

MACHINE LEARNING CLASSIFICATION MODEL FOR PREDICTING CUSTOMER CHURN AT SYRIA TEL

BUSINESS UNDERSTANDING

Client churn- loss of customers or over a specific period of time.

Fighting client churn has become a crucial concern in the dynamic telecommunications sector, as customers have many options for service providers and frequently switch carriers.

Understanding and reducing client churn is essential :

- High churn rates can indicate customer dissatisfaction and potentially harm the company's brand image.
- Churn directly translates to lost recurring revenue. Retaining existing clients is generally cheaper than acquiring new ones.

To Combat Client Churn: Companies can introduce

- Loyalty Programs
- Personalized Offers
- Improved Customer Service

PROBLEM STATEMENT

SyriaTel, a telecommunications company, has experienced a significant rise in customer churn rates within the US market during the past financial period. This churn is leading to customer loss and negatively impacting SyriaTel's revenue. To address this challenge,I aim to develop a machine learning model that will help SyriaTel company's stakeholders to identify customers at risk of churn in the US.Additionally,this model will be used to develop targeted customer retention strategies and mitigate churn.



OBJECTIVES

MAIN OBJECTIVE.

To develop a machine learning classification model that accurately predicts customer churn in the US market for SyriaTel, enabling them to identify customers at high risk of churning and implement targeted customer retention strategies.

SPECIFIC OBJECTIVES.

1. To identify the key factors that contribute to customer churn in Syria Tel.
2. To develop a model that will accurately predict the probability of churn for individual customers in the US market.
3. To determine the likely solution to lower churn

DATA UNDERSTANDING

The dataset contains various features details such as:

1. *The customer's state*
2. *Account length*
3. *Area code*
4. *Whether or not the customer churned (terminated their contract).*

Just to name a few

Summary of Features in the Dataset

- state: the state the customer lives in - different states in America
- account length: the number of days since the customer possessed an account
- area code: the area code of the customer
- phone number: the phone number of the customer
- international plan: true if the customer has the international plan, otherwise false

The data set is made up of 21 columns

Data Source,kaggle website: <https://www.kaggle.com/datasets/becksddf/churn-in-telecoms-dataset>

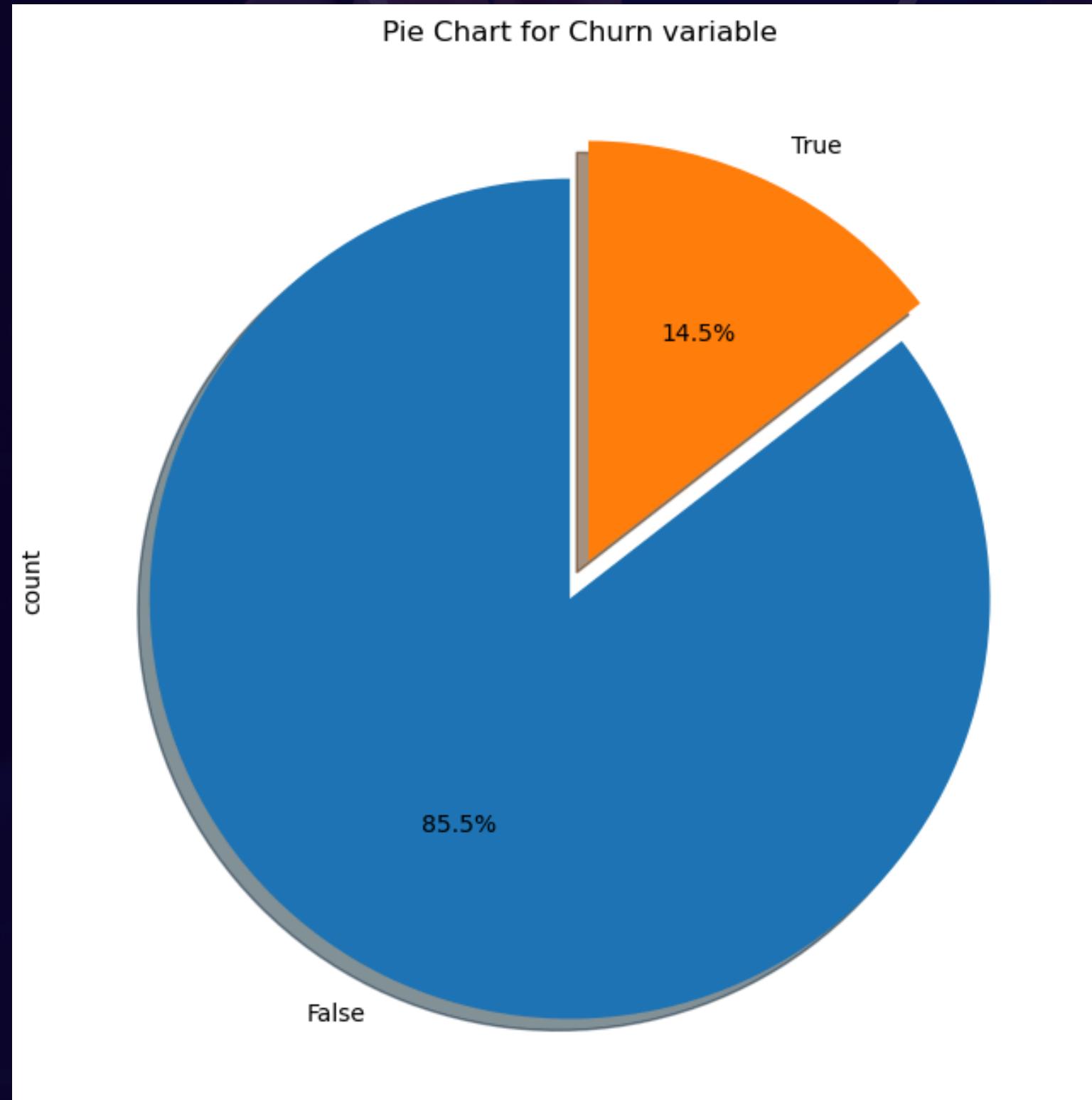
DATA CLEANING AND PREPARATION

Data was clean
Had no missing values

Removed hyphen from phone numbers
converted the numbers to integers

Dropped the area code
No much influence on our data set since we had the state column which equally showed geographical area

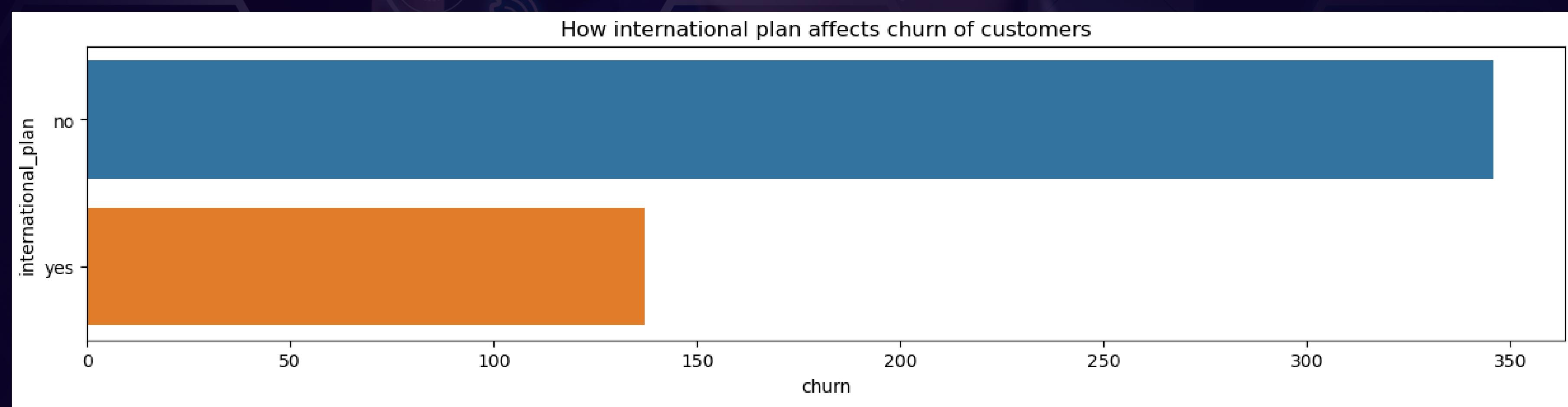
DATA ANALYSIS



1. The number of customers that did not churn was high compared to those that did churn
2. Out of the total number of customers 85.5% did not churn while 14.4% churned

DATA ANALYSIS

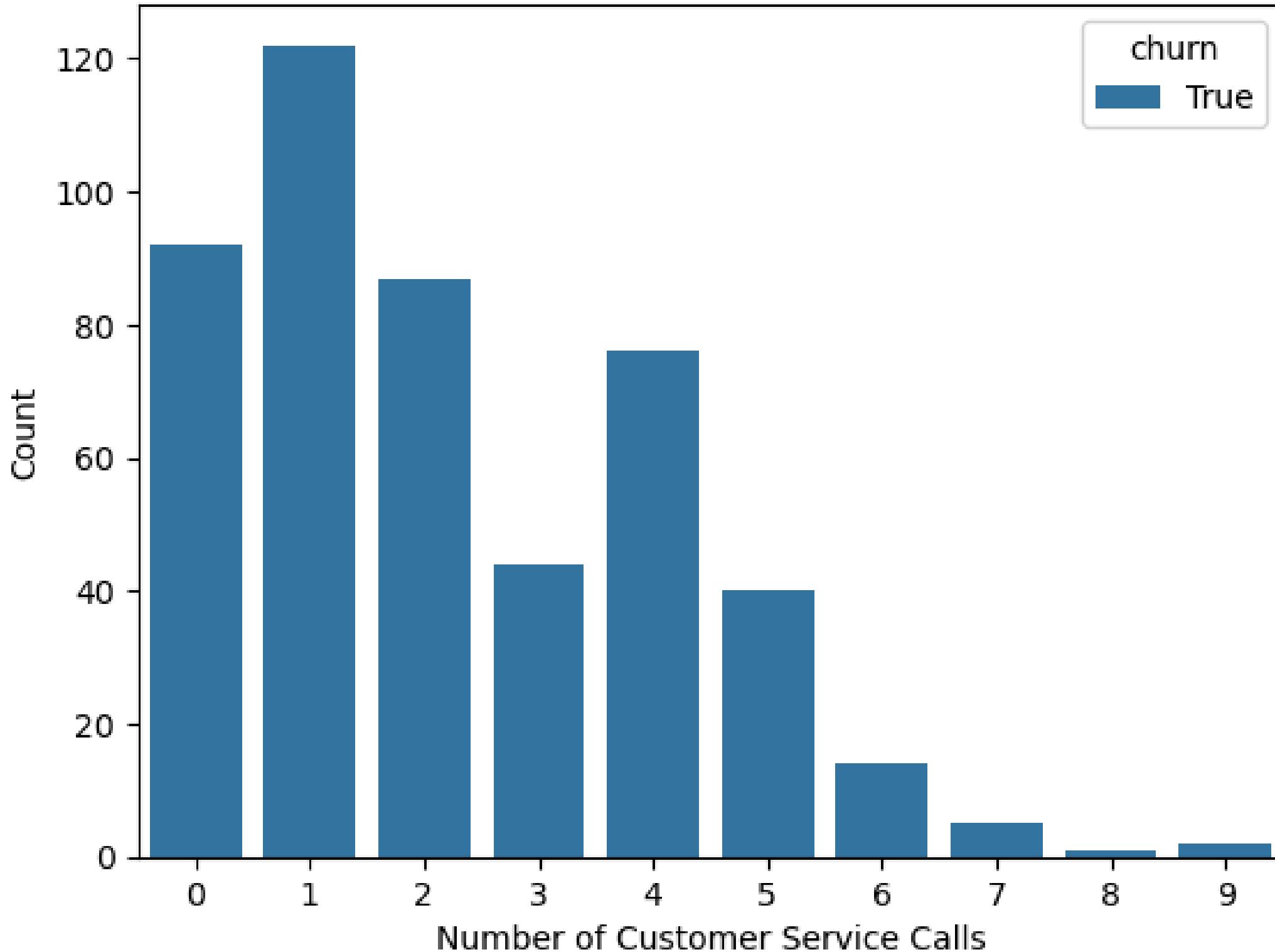
How international plan affects churn of customers



- The number of customers that Syriatel was lossing and had international plan are (137) lower as compared to the customers that did not haThe number of customers that Syriatel was lossing and had international plan are (137) lower as compared to the customers that did not have an international plan(346).
- Majority of the customers or subscribers that Syriatel was lossing did not have international plan.

DATA ANALYSIS

churn rate based on Number of customer service calls



- The rate of loss of customers /subscribers in syriatel was higher for the people who only made one customer service call followed by the customers who did not even bother making even a single call.
- Customers who had been used to making up to 9 customer calls had a lower rate of churn.

MODELING

I modeled my data using the listed models



Baseline model
Decision trees

Accuracy: 0.98
Recall: 0.872



XGBoost

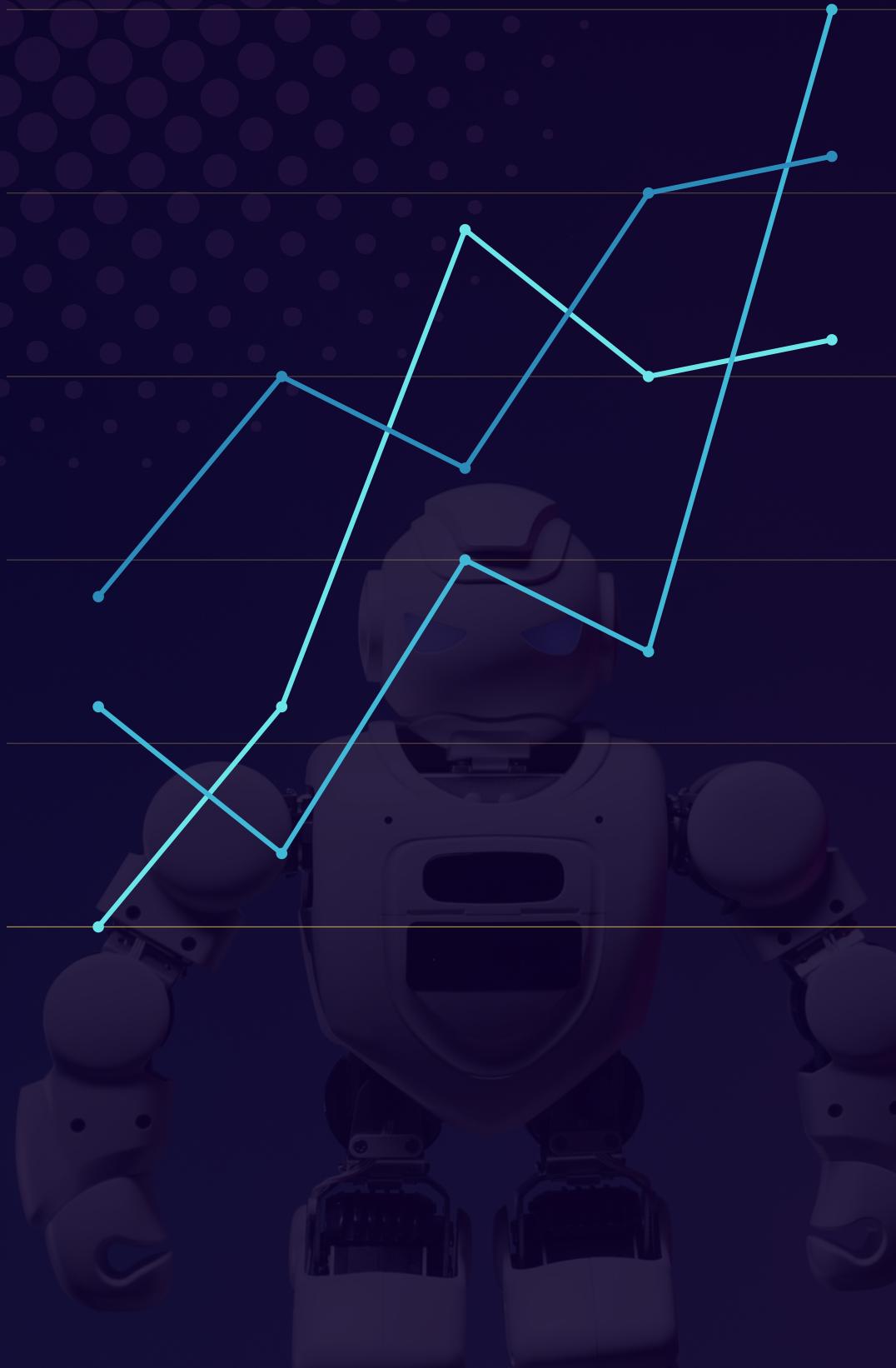
Accuracy: 0.98
Recall: 0.864



Random Forest
with Pipeline
and Gridsearch

Accuracy: 0.96
Recall: 0.832

EVALUATION



'Churn' is the positive class and 'Did not churn' is the negative class. Reducing false negatives means concentrating on accurately identifying customers who are likely to churn (positive class).

To develop more effective tactics to minimize and reduce customer loss. As a result, I have decided to rank the models according to Recall/Sensitivity.

My baseline model stood out

Accuracy: 0.98

Recall: 0.872

CONCLUSION

- The main objective and specific objectives were all satisfied.
- The best model that modeled our data and gave us the desired results was **DecisionTreeClassifier**.
- Features that highly contributed to loss of subscribers from Syriatel company were:
 - *Total charges,*
 - *a customer having an international plan*
 - *customer service calls*
- I also noted we had a higher customer rate churn in New Jersey and California state.
- Additionally, voice mail plan may not be highly desired by customers.

RECOMMENDATIONS

I would recommend Syriatel Company stakeholders to:

1. Check on how they charge their customers and reduce the total charges.
2. Look into their international plan, get to know what they are doing wrong, to be able to mitigate customers from leaving and looking for alternative international plans.
3. Retrain the personnel that handles the customer service desks on how to handle and address customer's complaints and how to effectively listen and be good to the customers.
4. Redefine how the company does its operations in New Jersey and California, since they were the state that had the highest customer churn rate and know what competitive service providers are doing to retain their subscribers.

NEXT STEPS

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1. Testing the model on larger customer datasets to determine if they hold true across a wider customer sample will probably be necessary in order to enhance the models.
 2. Possibly test models using datasets from rival cellular companies to see whether they are comparable.



Thank You!



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