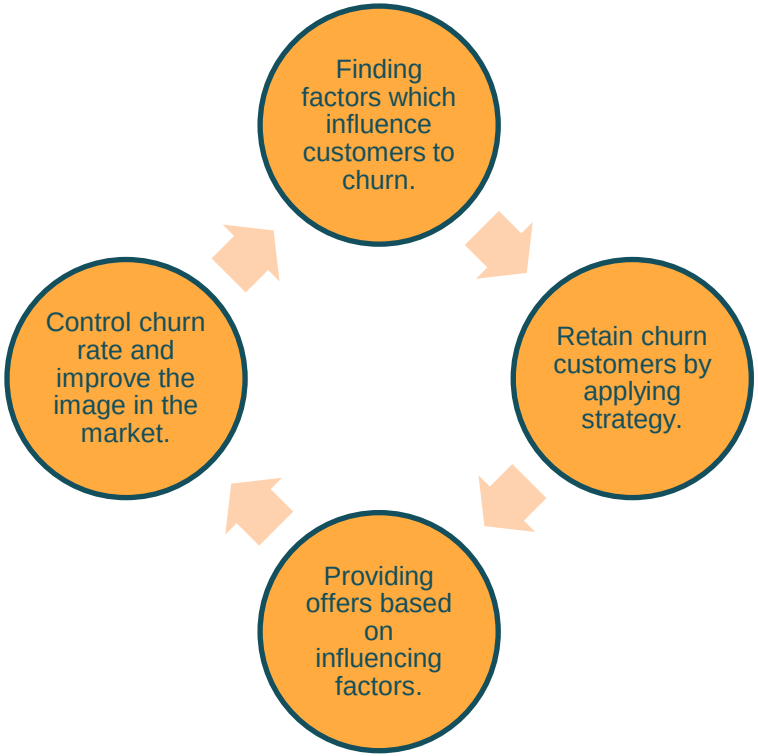
Capstone Project

Telecom Churn Analysis

Business Problem Overview

- Customer churn prediction is extremely important for any business as it recognizes the clients who are likely to stop a using their services.
- In the telecom industry, customers are able to choose from multiple service providers and actively switch from one operator to another. In this highly competitive market, the telecommunications industry experiences an average of 15-25% annual churn rate.
- For many incumbent operators, retaining high profitable customers is the number one business goal.
- To reduce customer churn, telecom companies need to predict which customers are at high risk of churn.
- In this project, we will analyze customer-level data of a leading telecom firm, to identify customers at high risk of churn and identify the main indicators of churn.

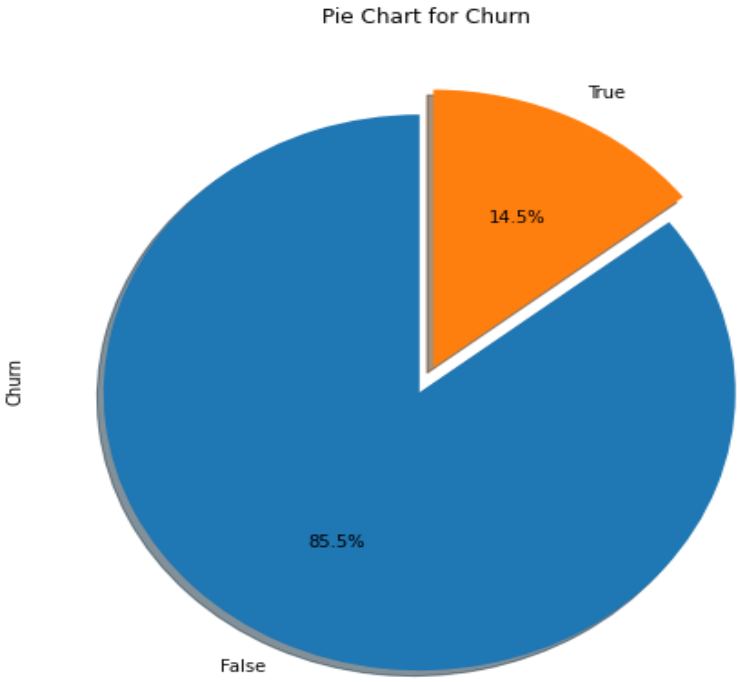
Objective


Finding factors which influence customers to churn.
Retain churn customers by applying strategy.
Providing offers based on influencing factors.
Control churn rate and improve the image in the market.

Data Summary

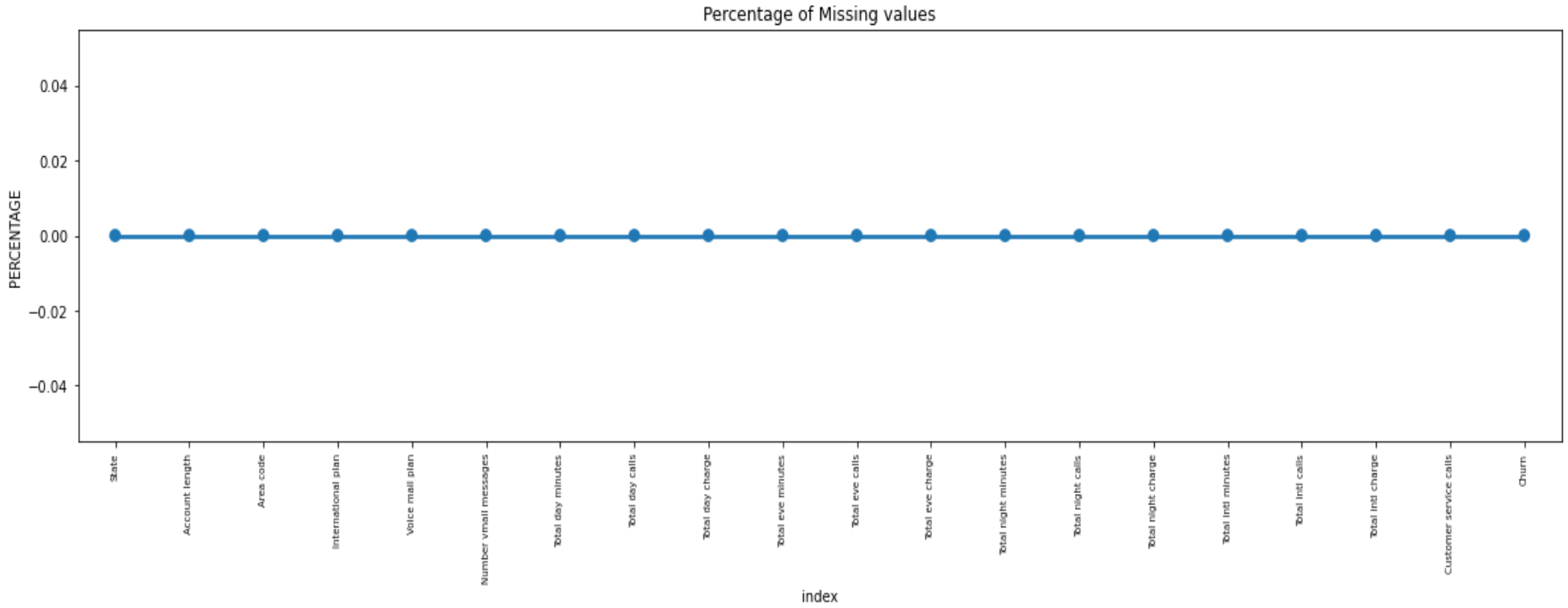
- **Data set :** Telecom Churn dataset of Orange S.A., formerly France Telecom S.A.
- **Shape:**
  - – Rows - 3333
  - – Columns – 20
- **Important Columns:** State, Area code, International plan, Voice mail plan, Churn, Customer service calls, Total eve calls, Total day calls, Total night calls, Total intl calls.(Probably all columns are important).

Churn Information

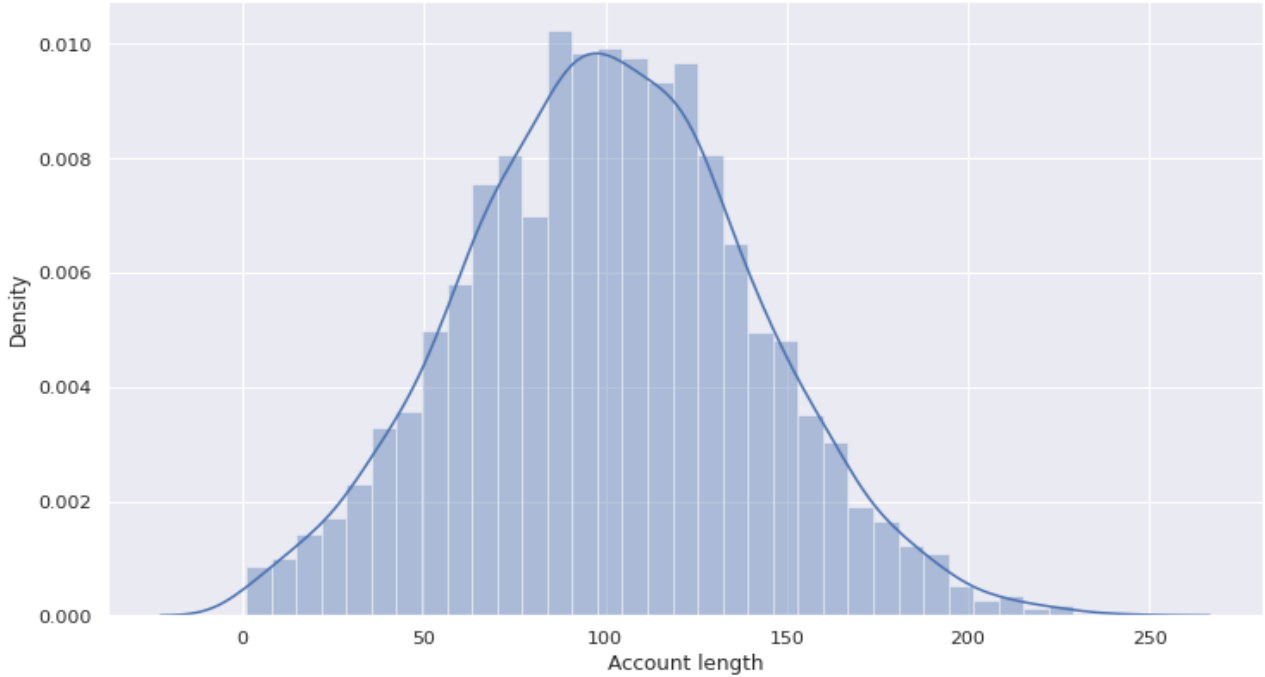


Total Users were 3333.
2850 - Non churn (85.5%)
483 - Churn (14.5%)

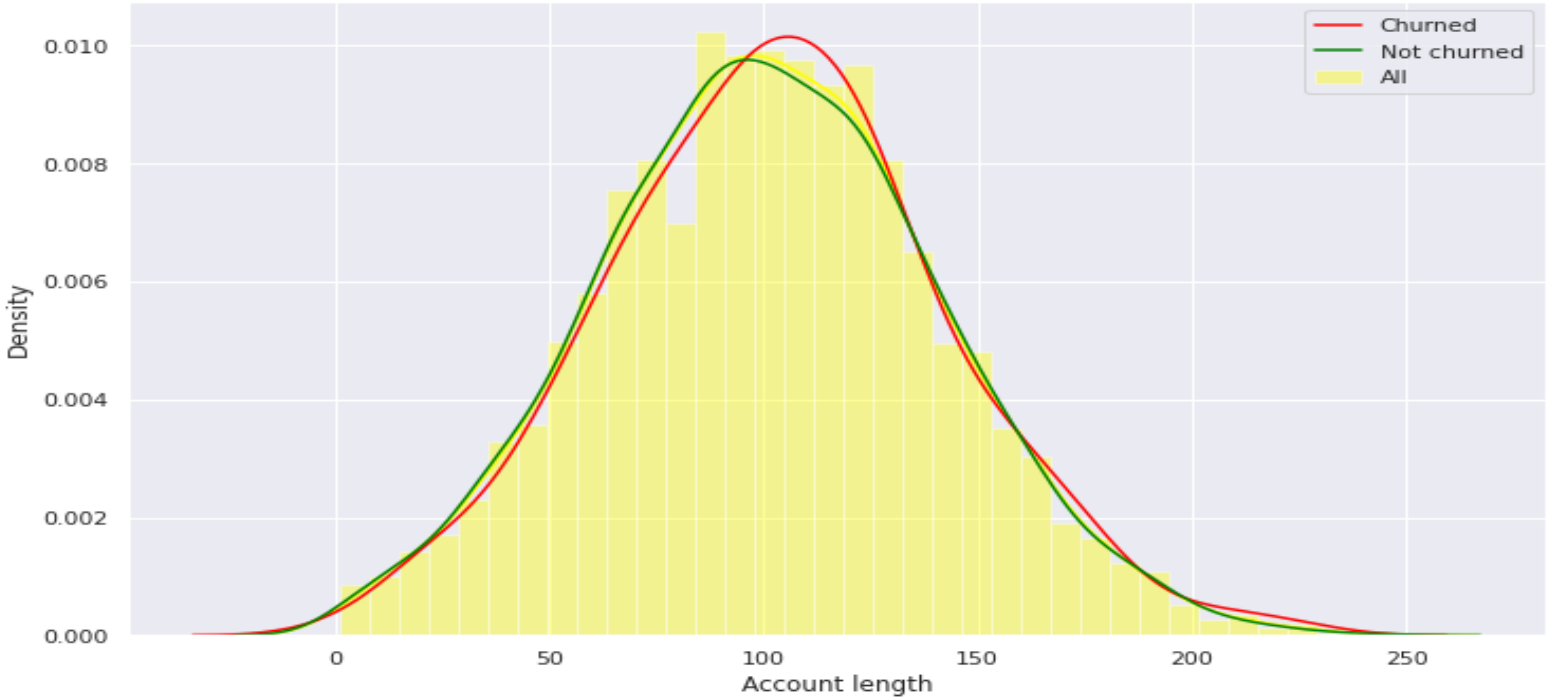
Percentage of Missing Values



Analysis based on Account Length

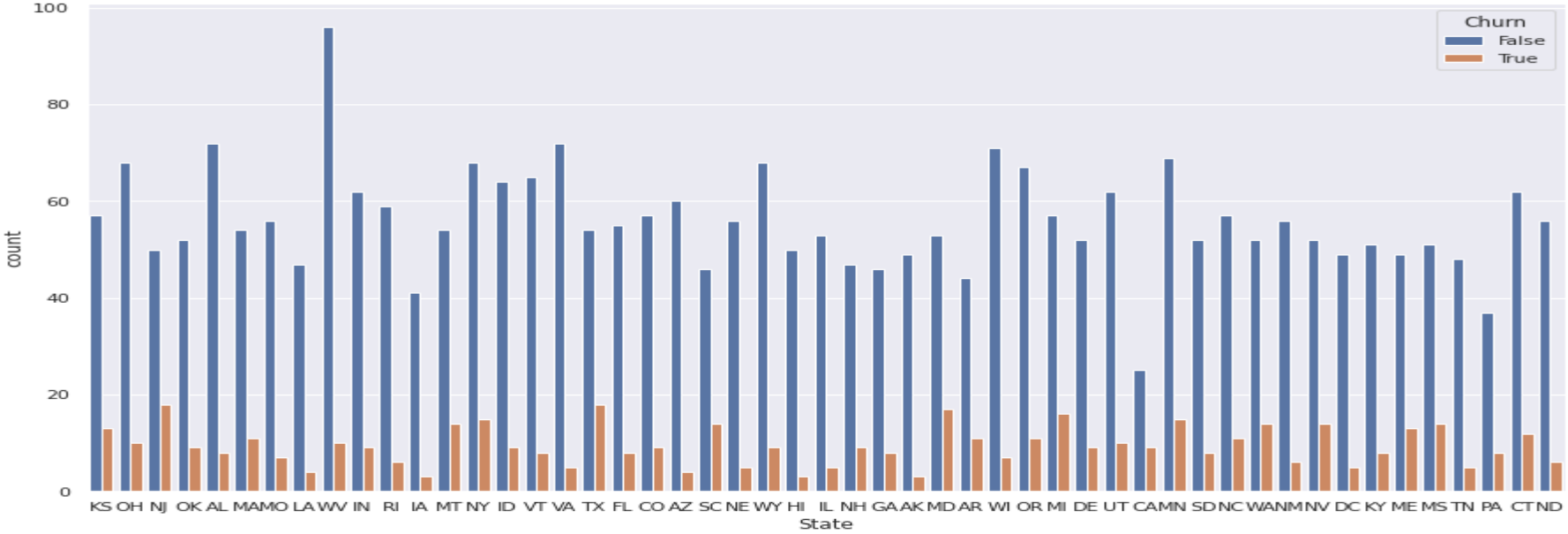


comparison of churned account length and not churned account length



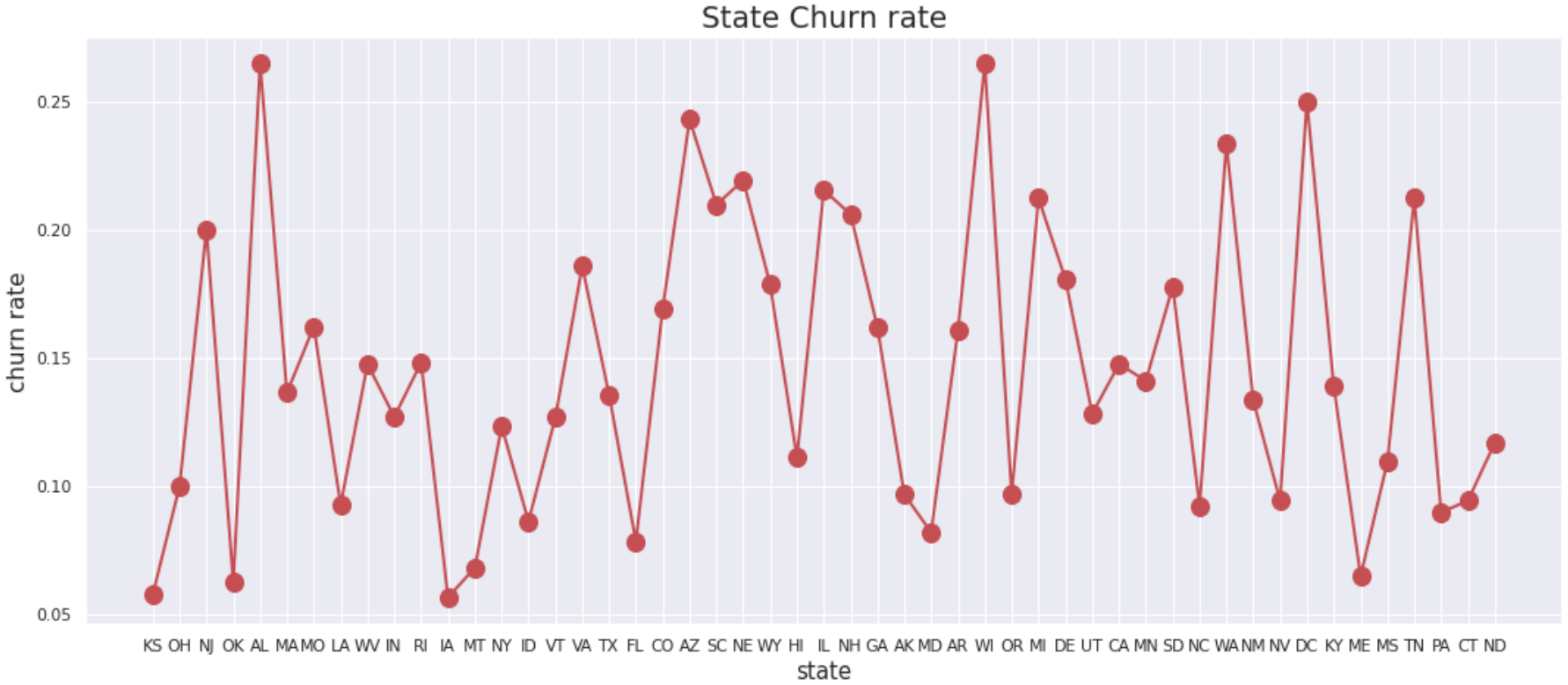
- After analyzing various aspects of the "account length" column we didn't found any useful relation to churn. so we aren't able to build any connection to the churn as of now. let's see what other features say about the churn.

Analysis based on States

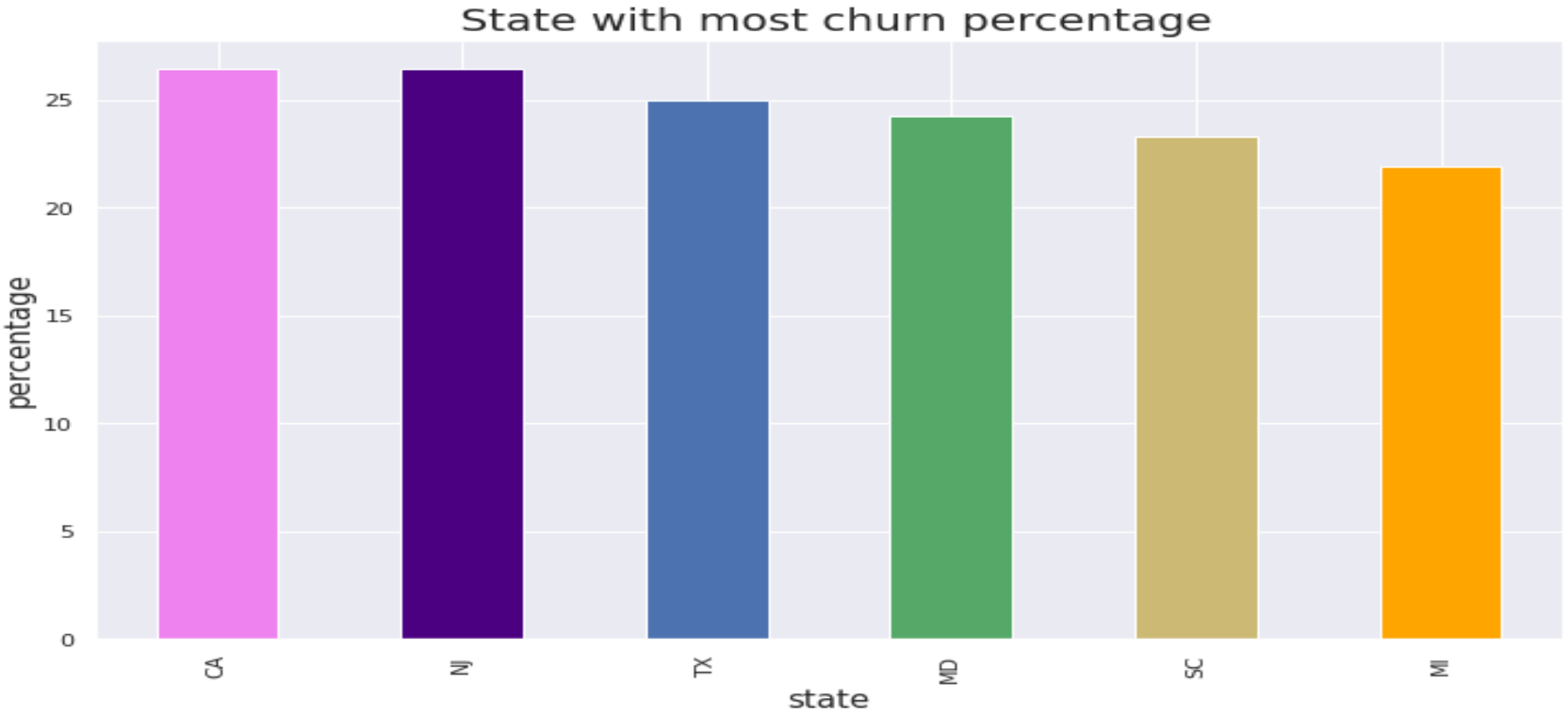


- There are 51 state who have different churn rate. **CA, NJ ,TX , MD ,SC ,MI** are the ones who have higher churn rate more than **21.74%** which is more than 50% of average churn rate.

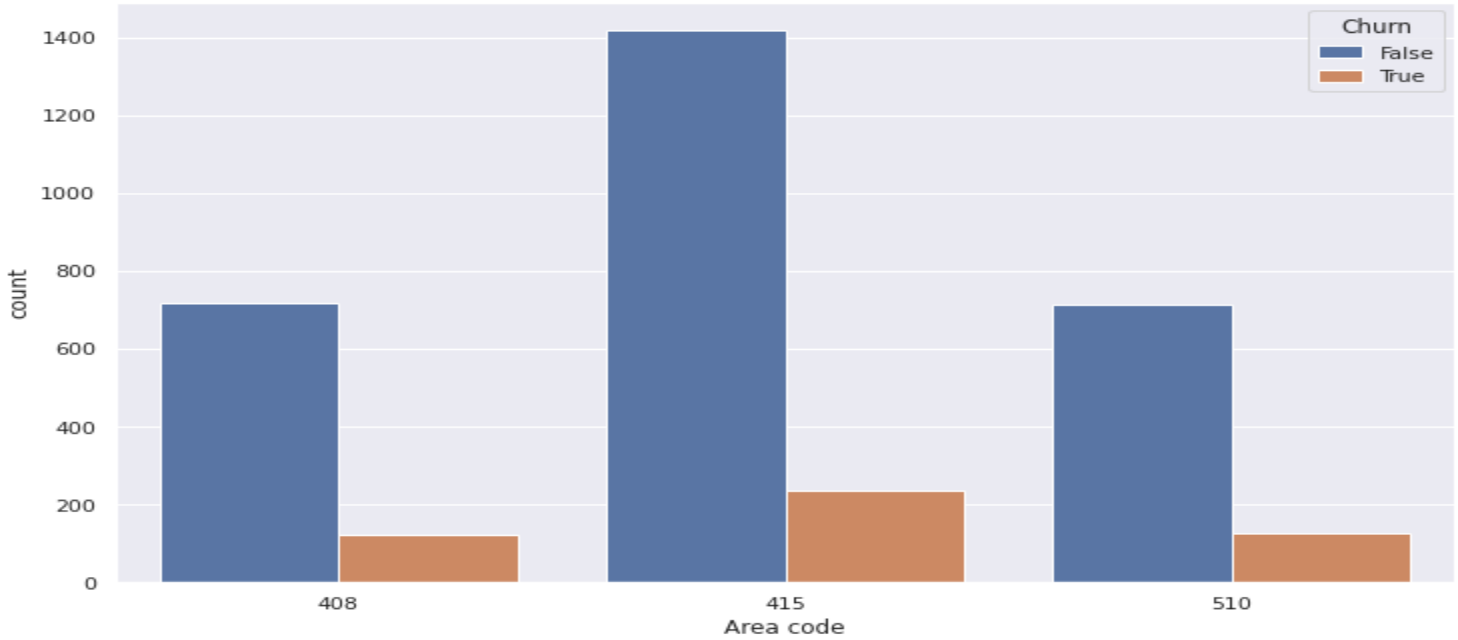
State Churn rate



State with most Churn percentage

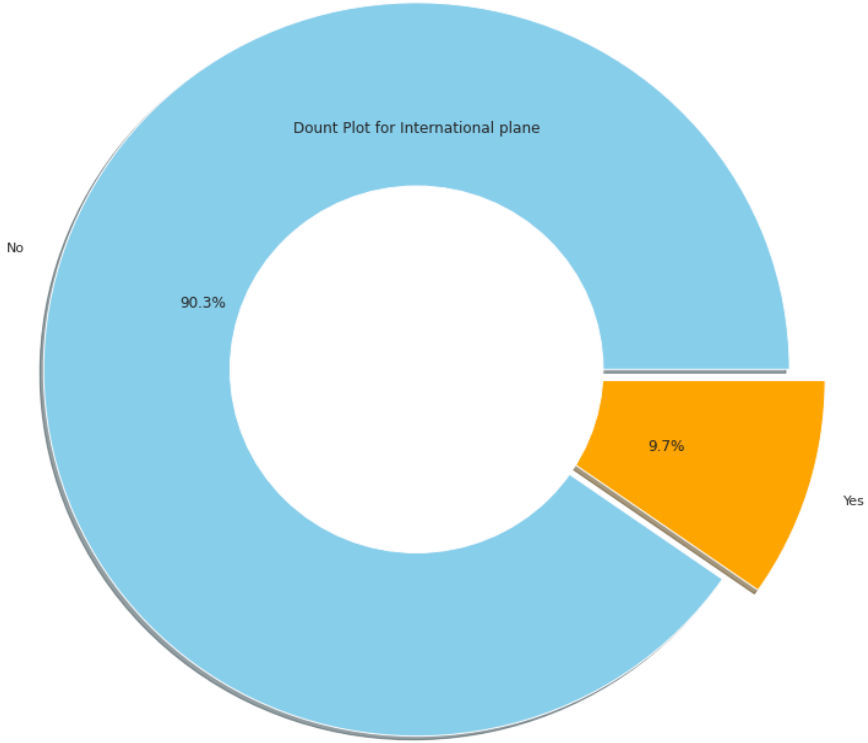


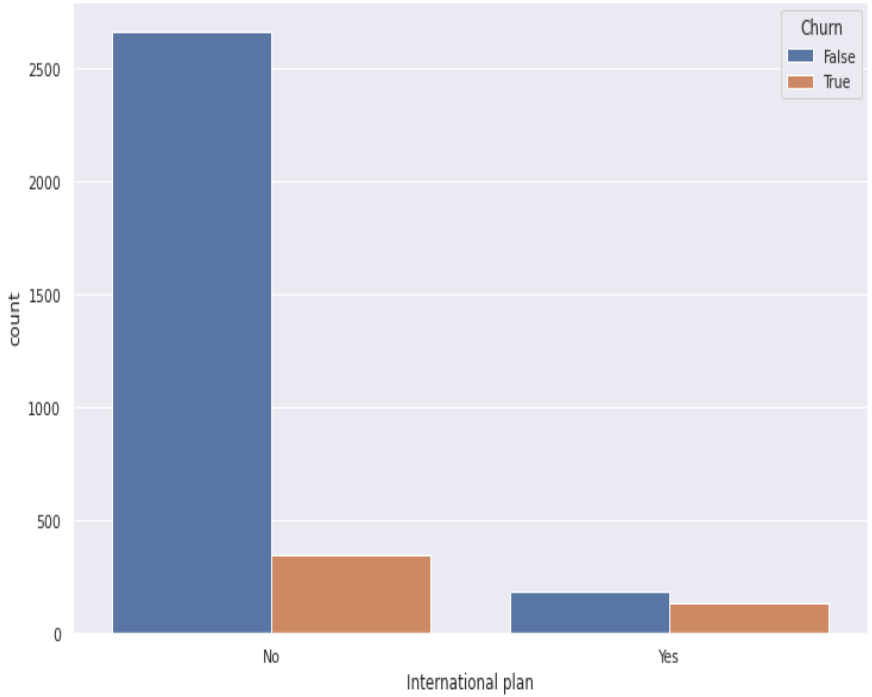
Analysis Based on Area Code



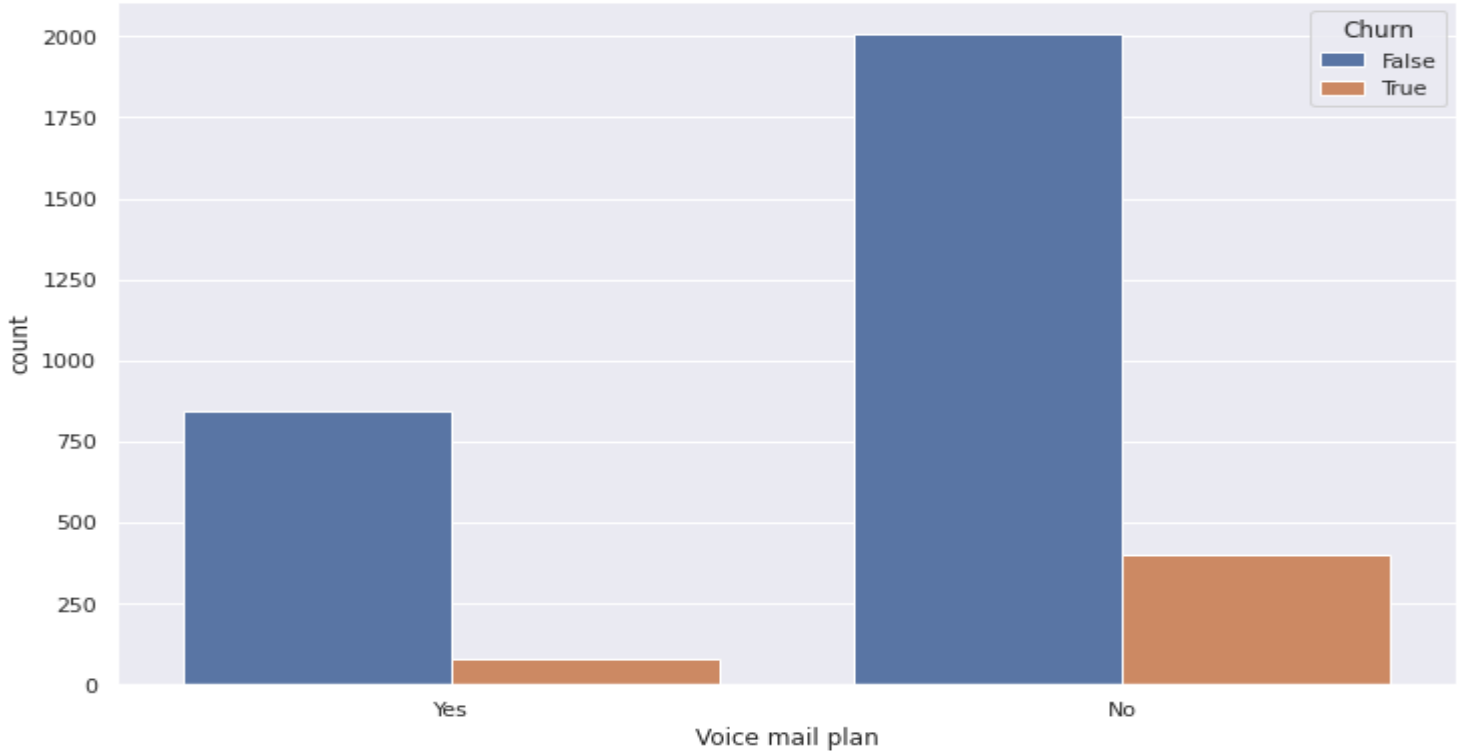
- All the Area codes have almost equal (14%) percentage of Churners.

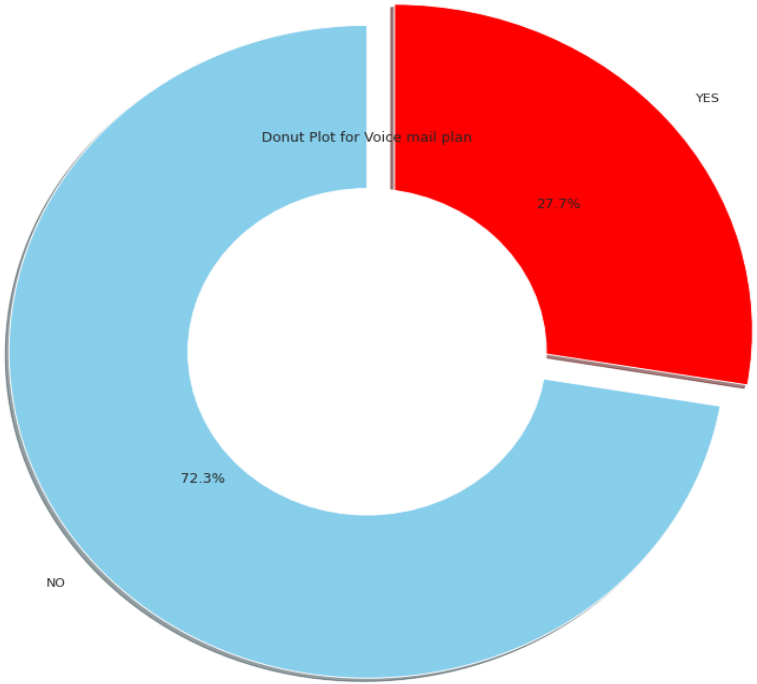
Analysis Based on International Plan





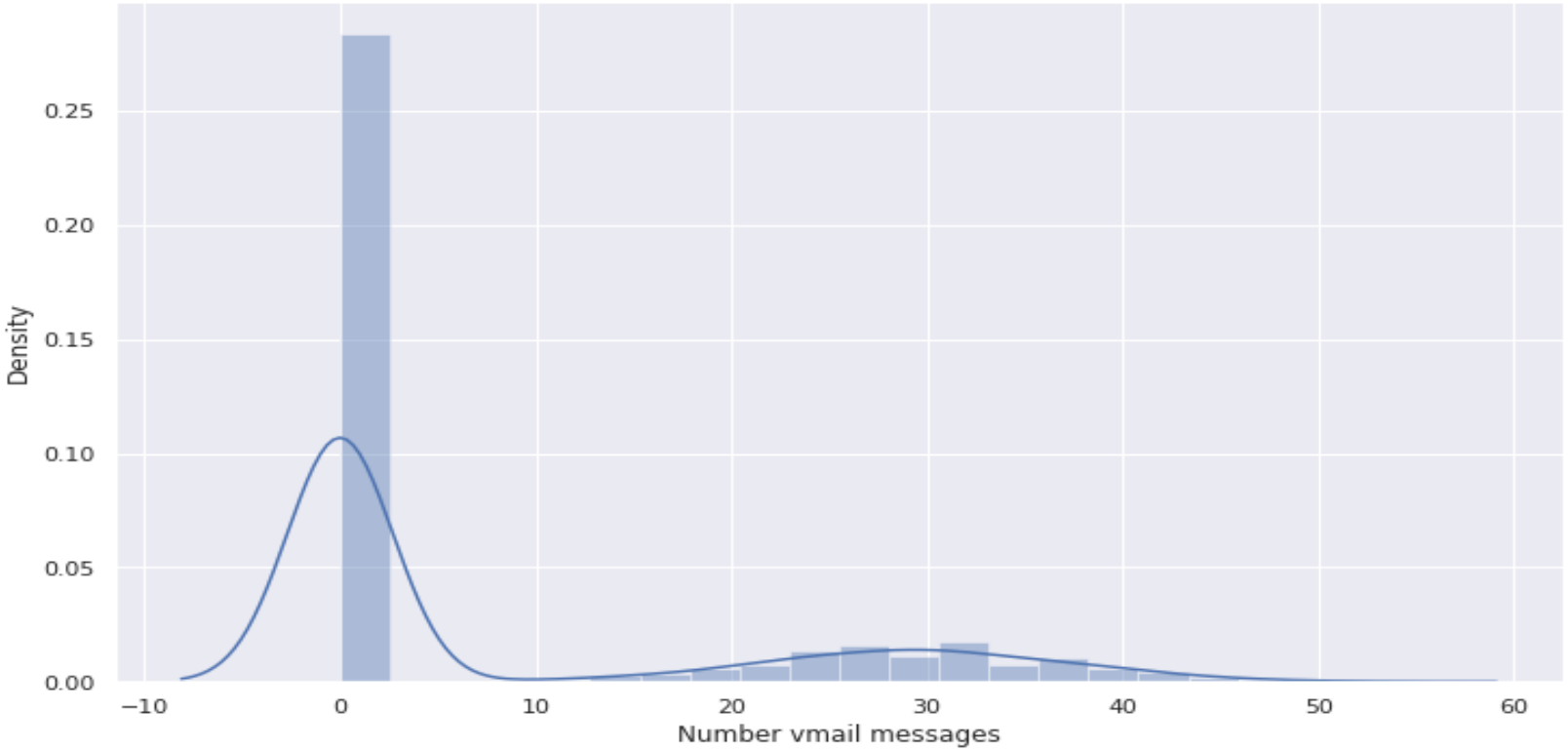
Analysis Based on Voice mail

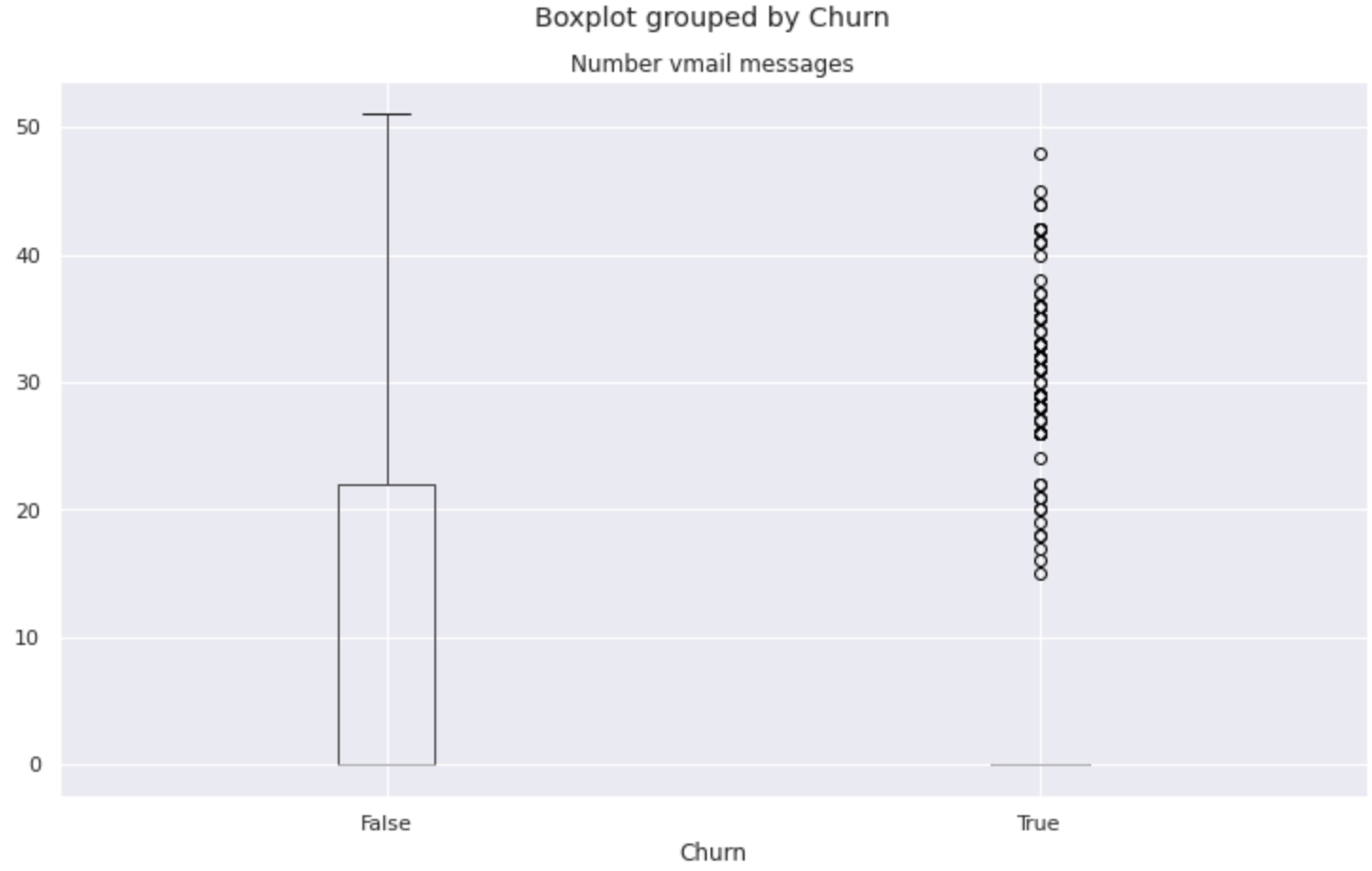




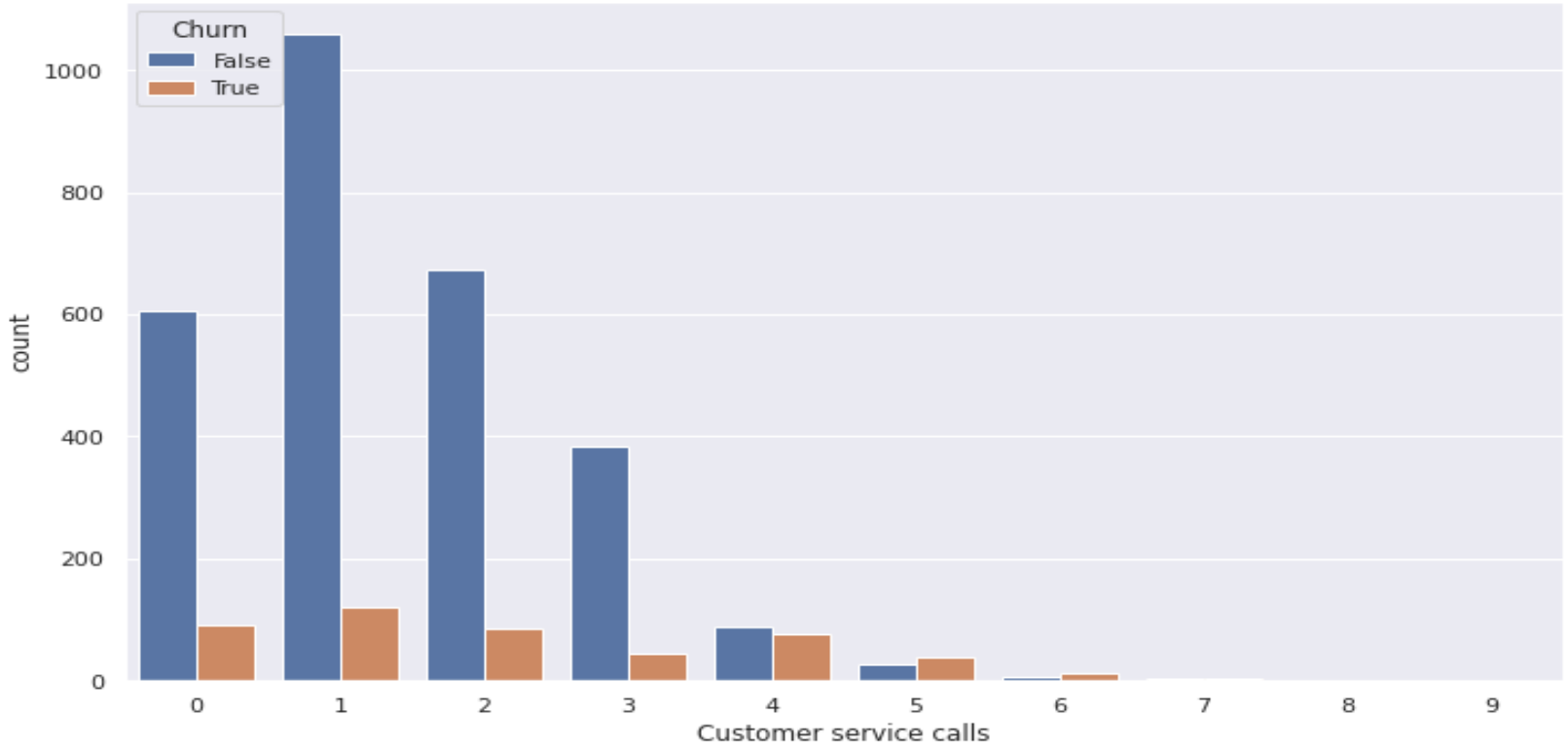
- **Out of 3333 people 922 having Voice mail plan, rest 2411 do not have any Voice mail plan.**

Analyzing "Number vmail message" column




Boxplot grouped by Churn
Number vmail messages
50
40
30
20
10
0
False
True
Churn

Analysis based on Customer Service Call

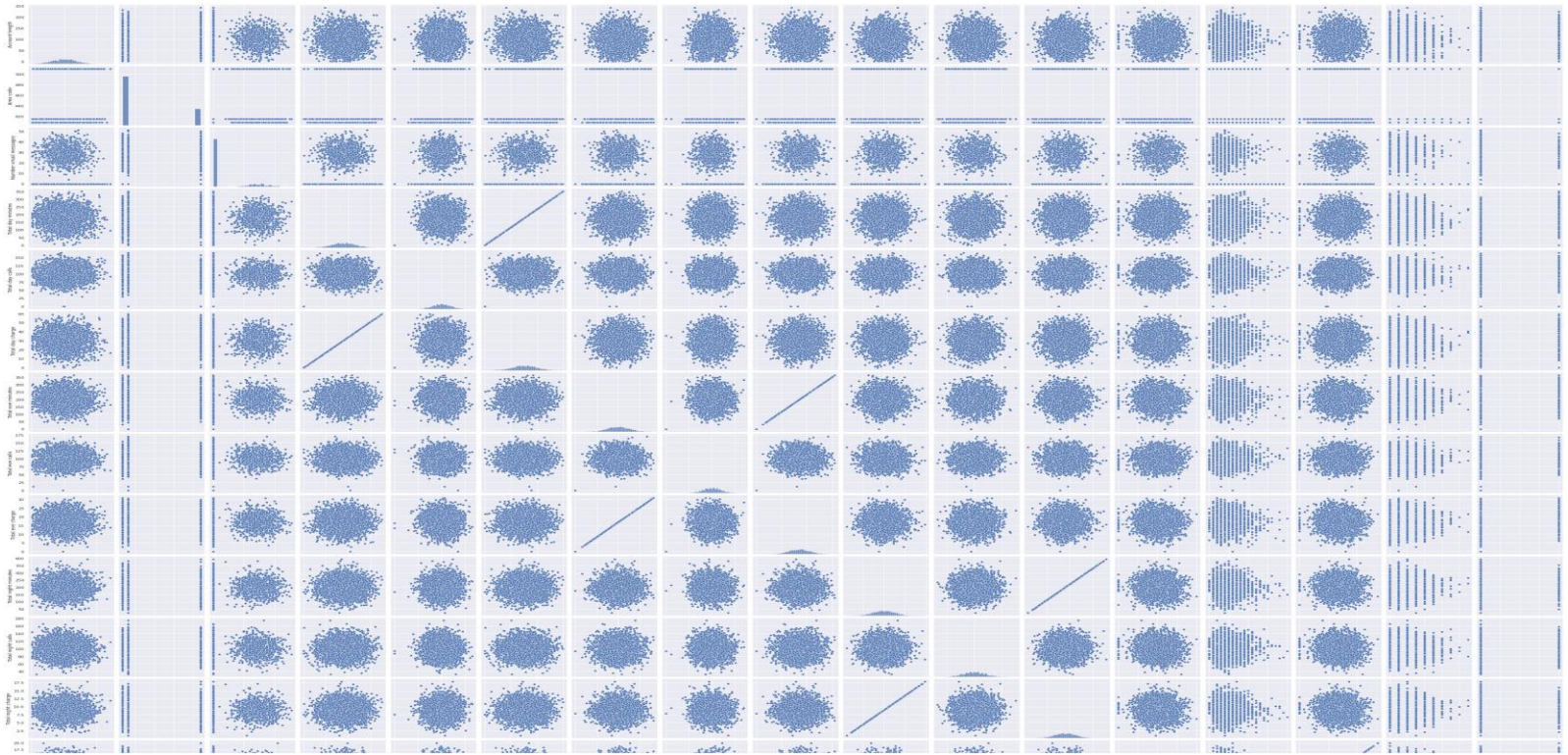


- It is observed from the above analysis that, mostly because of bad customer service, people tend to leave the operator.

- The above data indicating that those customers who called the service center 5 times or above those churn percentage is higher than 60%

- And customers who have called once have a high churn rate indicating their issue was not solved in the first attempt.

Pair Plot For All Columns



Challenges

- Difficult to recognize columns like- (Account Length , Number vmail messages. Etc.) as while subset these we got lot of possibilities of true churn and have to work for each possibilities

- Need to plot lot of Graph for different States as well as different Area codes to understand the data and handling the data.

- Need to subset for respective State having respective Area code till it reaches a dozen of customers.

Solution to Reduce Customer Churn

- Modify International Plan as the charge is same as normal one.
- Be proactive with communication.
- Ask for feedback often.
- Periodically throw Offers to retain customers.
- Look at the customers facing problem in the most churning states.
- Lean into best customers.
- Regular Server Maintenance.
- Solving Poor Network Connectivity Issue.
- Define a roadmap for new customers.
- Analyze churn when it happens.
- Stay competitive.

Conclusion

- The four charge fields are linear functions of the minute fields.
- The area code field and/or the state field are anomalous, and can be omitted.
- Customers with the International Plan tend to churn more frequently.
- Customers with four or more customer service calls churn more than four times as often as do the other customers.
- Customers with high day minutes and evening minutes tend to churn at a higher rate than do the other customers.

There is no obvious association of churn with the variables evening calls, night calls, international calls, night minutes, international minutes, account length.


Thank
You!