Capstone Project

Telecom Churn Analysis

Team Members

Pranav Rajmane

Sayali Mandhare

Prathamesh Kalambe

Dayanand Katkade

Pavan Malvay

Business Problem and Understanding

- Customer churn in the telecom industry is one of the leading reasons of loss in revenue
- The churn rate of Orange S.A is 14%
- Since the cost of retaining a customer is lesser than acquiring a new customer, reducing churn rate is important
- We have to analyse the data to predict which of the customers are at higher risk of churn and take necessary steps to retain them

Objective

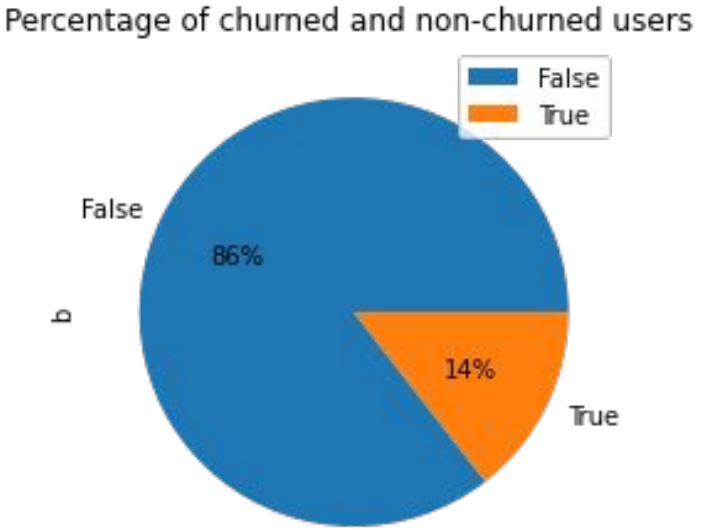
- Identify reasons for customer churn
- Identify patterns across the given data
- Provide offers, discounts and improve service quality without compromising profits
- Reduce the churn rate
- Maintain company’s brand value

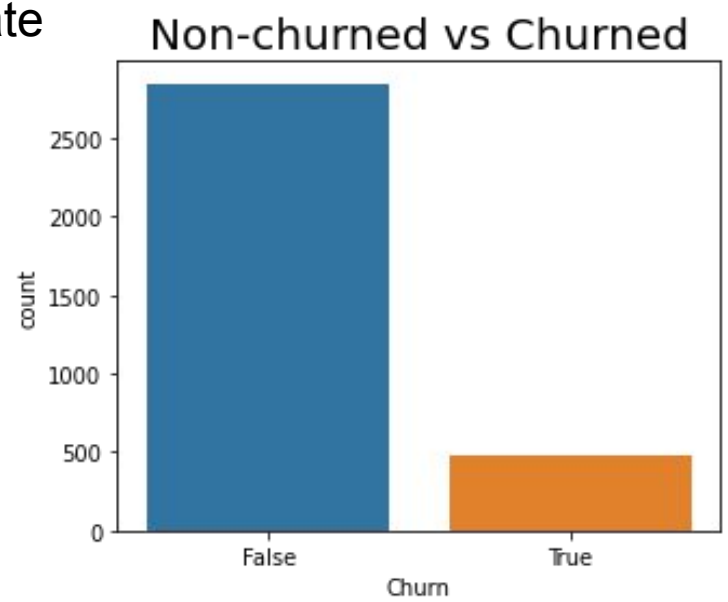
Available data summary

1. 51 Unique states
2. Account length info
3. 3 Unique Area codes
4. International plan, voicemail plan info
5. Total no. of calls, minutes, charges during day
6. Total no. of calls, minutes, charges during evening
7. Total no. of calls, minutes, charges during night
8. Total no. of international calls, minutes, charges
9. Calls made to customer service
10. Customer churn info
11. Total number of rows 3333, number of columns 20

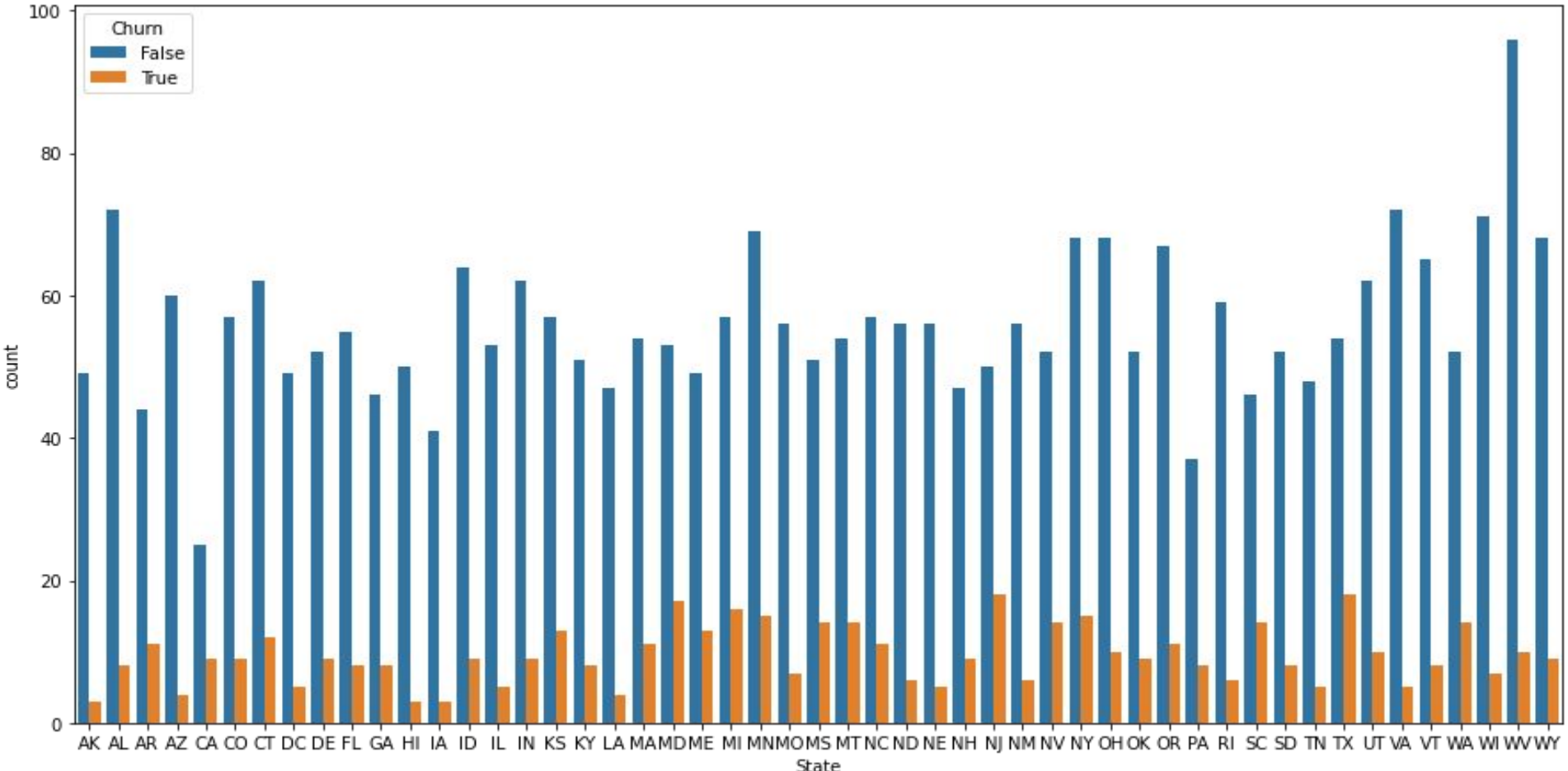
Analysing the current Churn rate

- Left pie chart shows true for Churn rate which is 14%
- Right side graph shows true for number of customers churned and false for not churned
- Next slide we can see the state wise churn rate

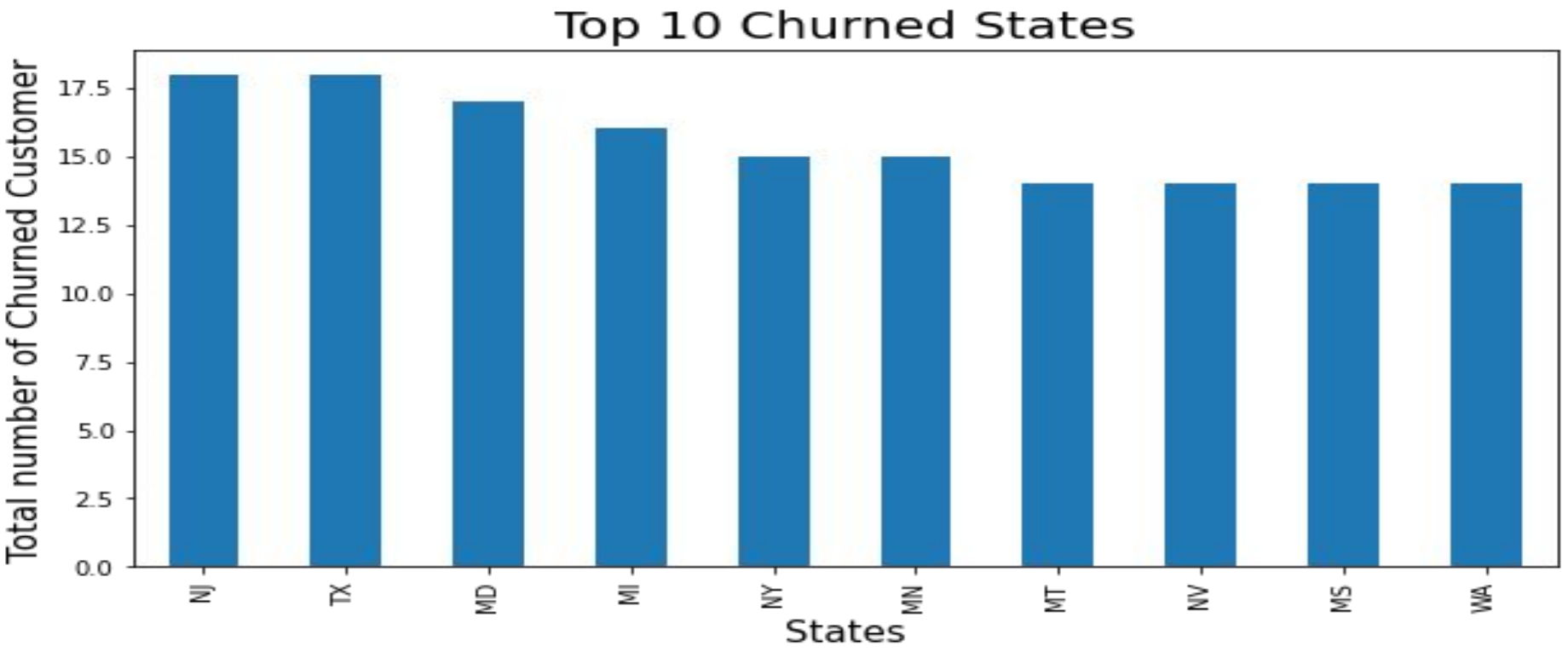




State wise churn rate



Below graph shows top 10 states with highest churn rate



Observations

From above barplot we can observe that users of these states are prone to churn.

According to my hypothesis, following would be the factors that should be implemented for stopping churn in these states:

1. In top three states New Jersey,Texas and Maryland we can definitely choose aggressive pricing strategies and network upgradation as well as improving voice quality of calls in these states.

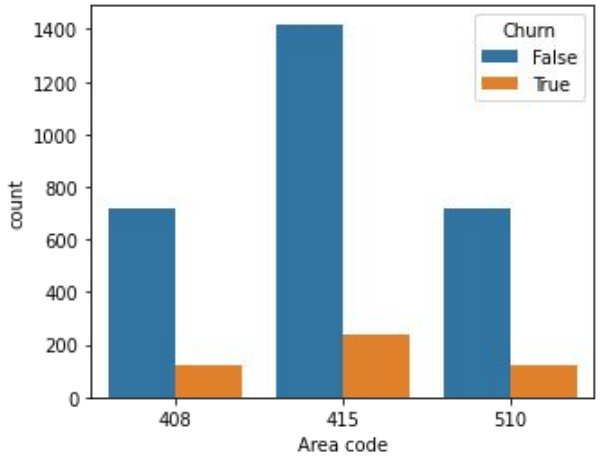
2. We have to look out for our competitor in these states also as observation says that there may be strong competition

Area code wise Churn rate

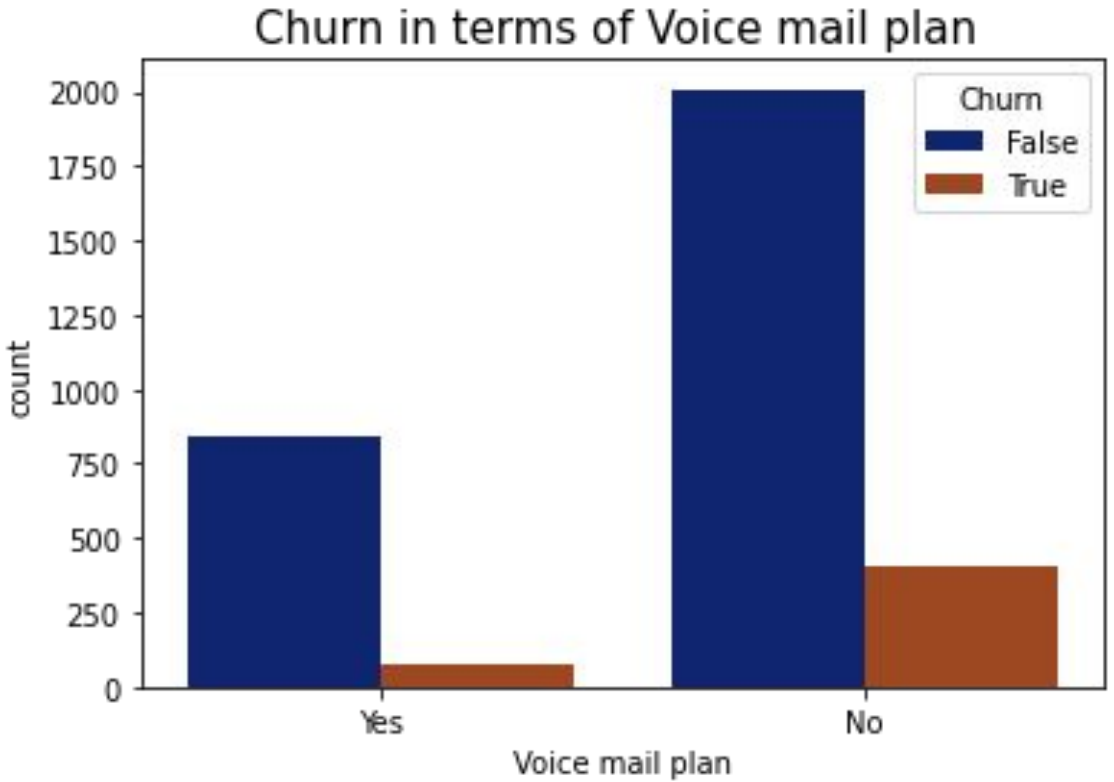
All three area codes have similar churn percentage

Number wise area code 415 has the highest churn rate

Area Codes	Churn Fales	Churn True	Churn Percentage
408	716	122	14.55
415	1419	236	14.25
510	715	125	14.88



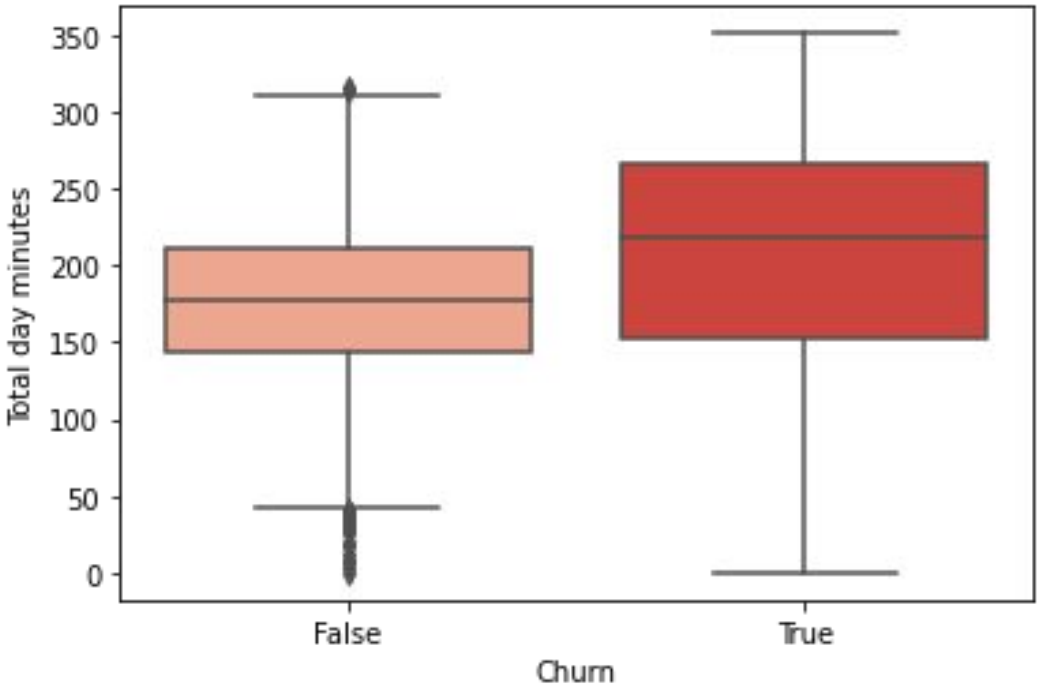
Churn rate vs Voicemail plan



From the plot we can see that the number of churned users who opt for voicemail plan is lesser than compare to those who did not opt for it.

So we can predict that voicemail plan is doing good hence we can improve it further to reduce the churn rate

Relation between Churn and Total day minutes



From the box-plot we can observe that users who are spending 225 minutes or more (approx. 4hrs) tend to switch to other operator.

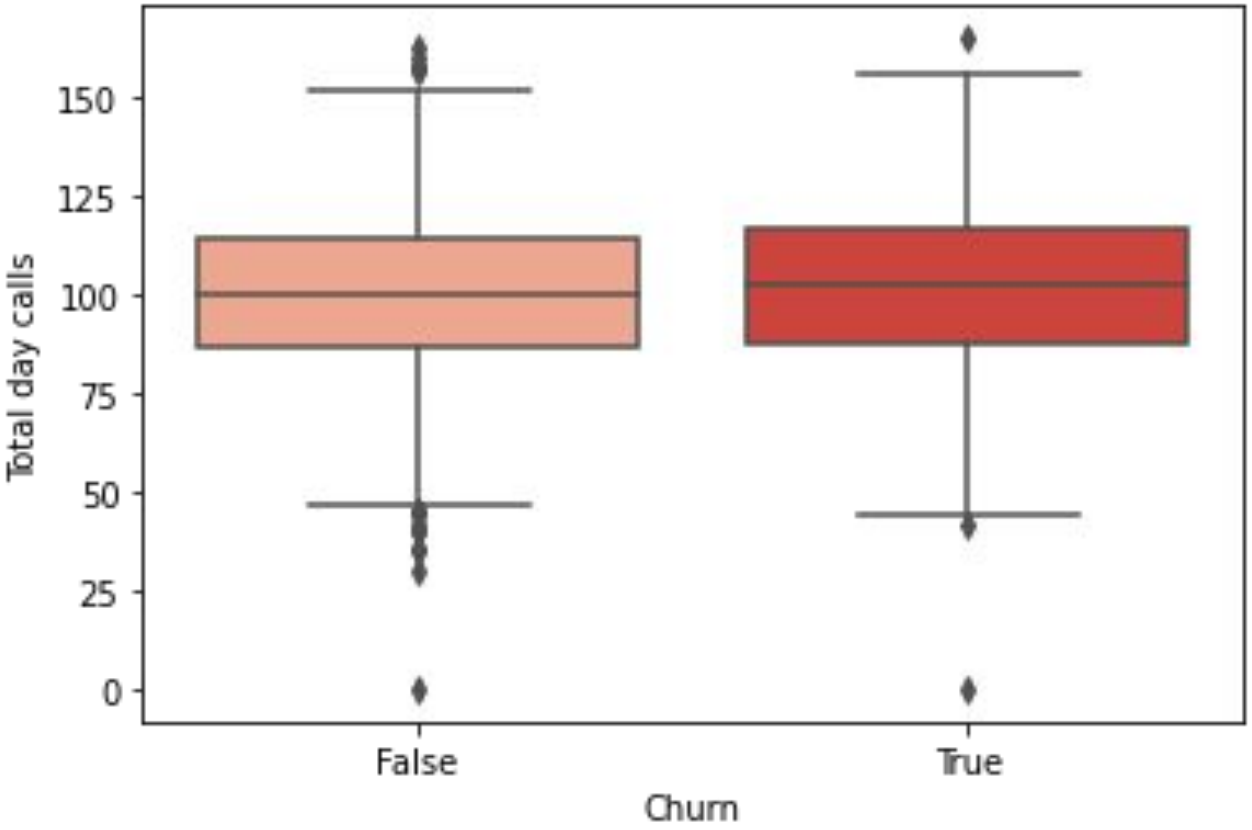
According to my hypothesis, following would be the factors that should be implemented:

1. Reduce network disturbance during a Call.

2. Need to Upgrade or make smarter use of technologies like VoLTE for improvement of Voice Quality during calls.

3. Network Upgradation.

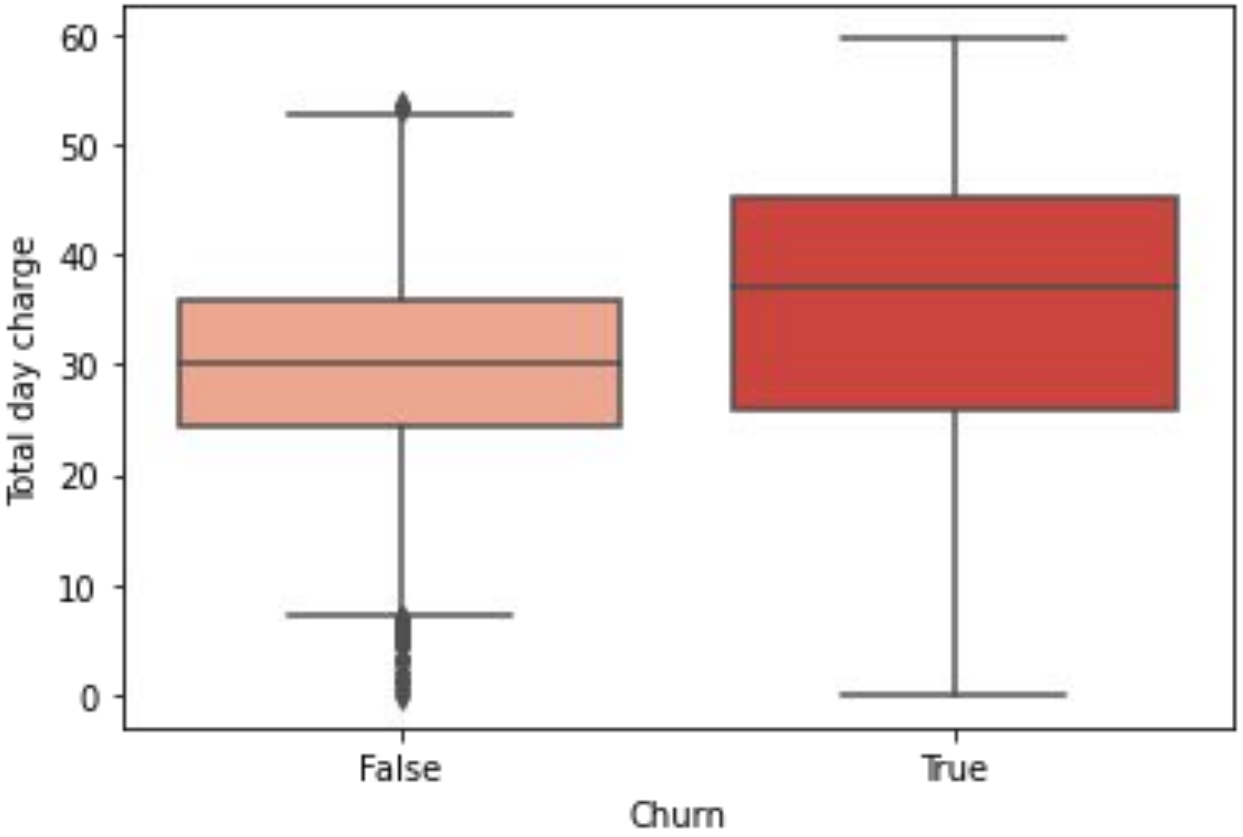
Relation between Churn rate and Total Day calls



From the plot we can observe that for the churned customer the median is slightly higher than 100 which indicates there maybe call drops which may lead to more calls in the day.

Hence upgrading the network to provide better call quality and help in reducing the churn rate

Relation between Churn and Total Day charge



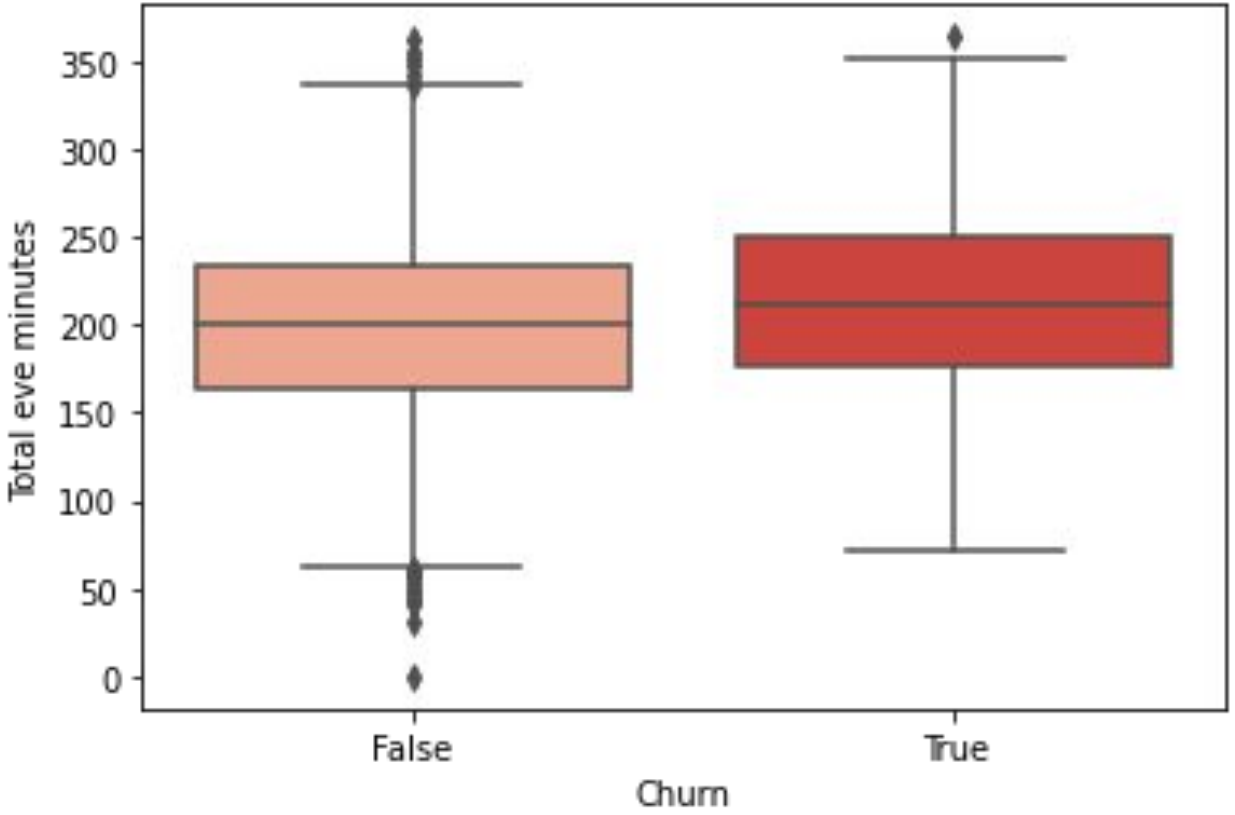
From the boxplot we can clearly indicate a good strategy needs to be implemented. We can say that Customers having more day minutes spent on the network tend to leave it's subscription

Following below recommendations can help:

1. Strategy of pricing needs to be re-evaluated.

2. We can give discounts for the customers who have high spending of day minutes.

Relation between Churn and Total evening minutes



From box-plot we can observe that users who are spending 210 minutes or more tend to switch to other operator.

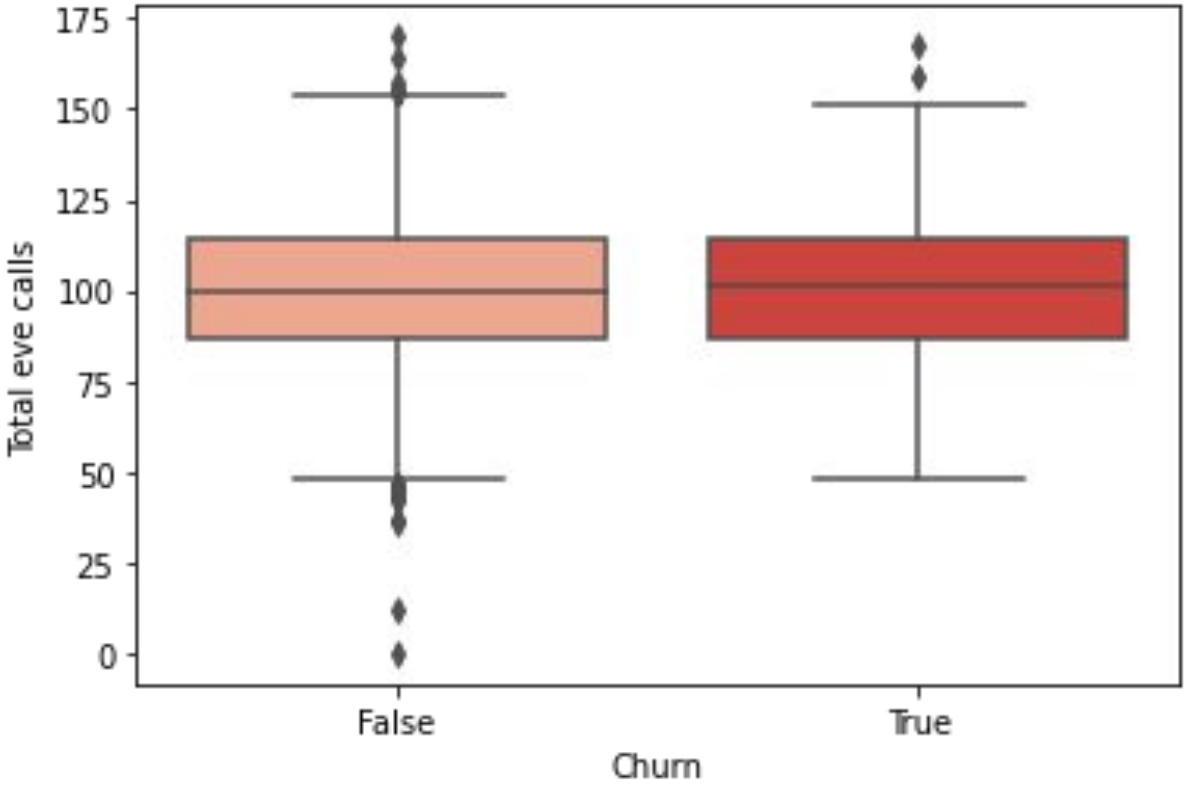
Following below recommendations can help::

1. Reduce network disturbance during a Call.

2. Need to Upgrade or make smarter use of technologies like VoLTE for improvement of Voice Quality during calls.

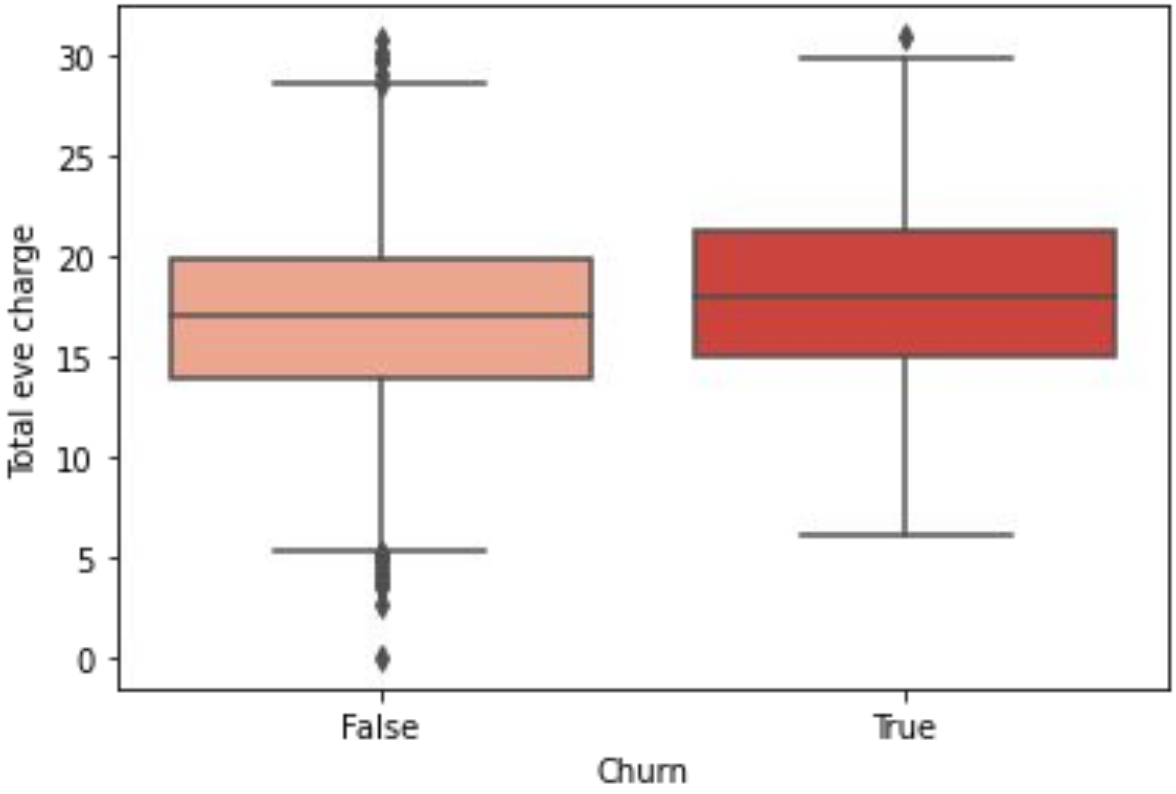
3. Network Upgradation.

Relation between Churn and Total evening calls



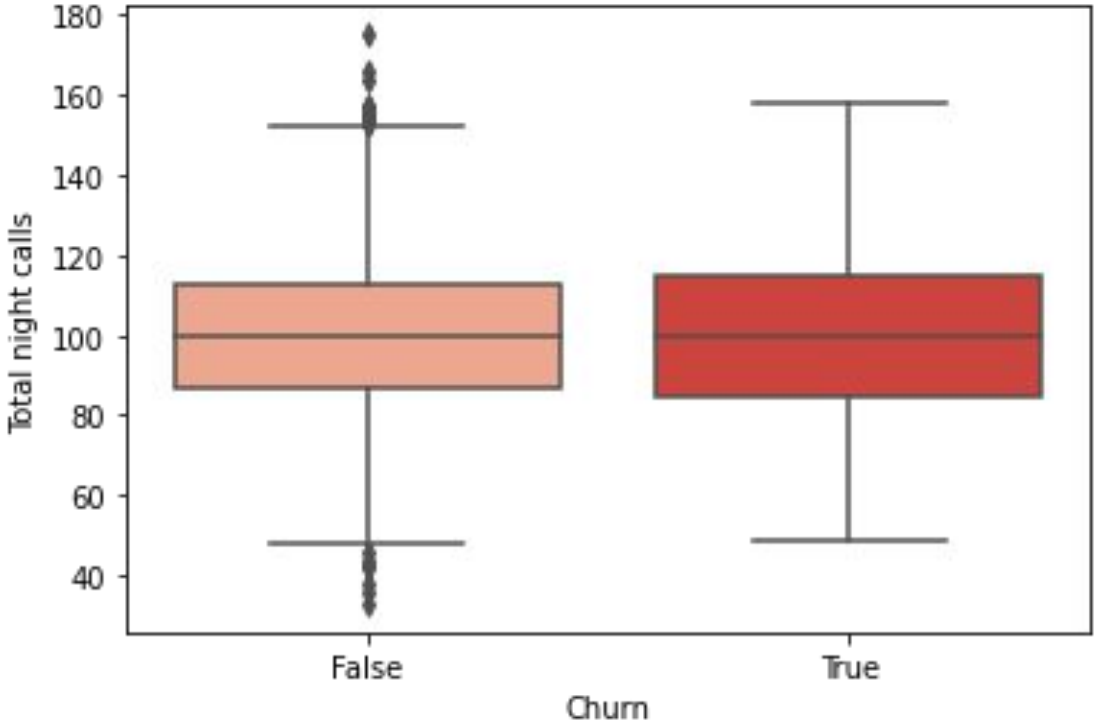
From box plot we can say that on an average a 100 evening calls and it is the same number for number of customers who have churned and not churned.

Relation between Churn and Total evening charge



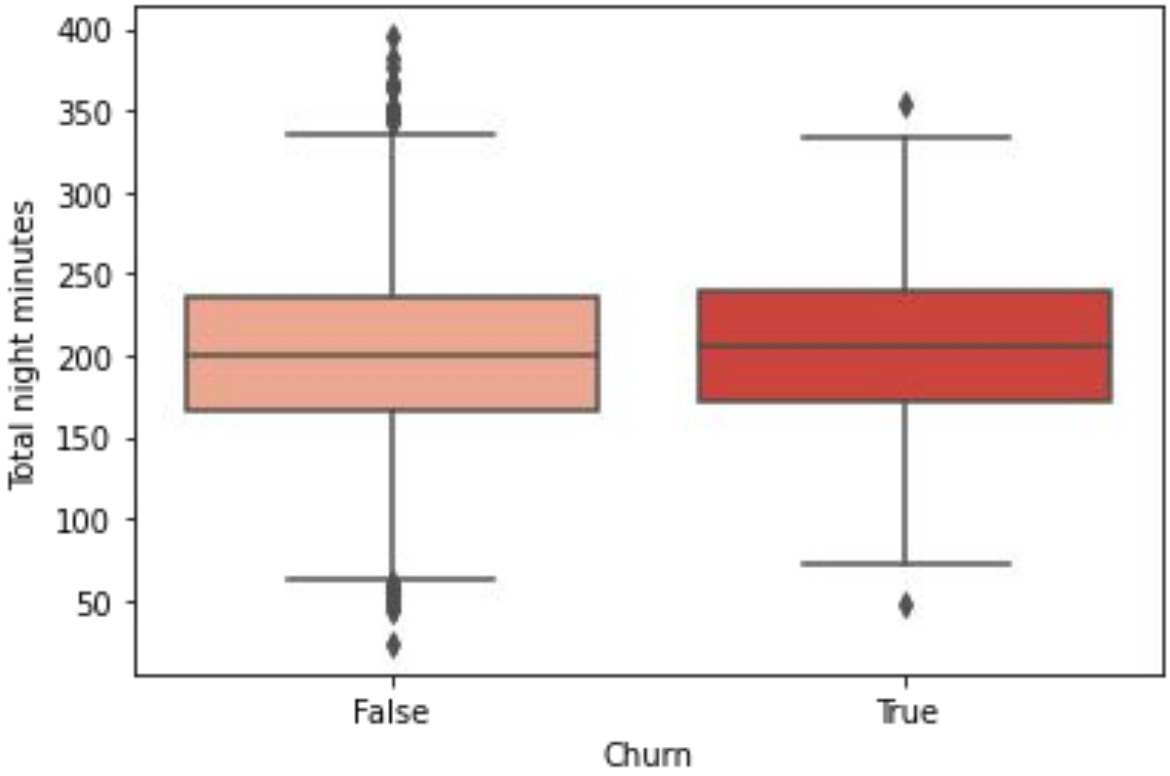
From observing above boxplot we can say that customers having to pay more than 20 for evening calls tend to churn and re-evaluating pricing and giving discounts can help in reducing the churn rate.

Relation between Churn and Total night calls



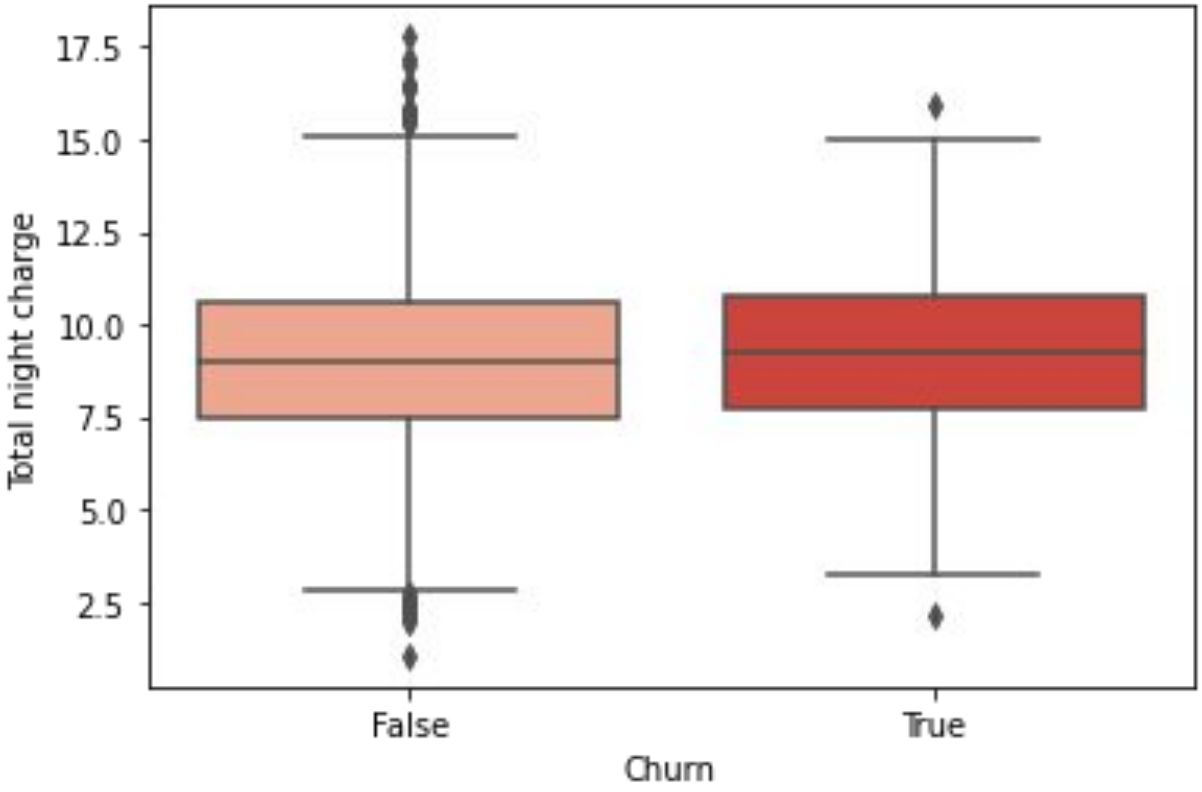
From the plot we can observe that for the churned customer the median is slightly higher, we can try reducing this by improving the call quality

Relation between Churn and Total night minutes



From the plot we can observe that for the churned customer the median is slightly higher, we can try reducing this by providing night call offers

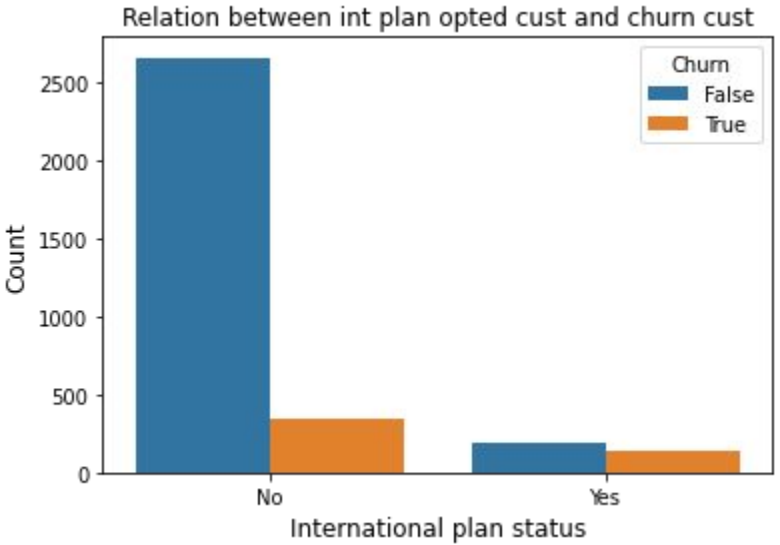
Relation between Churn and Total night charge



From the plot we can observe that for the churned customer the median is slightly higher, we can try reducing this by providing night call discounts

Relation between Churn and International Plan

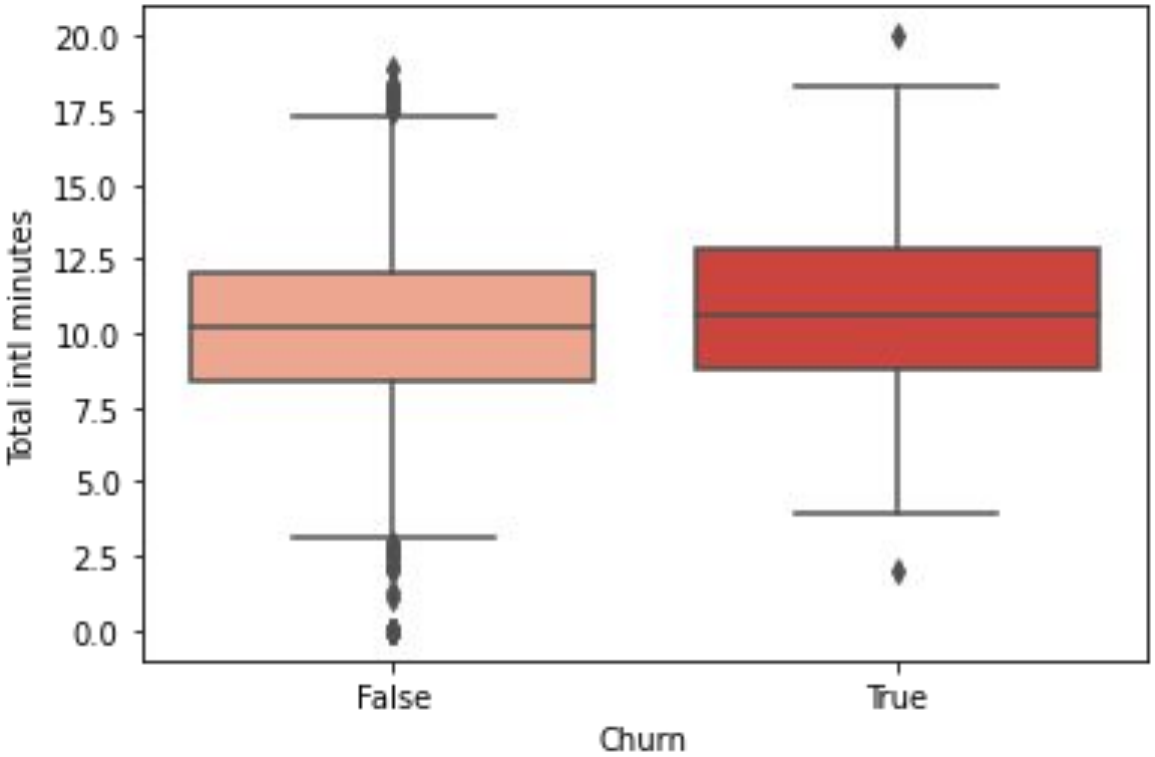
International Plan	Churn False	Churn True	Churn Percentage
No	2664	346	11.49
Yes	186	137	42.41



The ratio between churned user who opted for international plan is 42%. It means there is some problem with the pricing or voice call quality for International plan opted users.

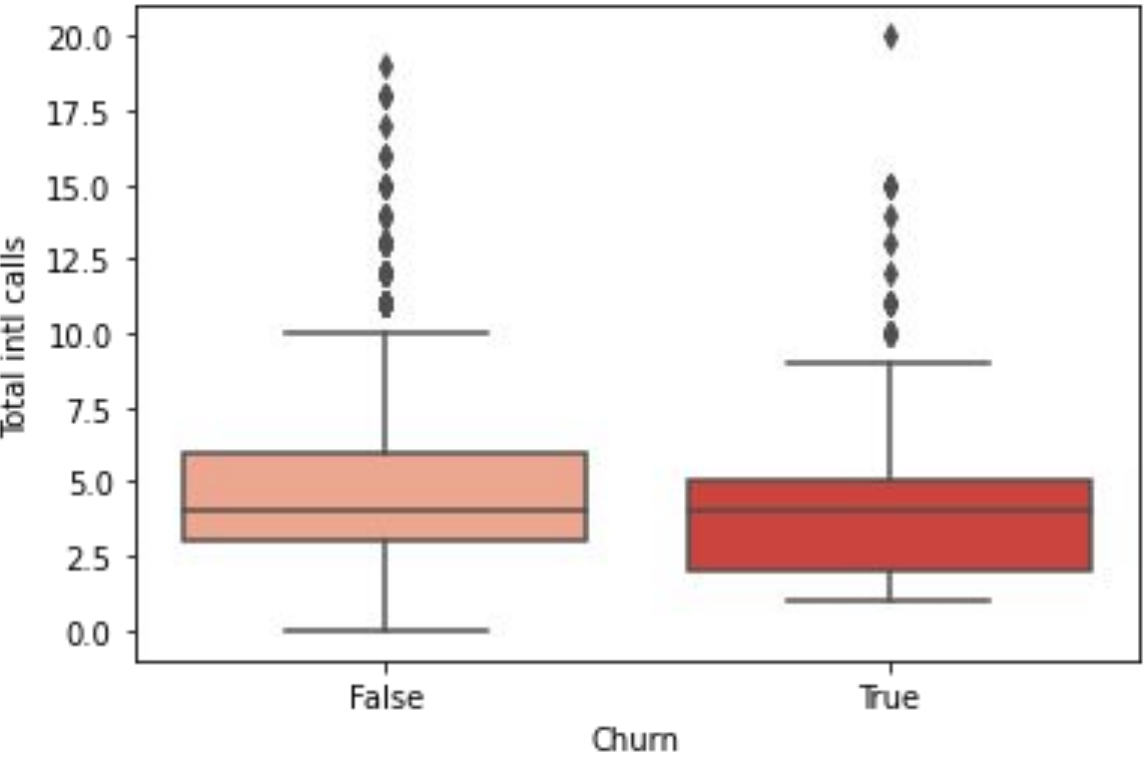
Providing better call quality, upgrading the network and discounted call rates can help with reducing the churn rate of international plan customers

Relation between Churn and International Minutes



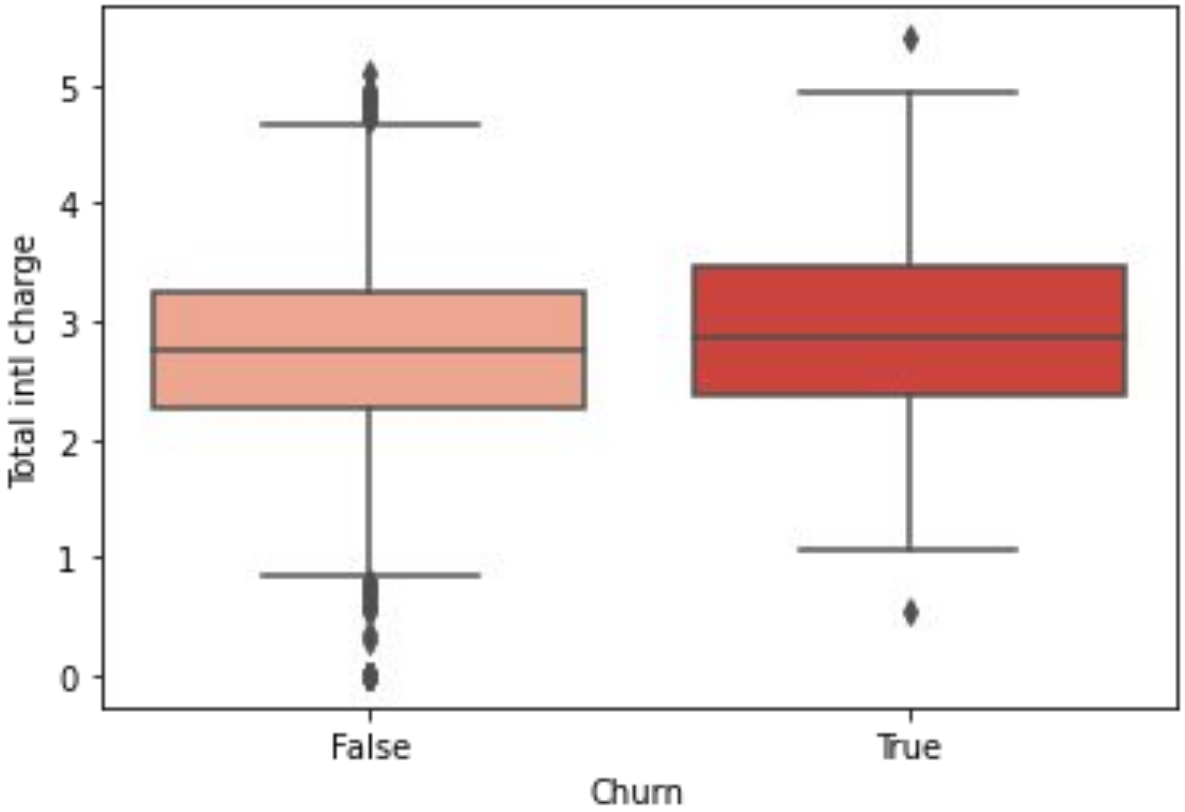
From the plot we can observe that customers with higher international minutes have more churn rate. Providing more offers for international calls can help in reducing churn rate

Relation between Churn and International Calls



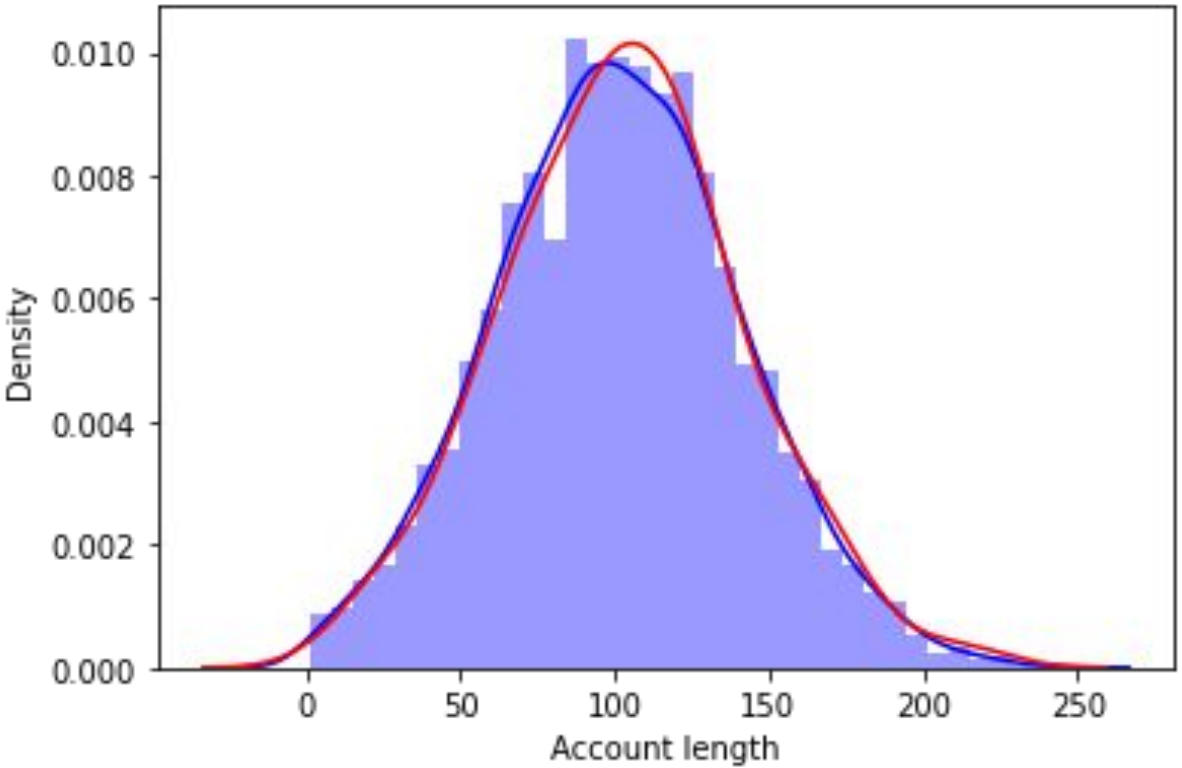
From the plot we can observe that customers with lesser international calls have lesser churn rate

Relation between Churn and International Charge



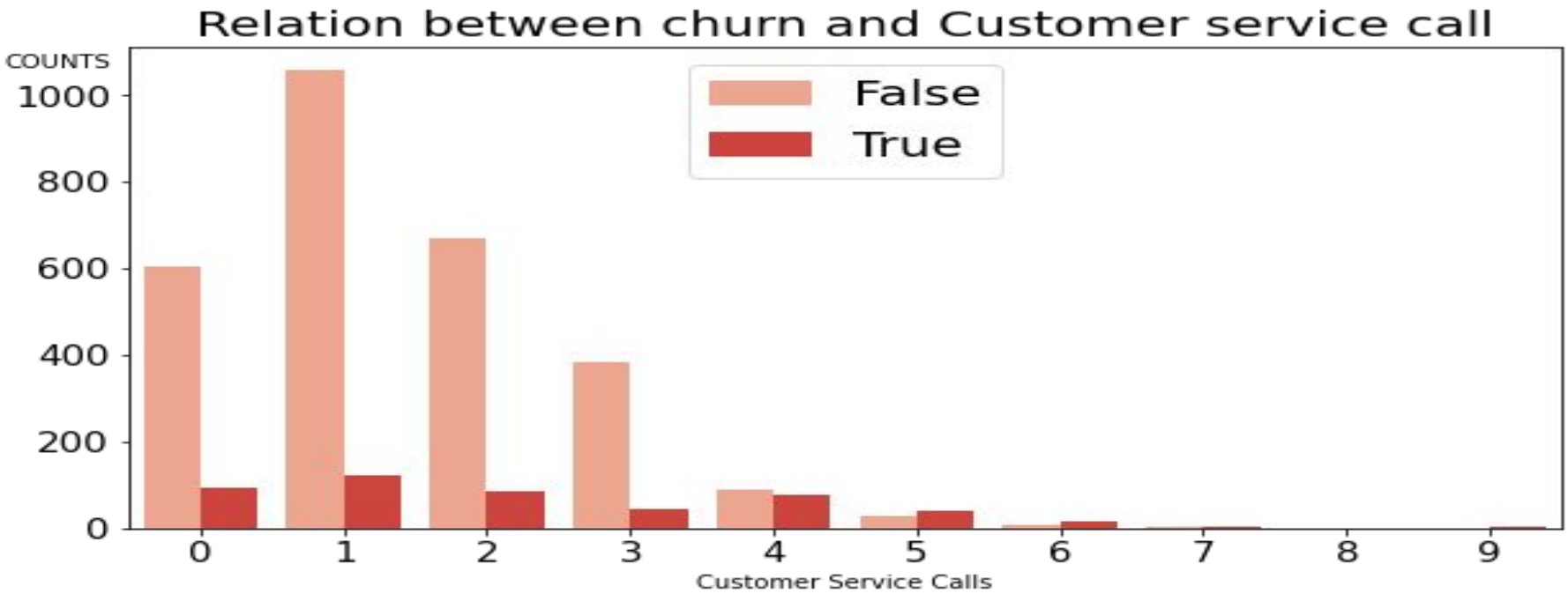
From the plot we can observe that customers with higher international charge have more churn rate, providing cheaper international charges can help with reducing churn rate

Relation between Churn and Account Length



We can see that churn rate keeps rising till account length is 125 and keeps reducing after, by this we understand that there are more chances of a customer to churn while his account length is less than 125. More offers and discounts must be provided to customers of account length less than 125 as an effort to retain them.

Relation between Churn and Customer Service Call



From the above plot we can say that customers who have made calls once or twice have one of the highest churn rate, indicating that the was not resolved, improving customer service and receiving feedback can help in reducing churn rate

Conclusion

In this project , we tried to analyze customer churn. First we did inspection of dataset on a basic level.We looked for missing values and check the outlier.

Then we used the matplotlib and seaborn to do Exploratory Data Analysis on sample data by plotting different graphs like count plot, pie chart, lmplot, barplot, boxplot,subplot and heat map from this we got useful insights like: customer having more daily charge will be more chances of churn, states like New Jersey,Texas and Maryland have higher churn rate, customer having international plan have more churn rate, customer having less customer service call have more churn rate, also churn rate is exponentially rising where account length is less than 125.

Suggestions to prevent churn

1. Upgrading network to improve services for long duration users.
2. Improving Pricing Strategies.
3. Optimizing and Updating International Call Rates.
4. Implementing a better network infrastructure in New Jersey,Texas and Maryland Areas where there is more Churn Rate.
6. Improvement in the customer service can be done to reduce the number of calls which cause the churn
7. Decreasing the prices as the talk-time increases can be an effective way to reduce the churn.

Thank you.