

# SYRIATEL PREDICTIVE ANALYSIS OF CUSTOMER CHURN

TELECOMMUNICATION COMPANY

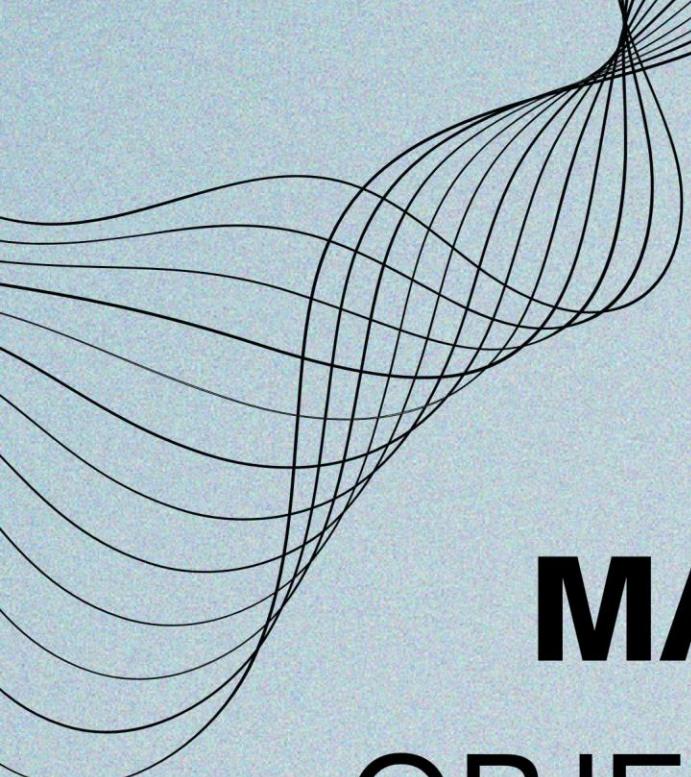
SYRIATEL



## **INTRODUCTION**

In a bid to grow revenue and maximise profits, SyriaTel, offering mobile and data services, recognizes that maintaining long-term customer relationships is more effective than constantly seeking new ones while losing existing customers.





## **MAIN OBJECTIVE**



## **SPECIFIC OBJECTIVE**

# **OBJECTIVES**

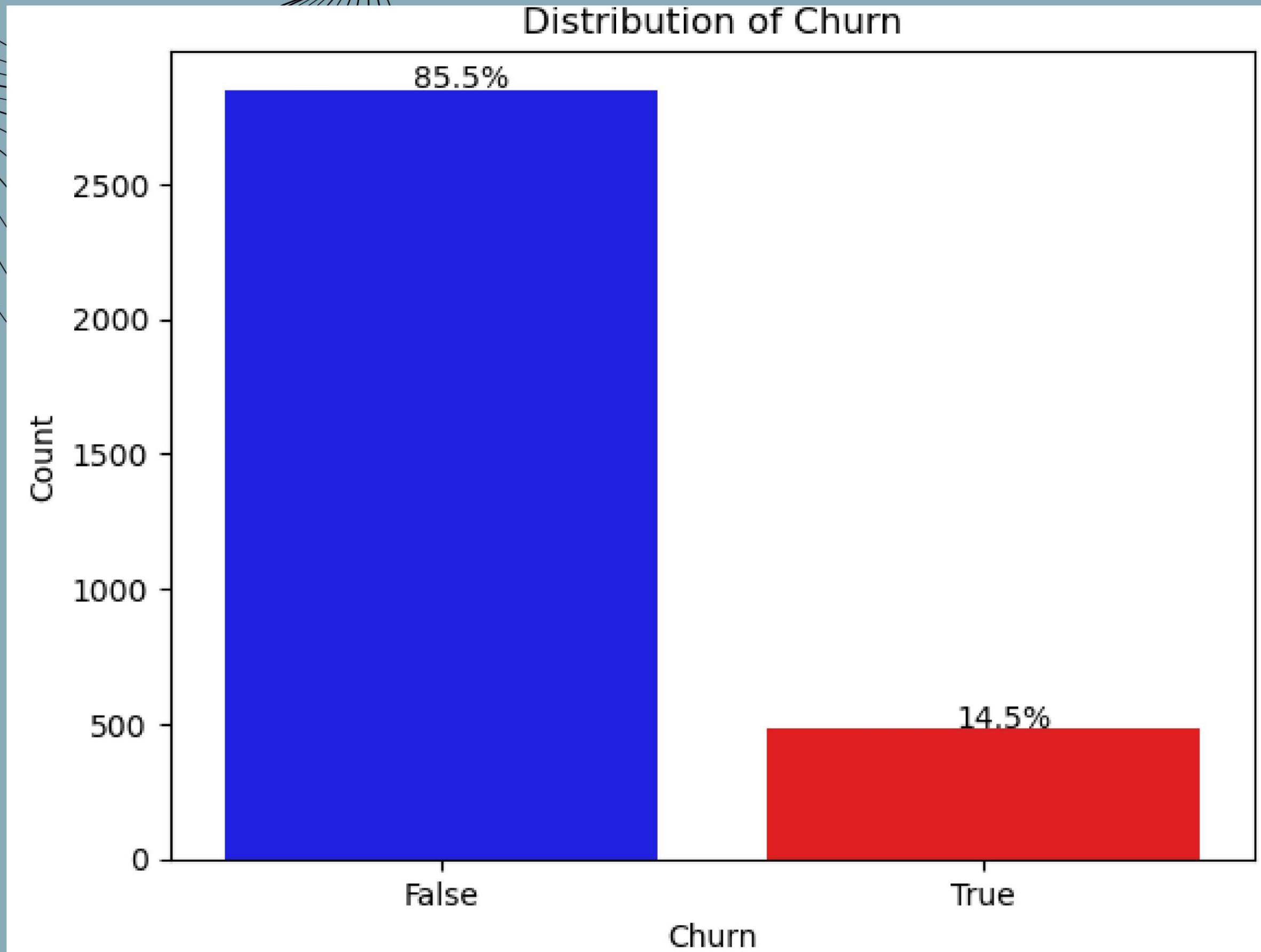
To build a predictive classifier that assists SyrialTel Telecommunication company in determining if there is a predictable pattern to customer churning

- Identify churning key factor
- Evaluate Classifier performance
- Provide actionable recommendations

# **EXPLORATORY DATA ANALYSIS**

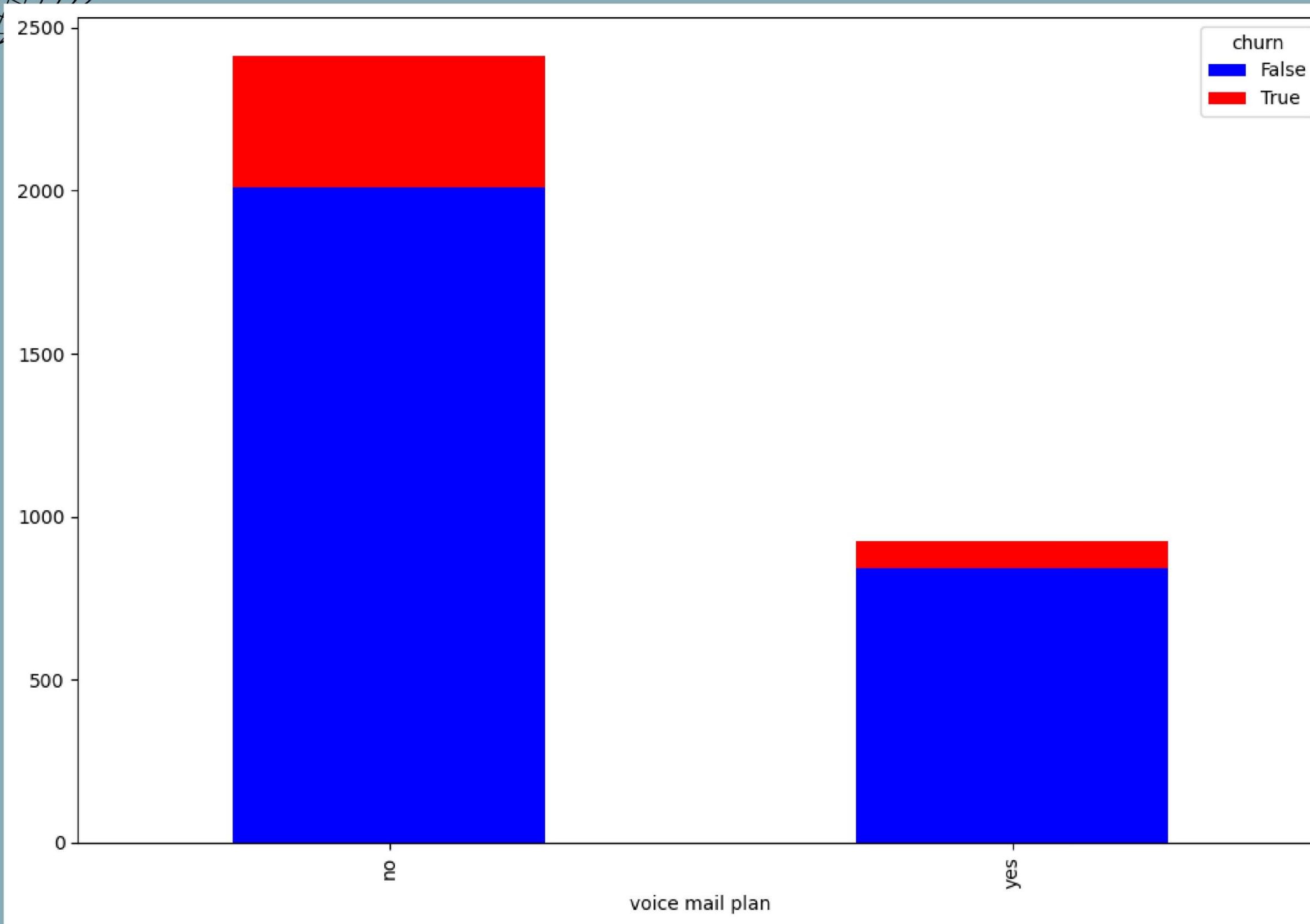


# Churn distribution



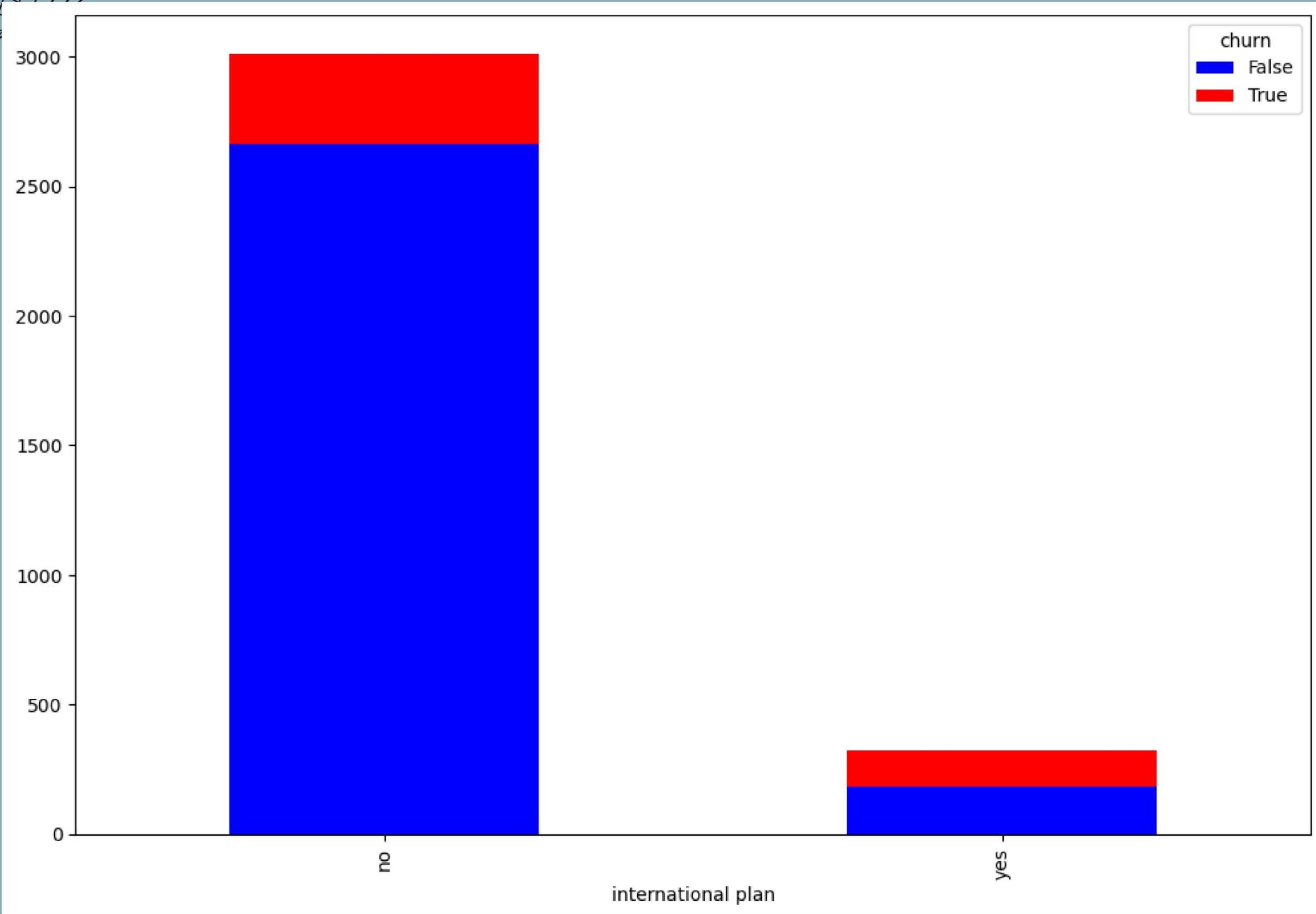
It is evident that from the 3,333 customers, 483 customers have churned from SyriaTel. This is approximately 14.5 % of the total customers indicating a loss in their customer base.

# Voice mail plan effect on churn



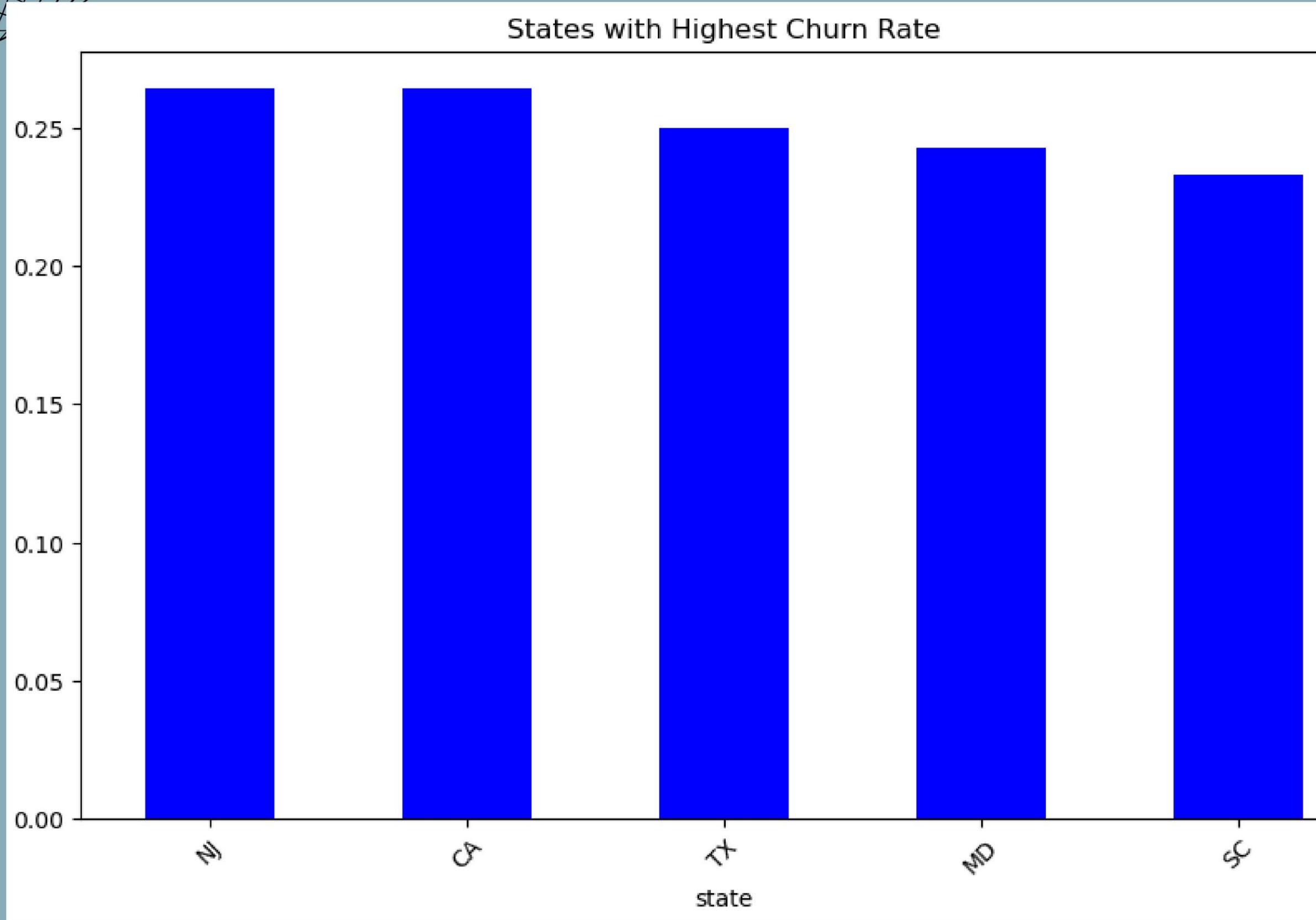
The voicemail plan seems to have an impact on customer churn, however, it is not as significant as the other factors

# International plan effect on churn



The international plan affects customer churn, as seen in those without it churning more.

# Top states with highest churn rate



- NJ: New Jersey
- CA: California
- TX: Texas
- MD: Maryland
- SC: South Carolina

# **MODELLING**

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- Logistic regression
- K-Nearest Neighbours
- Decision Trees
- Random Forest Classifier
- XGBoost Classifier



# LOGISTIC REGRESSION

- This was the baseline model
- It achieved a training accuracy of 85.4% and a testing accuracy of 84.8%
- It achieved a training precision of 40.5% and a testing accuracy of 40%

# K-NEAREST NEIGHBOURS

- The default model had an accuracy of 90.2%

## After Tuning:

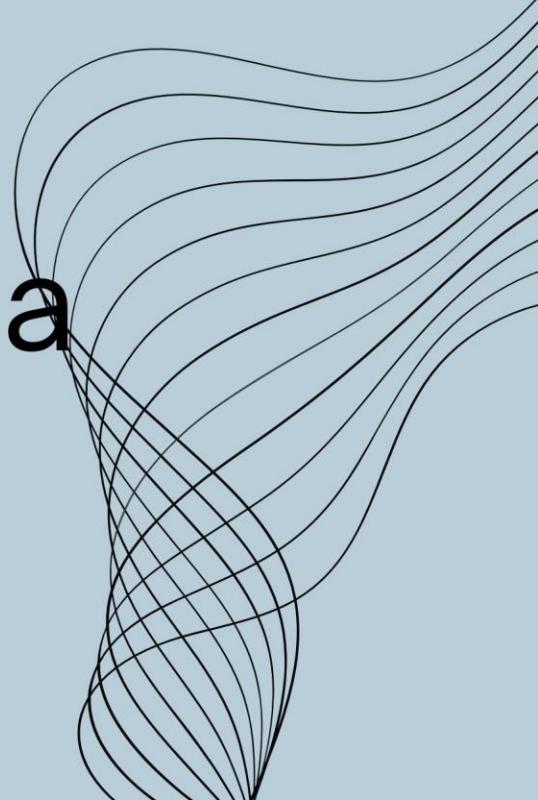
- It achieved a training accuracy of 89.79% and a testing accuracy of 45.80%
- It achieved a training precision of 92.6% and a testing precision of 18.3%



# DECISION TREES

- The default model had an accuracy of 87.1%

## After Tuning:

- It achieved a training accuracy of 93.8% and a testing accuracy of 90.9%
  - It achieved a training precision of 91.7% and a testing precision of 75.3%
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# RANDOM FOREST

- The default model had an accuracy of 91.48%

## After Tuning:

- It achieved a training accuracy of 98.9% and a testing accuracy of 90.9%
- It achieved a training precision of 99.9% and a testing precision of 87.7%

# XGBOOST CLASSIFIER

- The default model had an accuracy of 91.2%

## After Tuning:

- It achieved a training accuracy of 95.64% and a testing accuracy of 91.97%
- It achieved a training precision of 99.60% and a testing precision of 91.43%

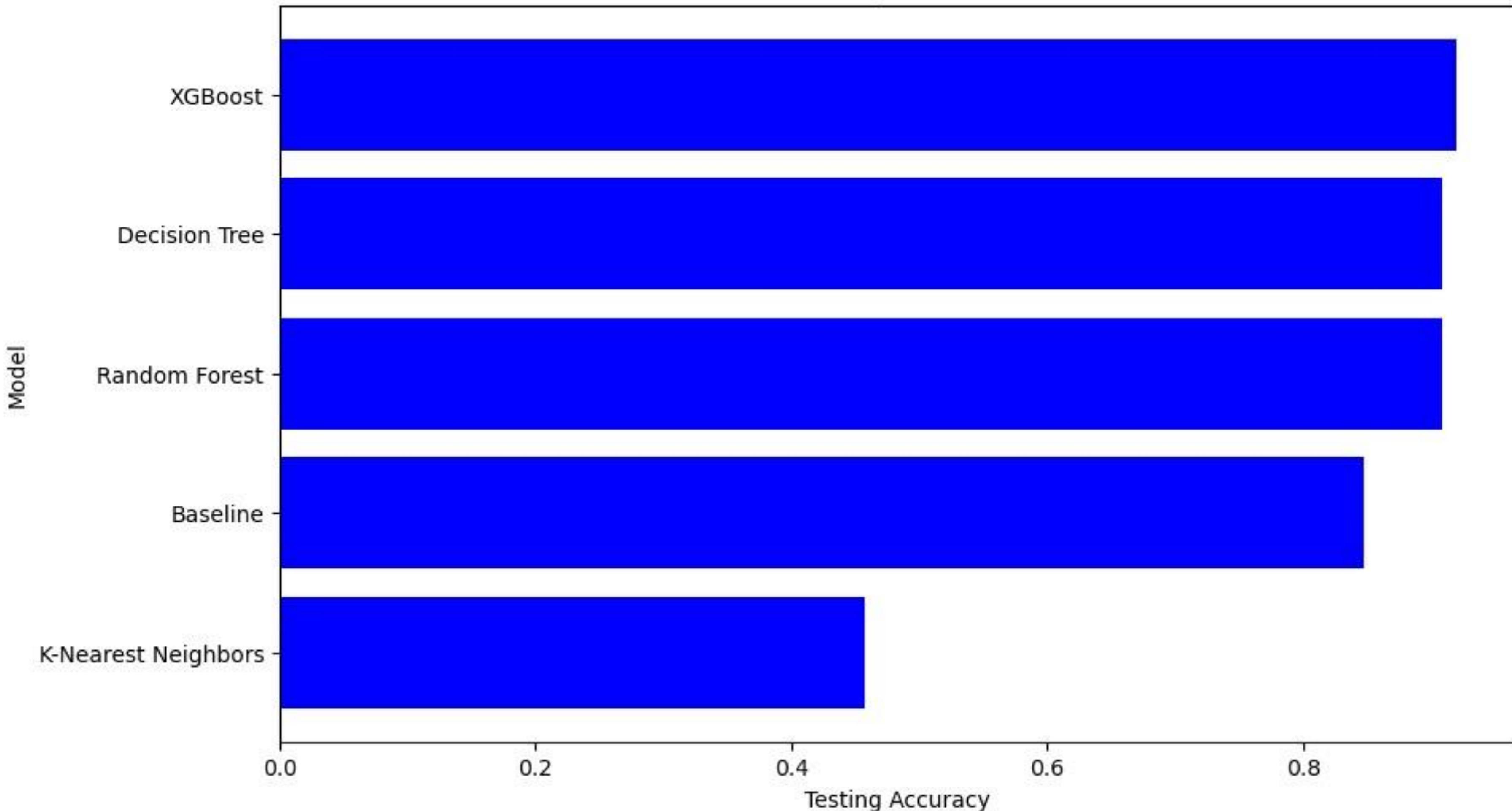
# EVALUATION



# EVALUATION

- The best model was one from XGBoost with a test accuracy of 91.97% and training accuracy of 95.64%.
- Based also on the Test ROC and AUC score, which is the measure of the ability of the model to distinguish positive and negative outcomes, XGBoost was the best with a score of 90%.

### Accuracy of Models

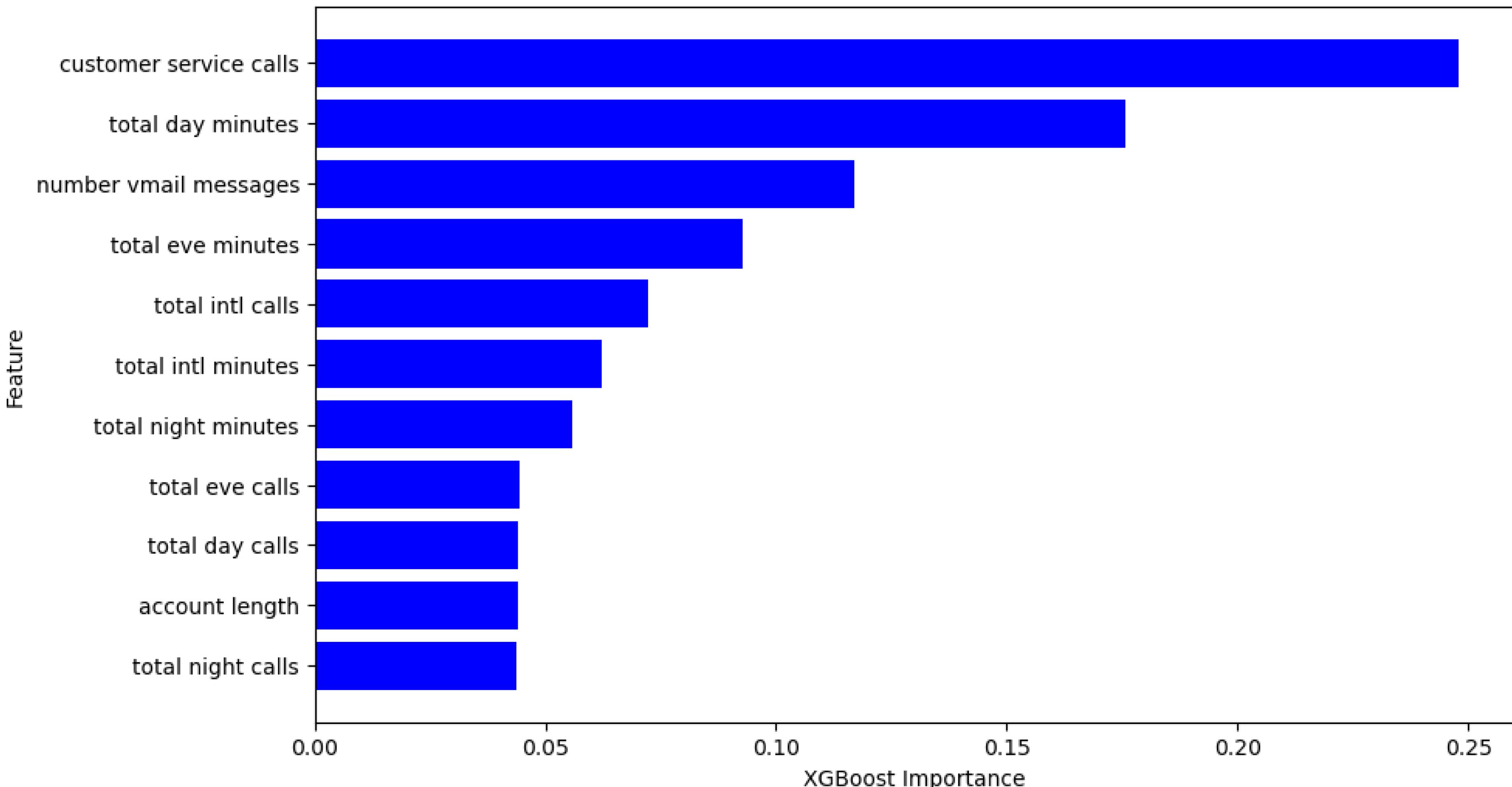


# EVALUATION

**Top five predictors were:**

- Number of customer service Calls by customers
- Total minutes spent on calls during the day.
- Number of voicemail messages left by customers
- Total number of minutes call during the evenings
- The total number of international calls

## XGBoost Feature Importance



# CONCLUSIONS

## Recommendations:

- Improve customer services
- Introduce Customised and affordable call plans
- Service Quality improvements
- Transparent pricing
- Proactive customer outreach
- Regular analysis of customer behaviour i.e “churn”

# CONCLUSIONS

**Next steps:**

- Deploy the model
- Monitor and update the model
- Interpreting the model insights
- Collect more diverse data