Capstone project 1

Telecom Churn Prediction

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Content

- **Problem Statement**
- **Summary**
- **Objective**
- **Data Summary**
- **Data cleaning**
- **Exploratory Data analysis**
- **Solution To Reduce customer Churn**
- **Conclusion**

Problem Statement

Orange S.A., formerly France Telecom S.A., is a French multinational telecommunications corporation. The Orange Telecom's Churn Dataset, consists of cleaned customer activity data (features), along with a churn label specifying whether a customer cancelled the subscription.

Explore and analyse the data to discover key factors responsible for customer churn and come up with ways/recommendations to ensure customer retention

SUMMARY

Our Exploratory Data Analysis performed the following steps:

- **Preview Data**
- **Check total number of entries and column types**
- **Check the null records**
- **Check any duplicate records**
- **Plot distribution of numeric data (univariate and pairwise joint distribution)**
- **Plot distribution of Categorical Data**
- **Analyse time series of numeric data by daily, monthly and yearly frequencies**

OBJECTIVE

- **Customer churn occurs when customers stop doing business with a company.**
- **As the cost of retaining an existing customer is far less than acquiring a new one, maintaining a healthy customer base is important for the success of any business**
- **The main objective of project is to :**
- **Finding factors which influence customers to churn.**
- **Retain churn customers by applying strategy**
- **Providing offers based on influencing factors.**
- **Control churn rate and improve their image in the market.**

Data Summary

This data set contains 20 features with 3333 observations:-

- **State:-51 unique states in United States of America**
- **Account Length :-how long account has been active**
- **Area Code :-Code Number of Area having some States included in each area code**
- **Intl Plan :-International plan activated (yes, no)**
- **V-mail Plan :- voice Mail plan activated (yes ,no)**
- **V-mail Message :- No. of voice mail messages**
- **Day Mins :-Total day minutes used**
- **Day calls :-Total day calls made**
- **Day Charge :-Total day charge**
- **Eve Mins :-Total evening minutes**

Data Summary

- **Eve Calls :-Total evening calls**
- **Eve Charge :-Total evening charge**
- **Night Mins :-Total night minutes**
- **Night Calls :-Total night calls**
- **Night Charge :-Total night charge**
- **Intl Mins :-Total International minutes used**
- **Intl Calls :-Total International calls made**
- **Intl Charge :-Total International charge**
- **Customer Service calls :-Number of customer service calls made**
- **Churn :-Customer churn (Target Variable True=1, False=0)**

Data Cleaning

Checking the data for any missing Values.

```
#to check any missing values in the dataset
data_set.isnull().any().sum()
```

```
0
```

Dataset statistics

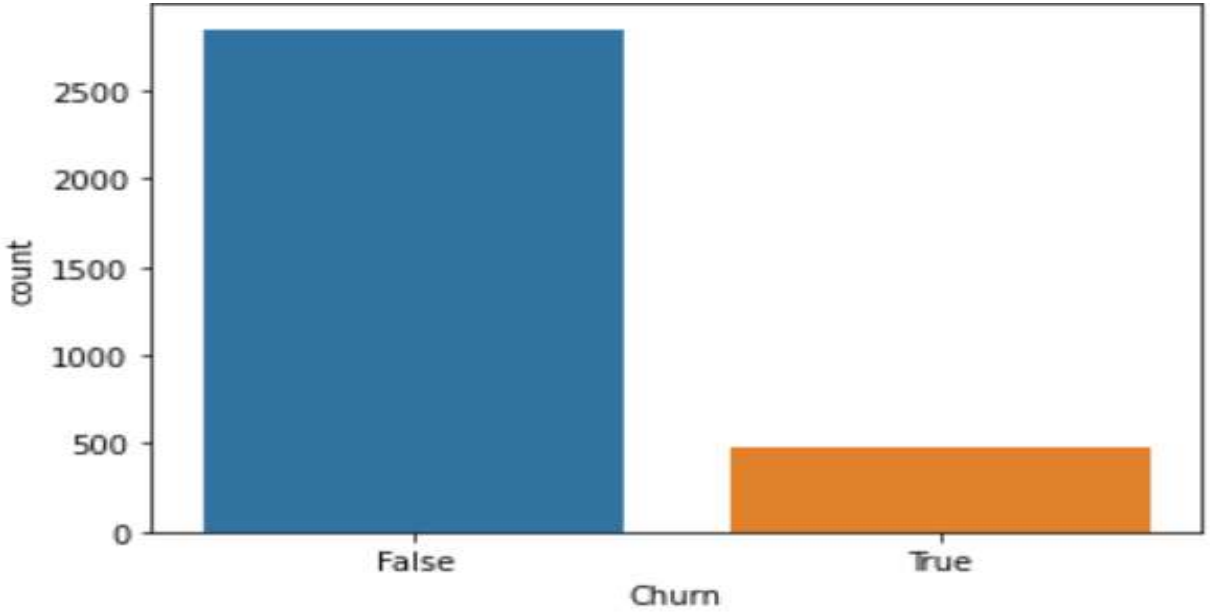
Number of variables	21
Number of observations	3333
Missing cells	0
Missing cells (%)	0.0%
Duplicate rows	0
Duplicate rows (%)	0.0%
Total size in memory	732.9 KiB
Average record size in memory	225.2 B

Variable types

Categorical	5
Numeric	16

EDA

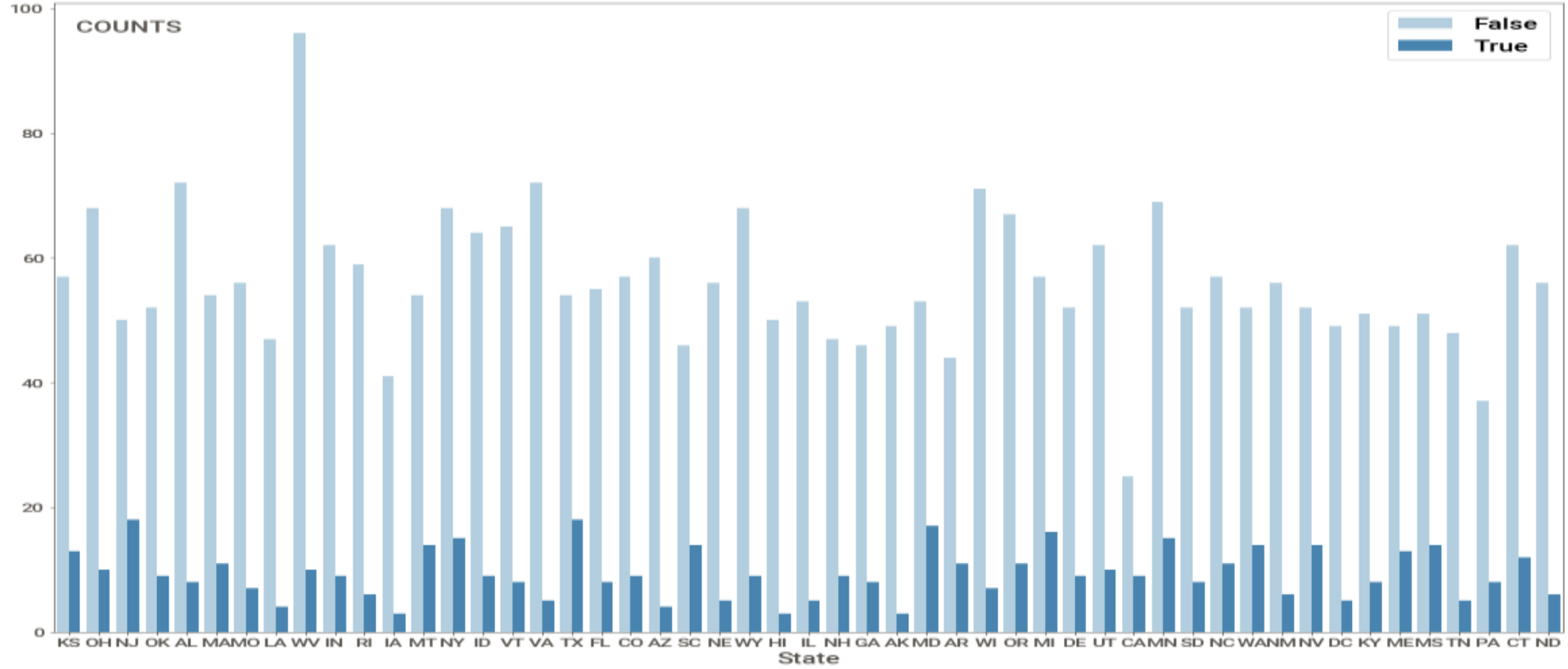
No of Churn customers out of total customers:-



it shows that 2850 customers are loyal and only 483 cutomers are churned

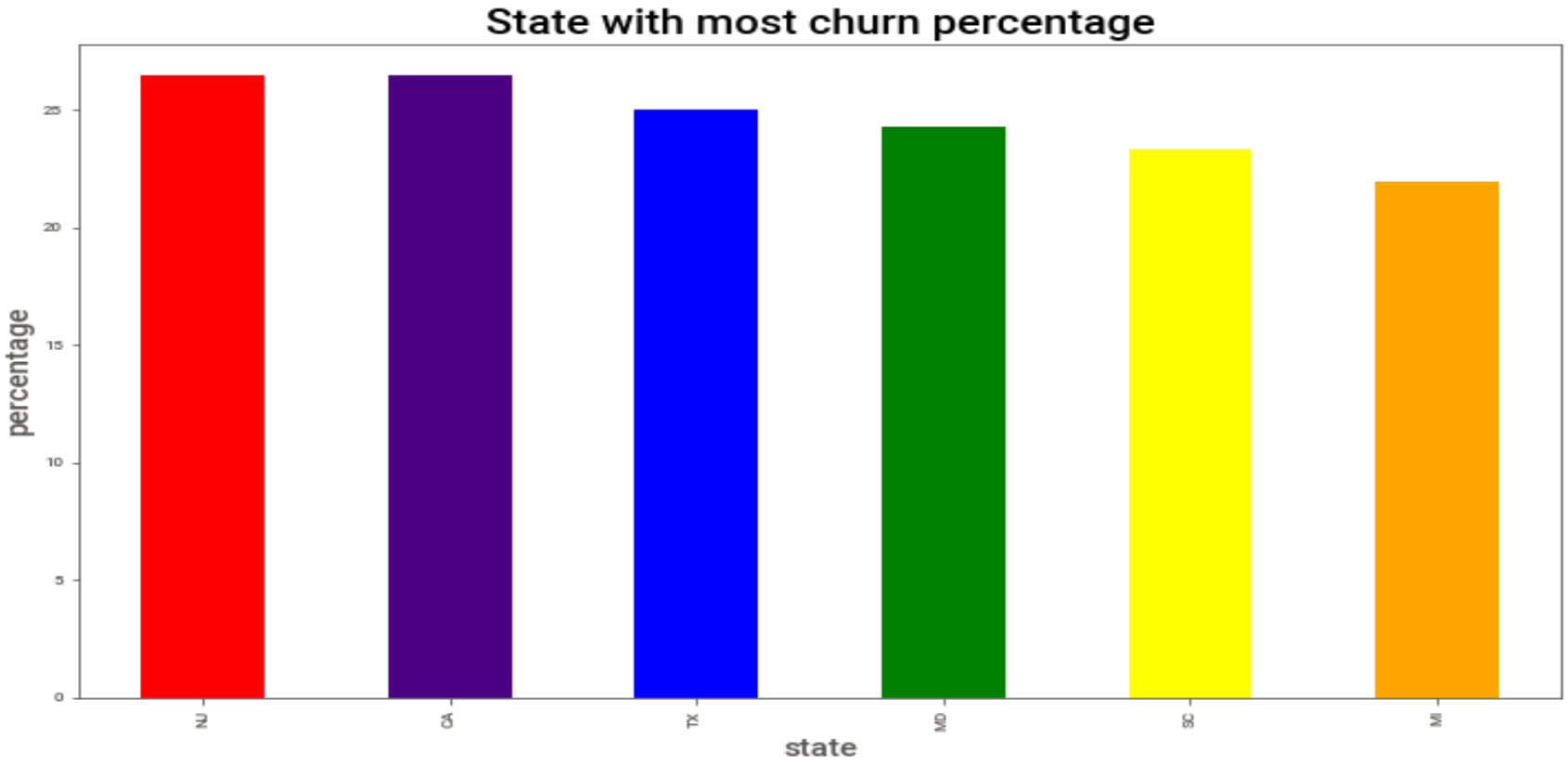
EDA

Countplot For the Feature ‘State’:-



EDA

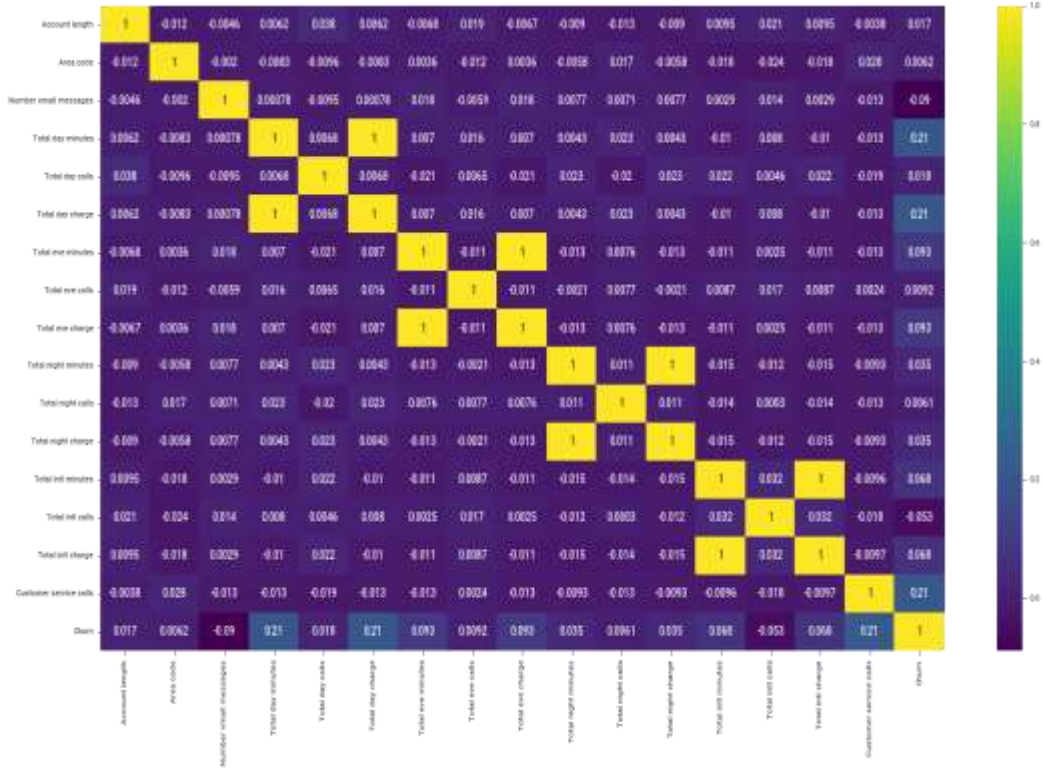
State With Most Churn Percentage:-



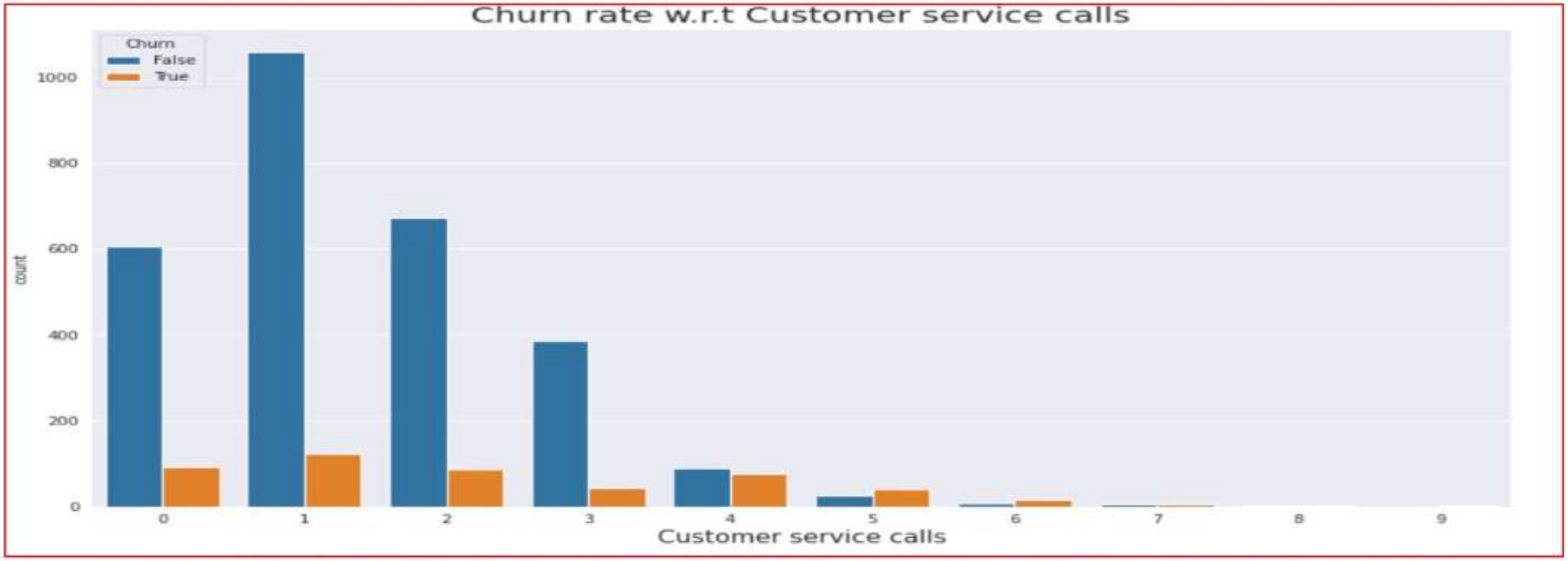
EDA

By plotting the heat map we can easily see there are correlation between some variables and churn:

- **Total Day charge to churn at 0.2**
- **Total day minutes to churn at 0.2**
- **Customer service calls to churn at 0.2**
- **Total evening charge to total evening minutes at 1**
- **Total day charge to total day minutes at 1**

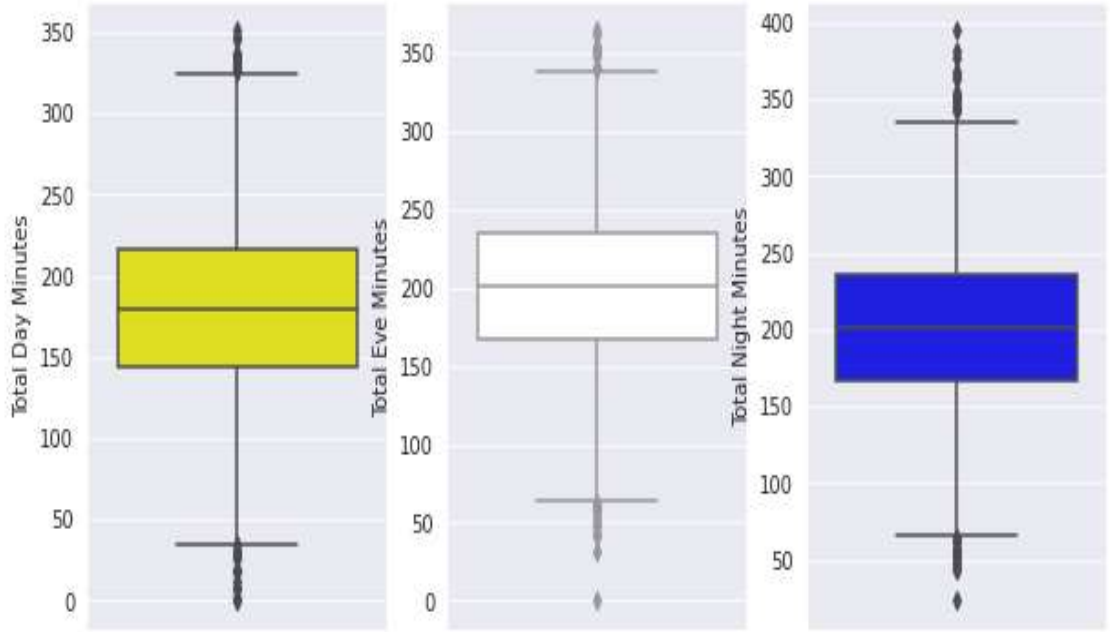


EDA(Churn rate w.r.t Customer service calls)



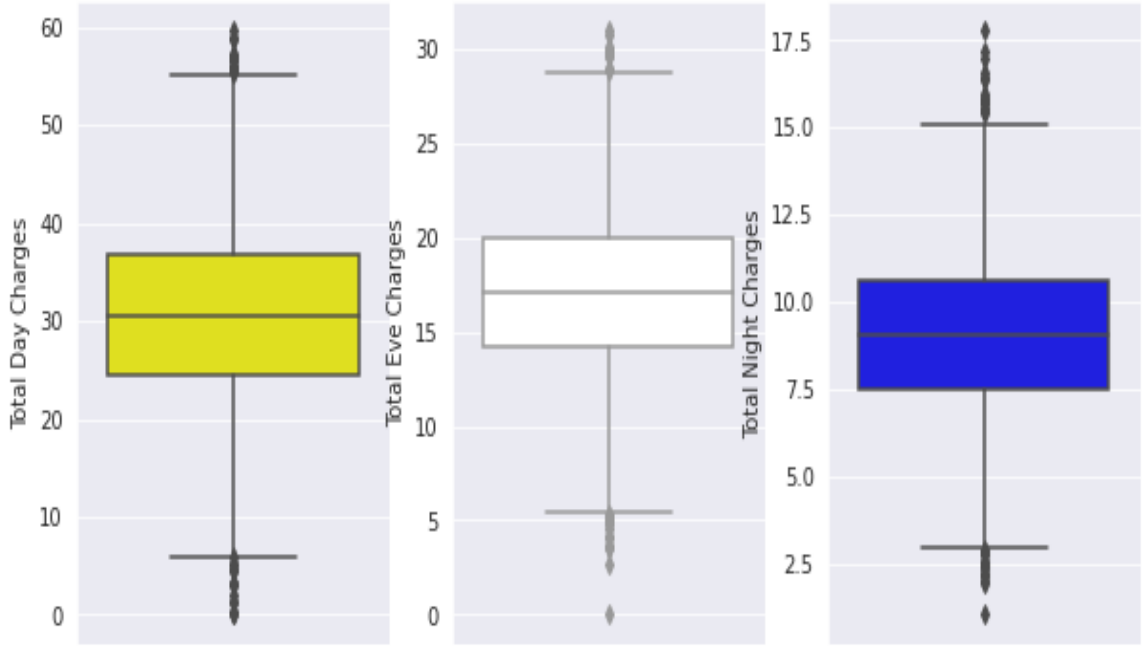
- We can see that if customer service calls are made more than 7 times, then the service is bound to be cancelled. This also comes with high charges imposed on the user.
- At the same time we can see that many users leave the service over 1 to 3 calls made to the customer service when are charged more. Analysis of the total day charge to the minutes spoken over churn rate could give us a better understanding of the same.

EDA(TOTAL CALLS ON DAY,EVE AND NIGHT)



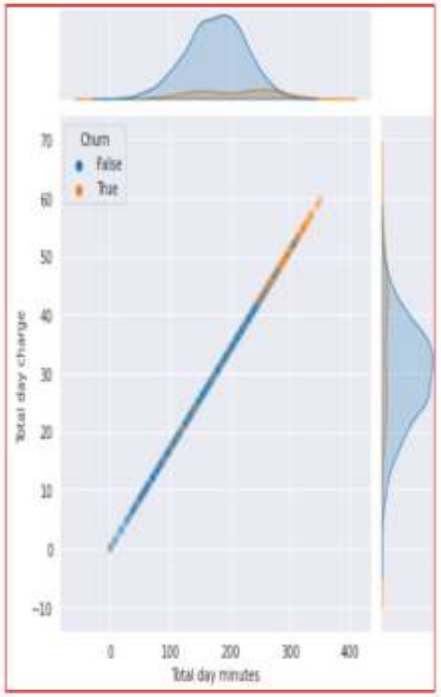
Despite having more calls made during the day, we can see that users do not spend longer time on the calls in the morning. Users tend to talk for longer time in the afternoon than other times.

EDA(TOTAL MINUTES ON DAY,EVE AND NIGHT)



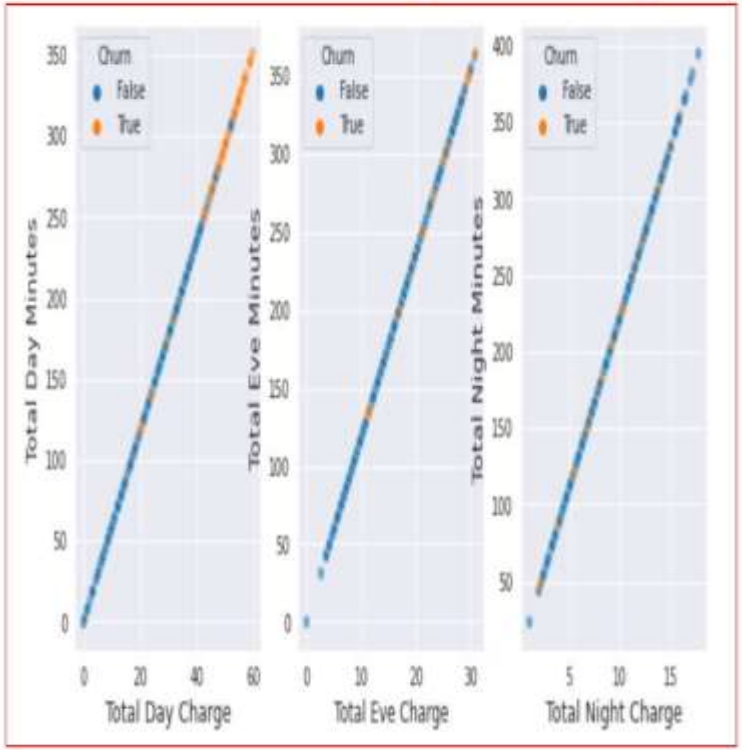
The charges are maximum in the evening time and lowest in the night time. These plots are in conjunction with the minutes spoken.

Bi - Variate Distribution



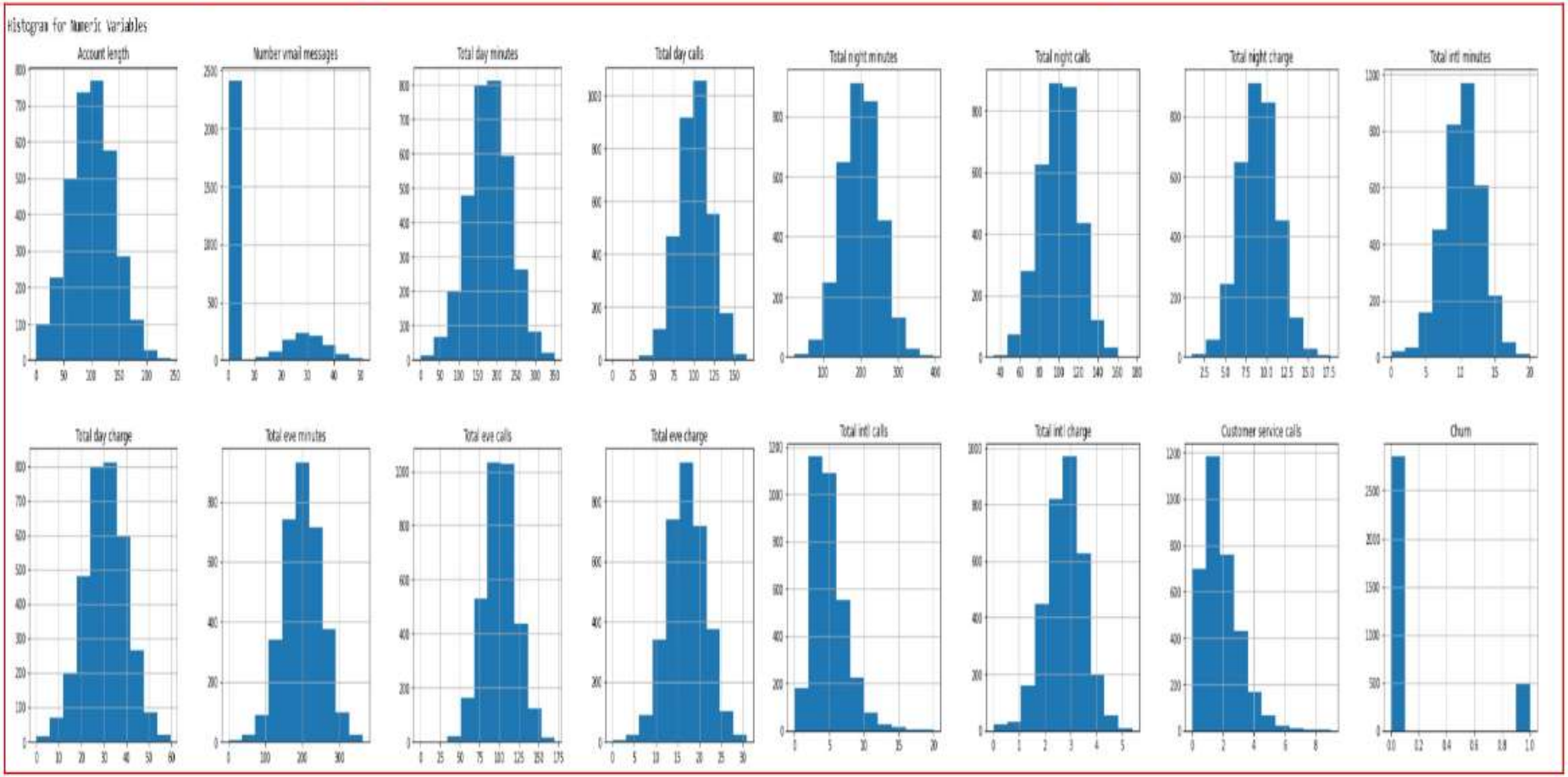
we used here jointplot from the seaborn library to show relation between Total day minutes and Total day charges

Bi - Variate Distribution (Continued)



we used here scatterplot from the seaborn library to show relation between Total day minutes and Total day charges

EDA (Histogram for Numeric variables)



Solutions to reduce the 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.**
- **Analyse churn when it happens.**
- **Stay competitive.**

CONCLUSION

- **It can also be observed that most people who use the service in the morning speak for shorter amounts of time but make more calls.**

- **International plan users are more consistent with their churn w.r.t the ones who do not have the service.**

- **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.**

THANK YOU SO MUCH.....