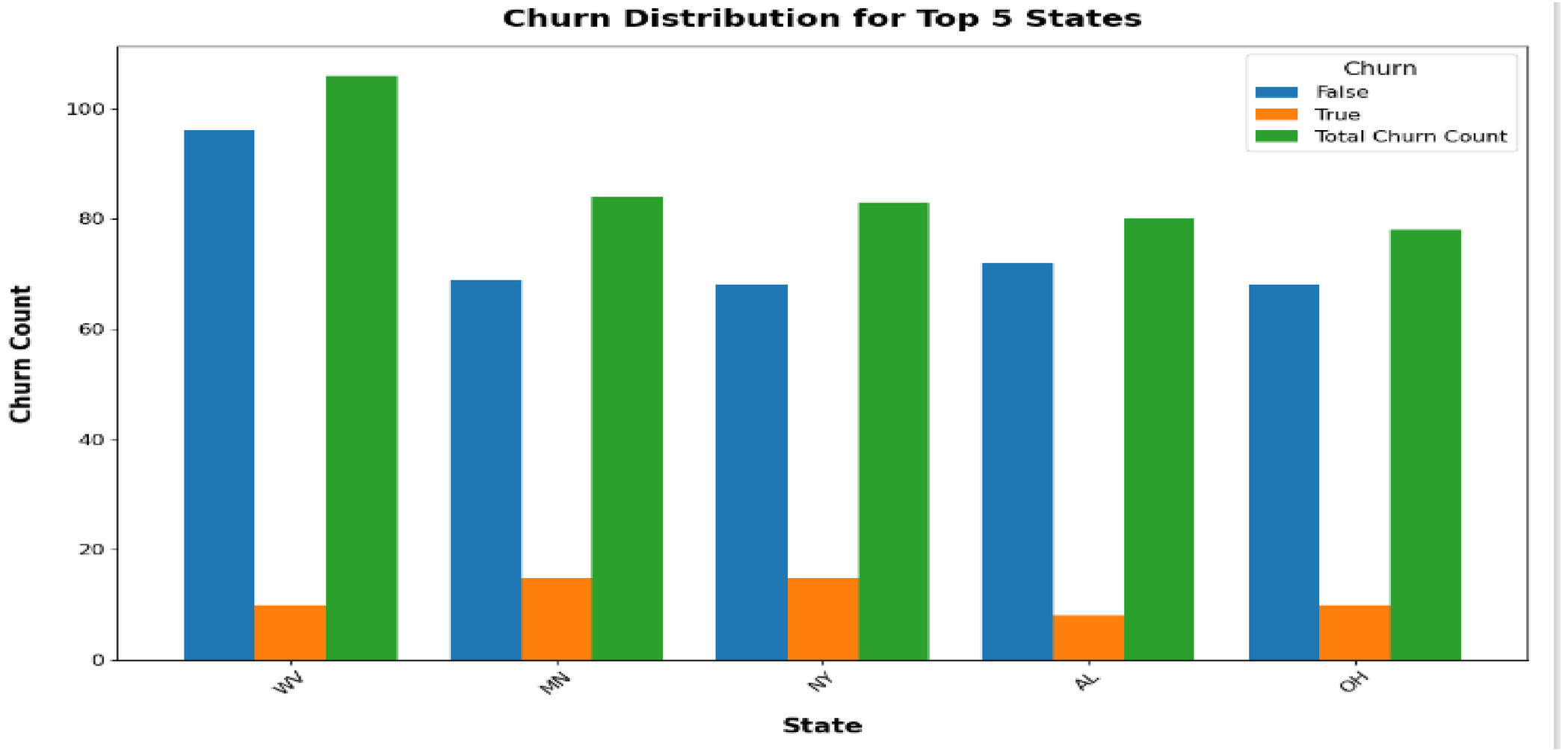
EXPLORATORY DATA ANALYSIS

Churn Rate By Area Code , Voice Mail Plan And International Plan



The visual illustrates the churn rate categorized by area code, voice mail plan usage, and international plan subscription.

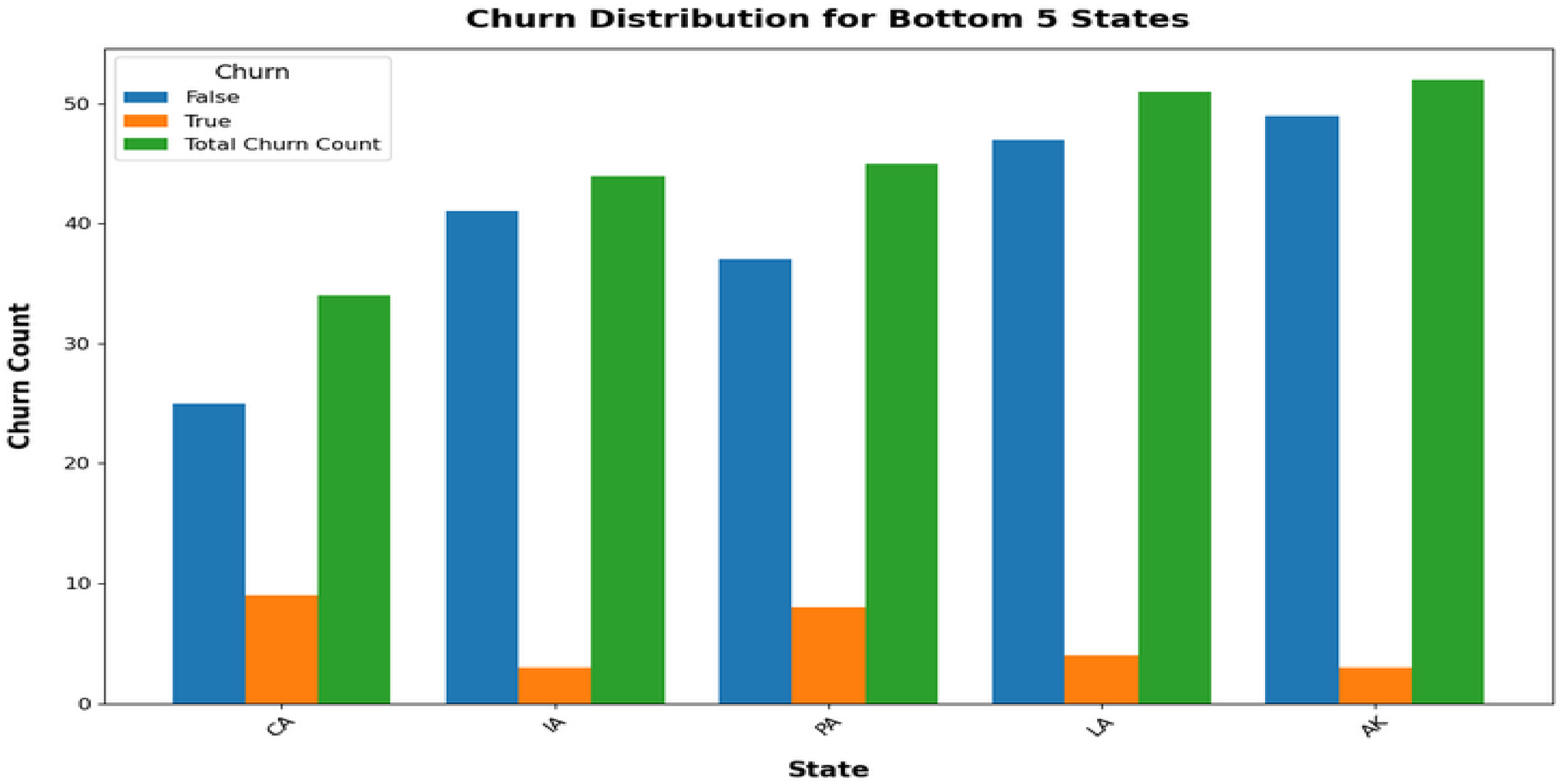
CHURN BY STATE



The plot above shows the distribution of churn for Top 5 states.

- Some states have relatively higher churn rates like WV, MN, AL, NY, OH with a significant number of churned customers (churn 1)

CHURN BY STATE



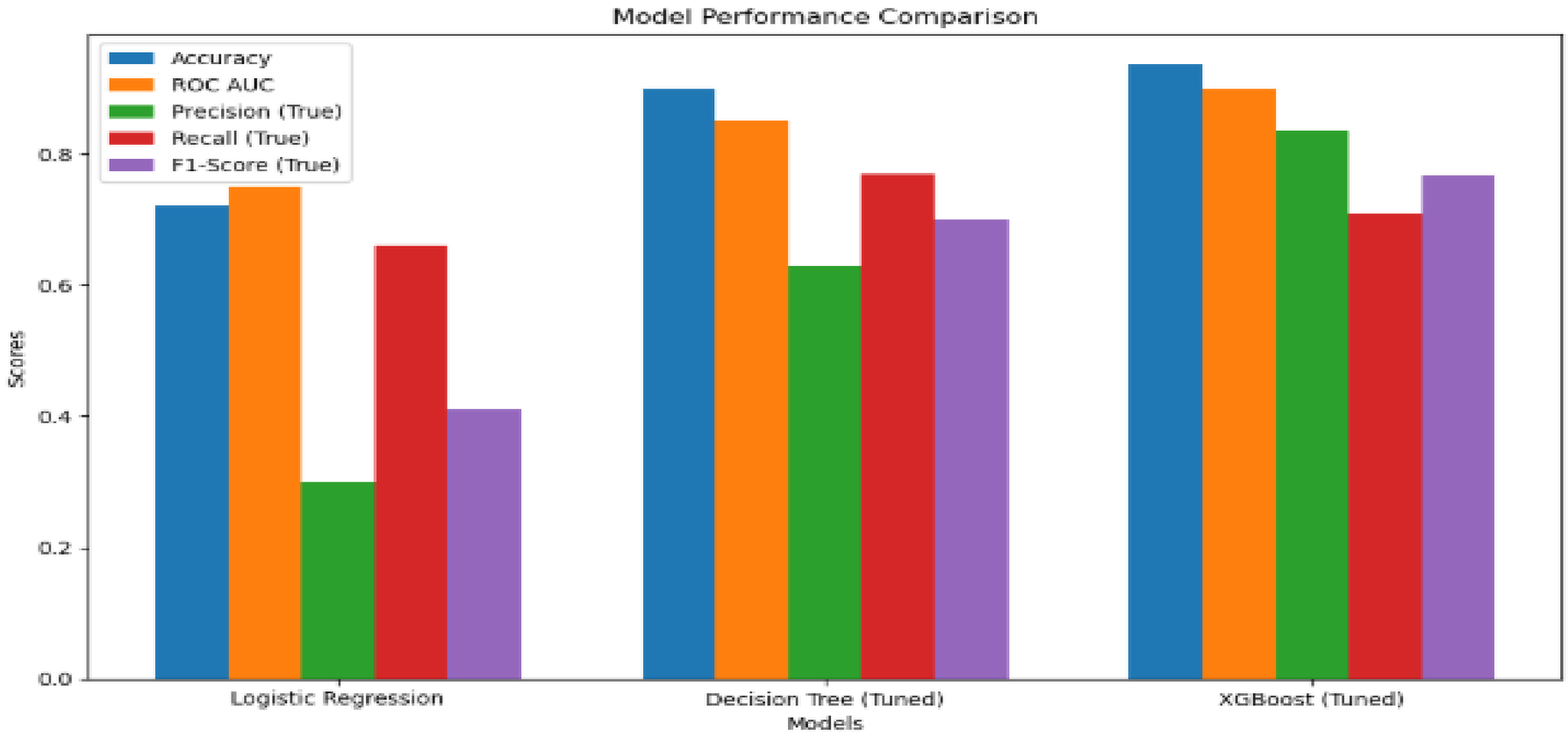
The plot above shows the distribution of churn for Bottom 5 states.

- Some states have relatively lower churn rates like AK, PA, LA, CA with a higher count of customers who did not churn (churn 0)

Modeling Approach

Four binary classification models - Logistic Regression, Gradient Boosting, and Decision Tree - were used, trained on a resampled dataset, and optimized with hyperparameter tuning.

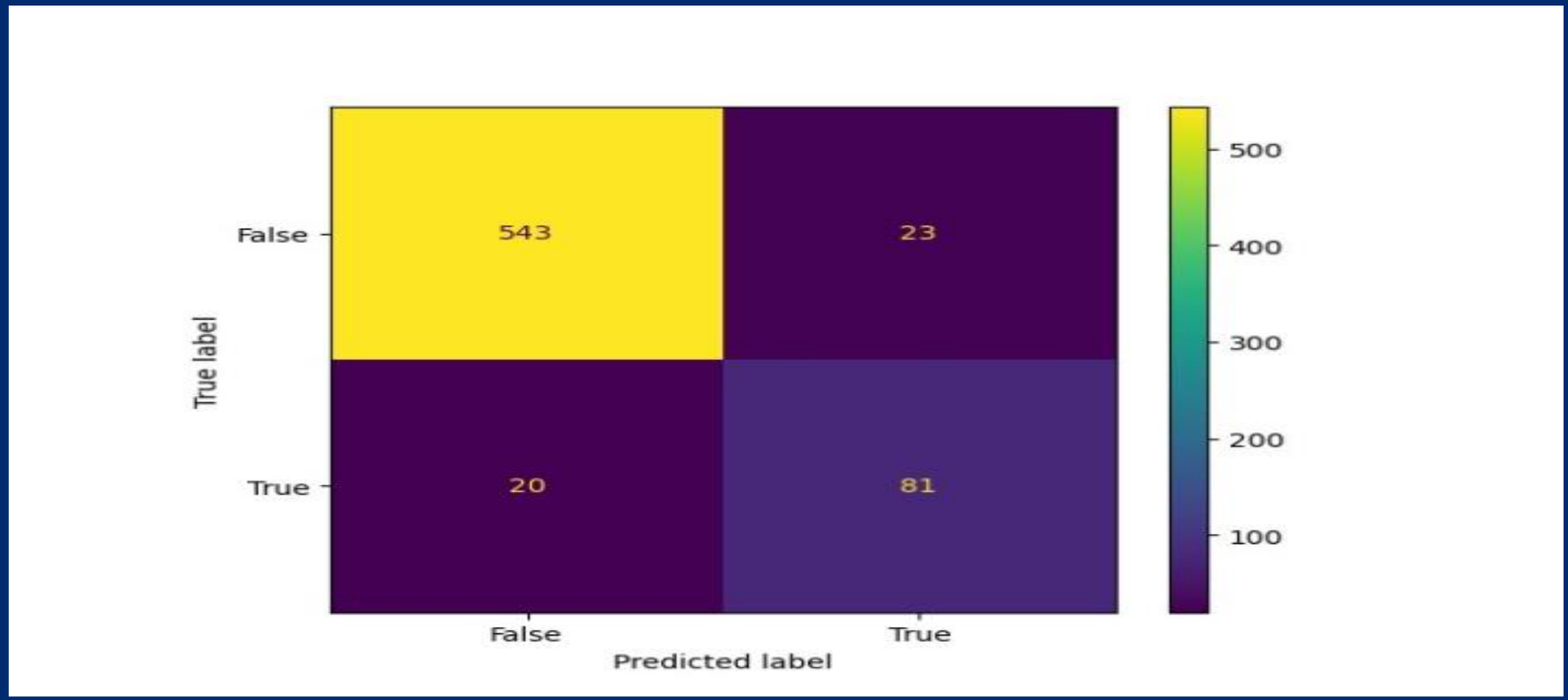
Tuned Results



From the above visualization, we see that specifically for precision, the XGBOOST model performs the best.

04

Model Performance Evaluation XGBoost



In this case, the model accurately identified 81 churners, but mistakenly flagged 20 non-churners as churners. Additionally, 23 churners were missed, while 543 non-churners were correctly identified.

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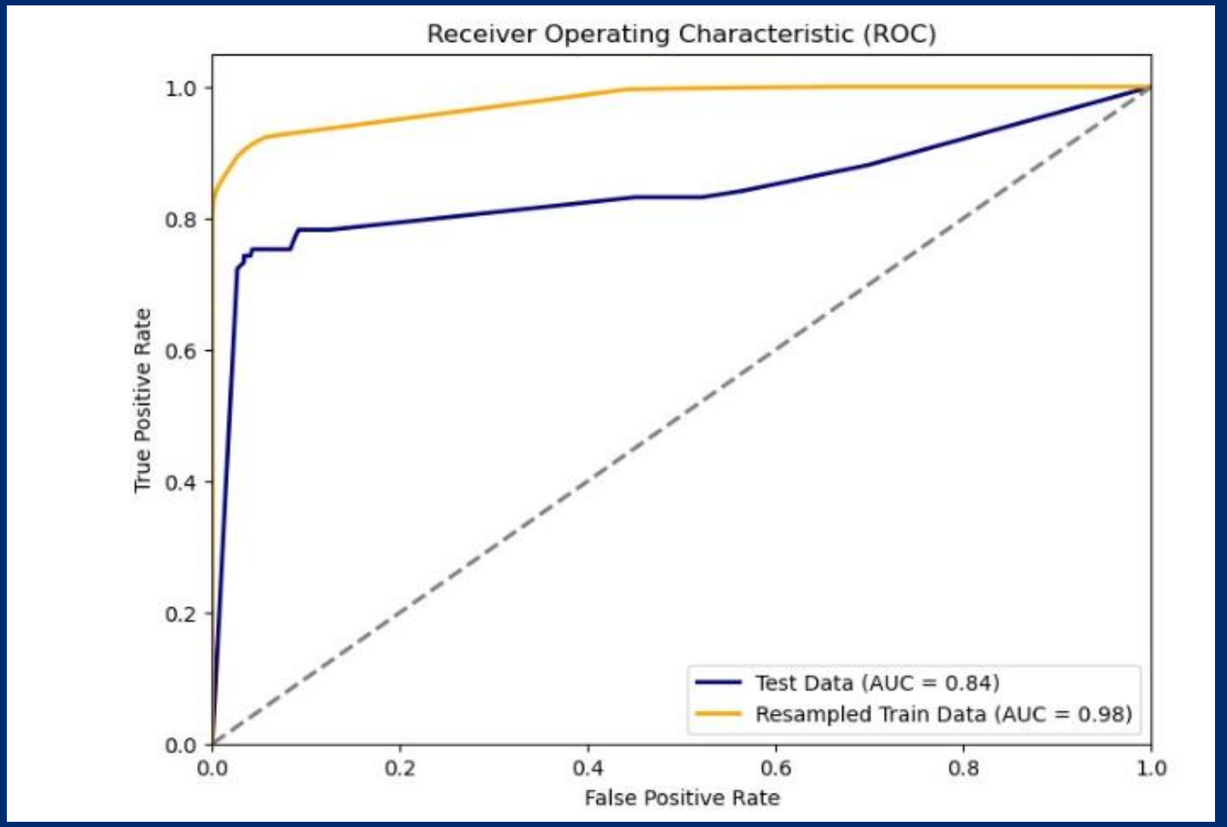
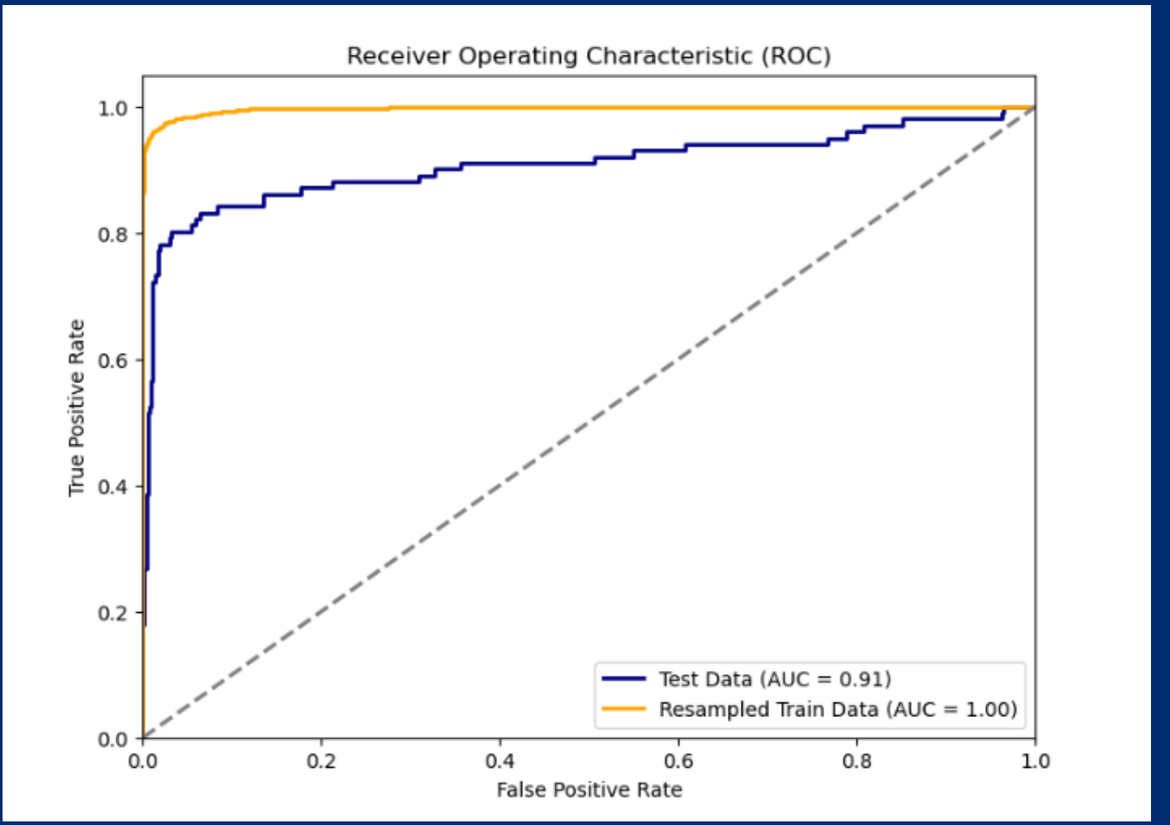
ROC Curves for the Tuned Models

Decision Tree

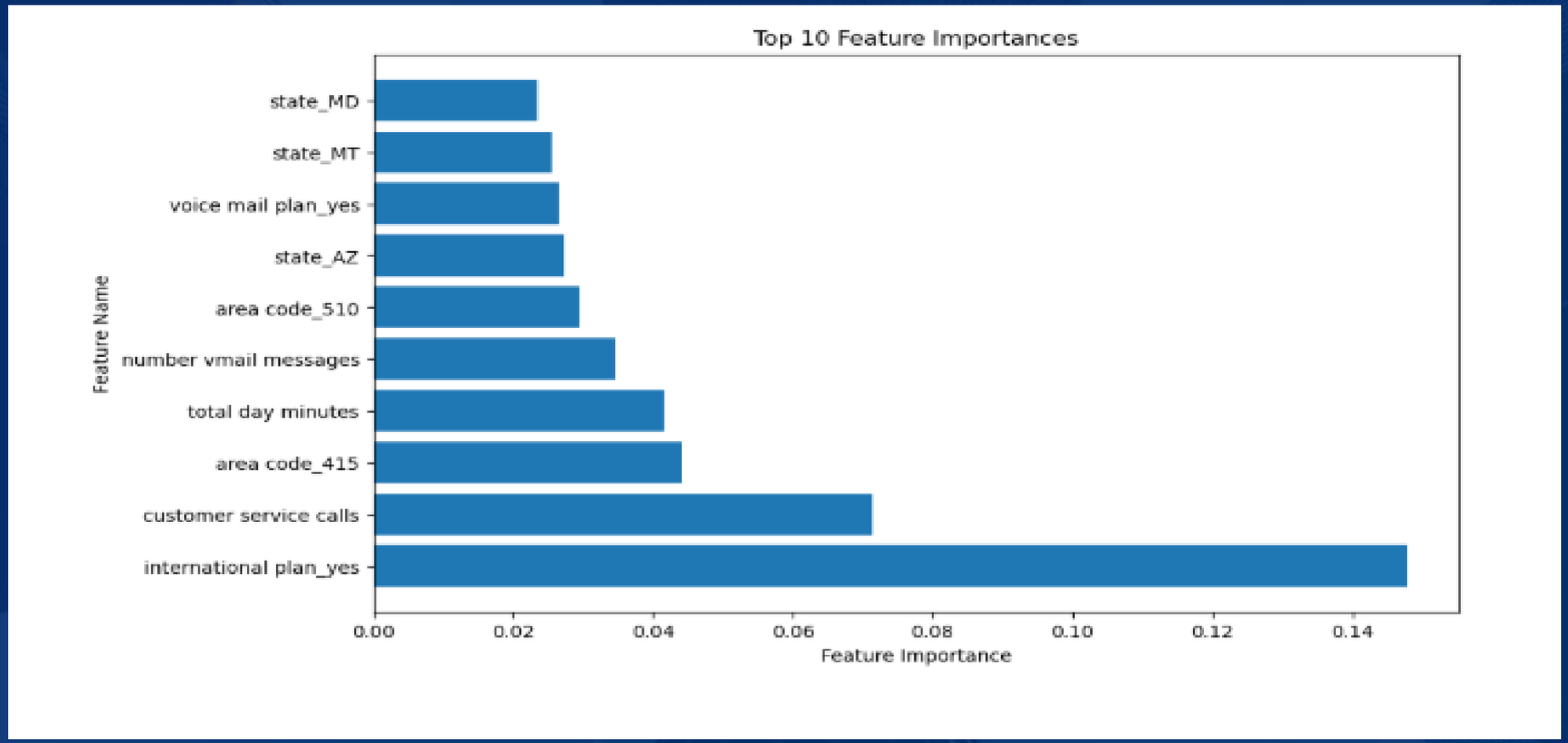


XGBoost



XGBoost's ROC AUC curve demonstrates superior performance compared to the decision tree model, indicating its effectiveness in accurately distinguishing between classes and minimizing classification errors.

IMPORTANT FEATURE SELECTION



The visual highlights the top 10 most influential features, underscoring the significance of factors such as international plan subscription, customer service interactions, and the presence of area code 415 in driving predictive accuracy.

RECOMMENDATIONS

Deploy XGBoost Model: Integrate XGBoost for real-time churn risk monitoring

Enhance Customer Service: Improve service quality for increased satisfaction.

Investigate Voice Mail Plans: Analyze and optimize voice mail plans to reduce churn.

Implement Personalized Promotions: Tailor promotions for effective retention strategies.

RECOMMENDATIONS

Regular Model Updates: Ensure model accuracy through periodic updates.

Establish Feedback Loop: Foster communication for refined retention tactics.

Continued Data Exploration: Explore data for insights into evolving trends

CONCLUSION

In conclusion, our data-driven approach effectively addresses customer churn at Syriatel. Leveraging advanced analytics, particularly XGBoost, we've developed models that accurately identify at-risk customers. These insights, combined with continuous model updates, empower Syriatel to enhance retention efforts, reduce churn, and ultimately improve overall business performance by proactively identifying and retaining at-risk customers through personalized interventions and targeted strategies tailored to meet customer needs.

NEXT STEPS

Model Deployment:
Integrate XGBoost into Syriatel's systems.
Establish real-time monitoring for customer churn risk.

Voice Mail Plan Analysis:
Gather and analyze voice mail plan data.
Test and refine voice mail plans based on insights.

Personalized Promotion Strategy:
Design tailored promotions using customer data.
Monitor campaign success and adapt as needed.

Feedback Loop Implementation:
Create a system to track customer interactions.
Use feedback to improve models and strategies.

Any Questions….

Thank You