

# Capstone Project

AI

Topic - Telecom Churn Analysis

Team Members –

Annayan Bose

Prabhat Patel

## Objective

Examine and analyze data to identify key features that are responsible for customer negotiations and come up with recommendations to ensure customer retention.

# Dataset Information



We have a telecom churn dataset from Orange Telecom. It comprises of cleaned customer activity data (features) and a churn label indicating whether a customer terminated their subscription or not.

## Dataset description -

- a) .csv file containing 3333 non null entries.
- b) 20 features
- c) attributes related to state, charges, calls and services.
- d) Churn a boolean(True/False) variable showing customer churned or not.

# Column Overview

**State:** the state in which the customer resides, indicated by a two-letter abbreviation

**Account Length:** the number of days that this account has been active

**Area Code:** the three-digit area code of the corresponding customer's phone number

**Int'l Plan:** whether the customer has an international calling plan: yes/no

**VMail Plan:** whether the customer has a voice mail feature: yes/no

**VMail Message:** presumably the average number of voice mail messages per month

**Day Mins:** the total number of calling minutes used during the day

**Day Calls:** the total number of calls placed during the day

**Day Charge:** the billed cost of daytime calls

**Eve Mins:** the total number of calling minutes used during the evening

**Eve Calls:** the total number of calls placed during the evening

**Eve Charge:** the billed cost of evening time calls

**Night Mins:** the total number of calling minutes used during the night

**Night Calls:** the total number of calls placed during the night

**Night Charge:** the billed cost of nighttime calls

**Intl Mins:** the total number of international minutes

**Intl Calls:** the total number of international calls

**Intl Charge:** the billed cost for international calls

**CustServ Calls:** the number of calls placed to Customer Service

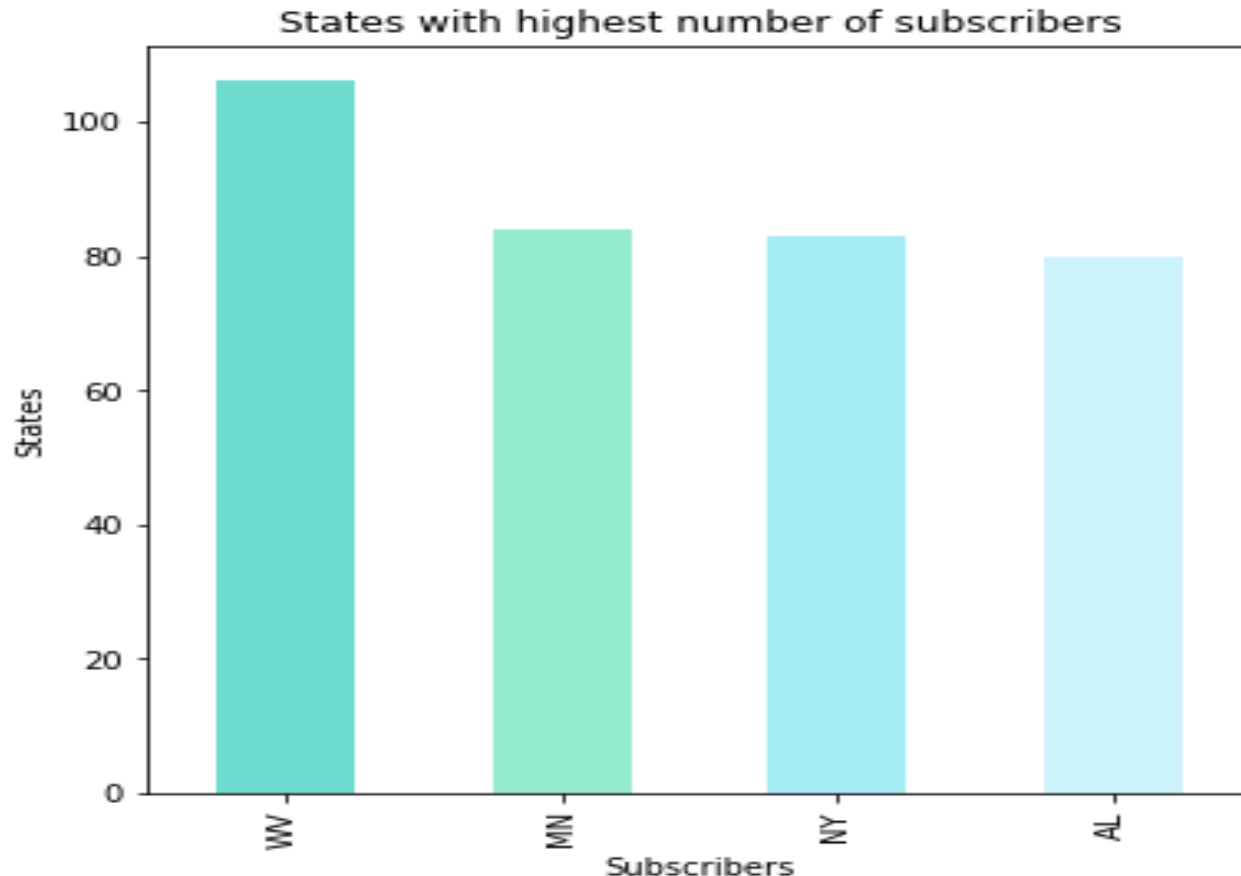
**Churn?:** whether the customer left the service: true/false

## Preliminary Analysis

- a) Orange telecom provides services in 51 unique states in United states of America.
- b) West Virginia with maximum and California with minimum number of observations.
- c) International plan (having 323 customers) and Voicemail plan (having 922 customers) are add-on services and we have a total of 3333 customers.

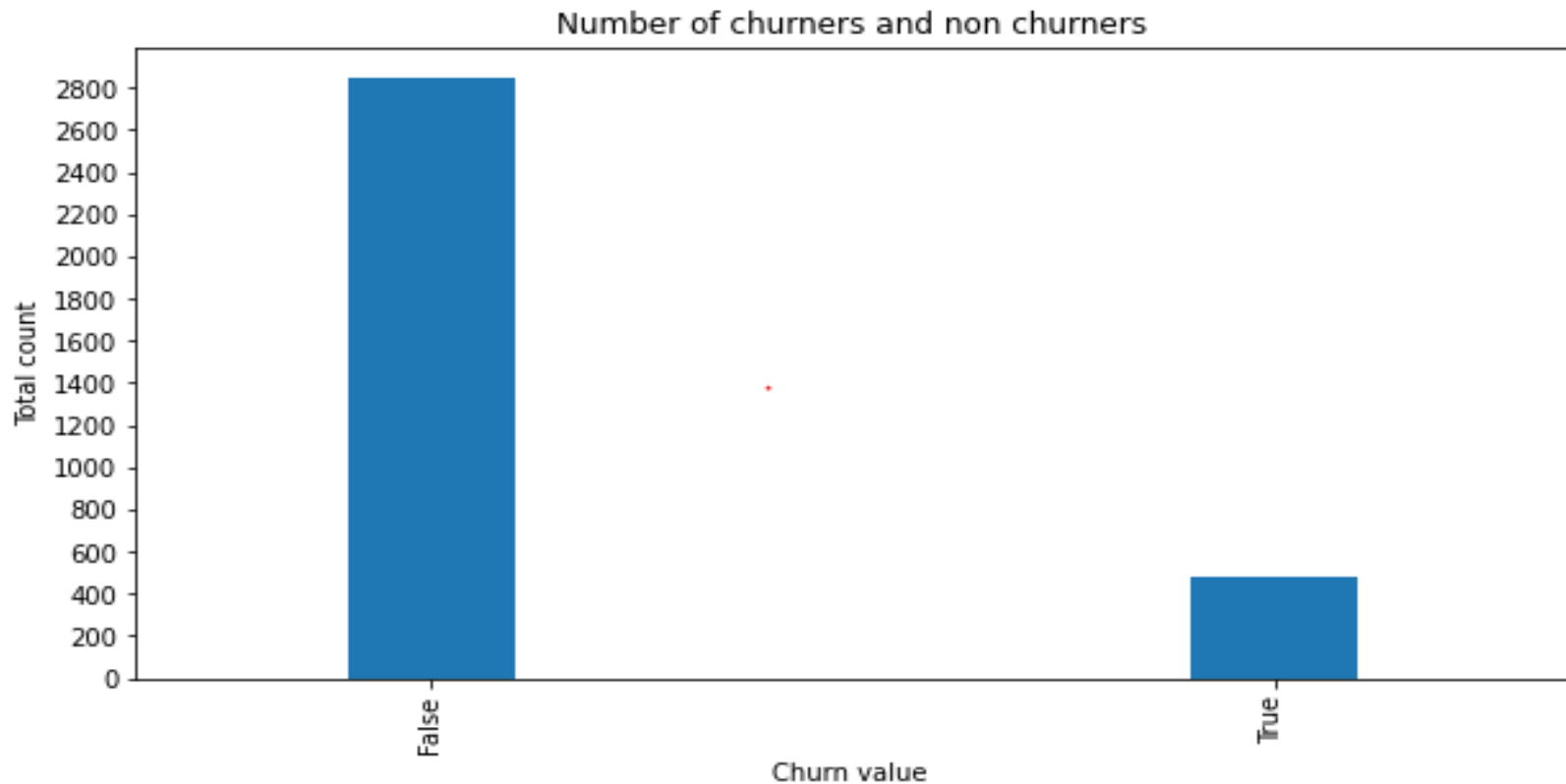
# States with highest number of subscribers

These 4 states have highest number of customers.  
West Virginia has highest number of subscribers.

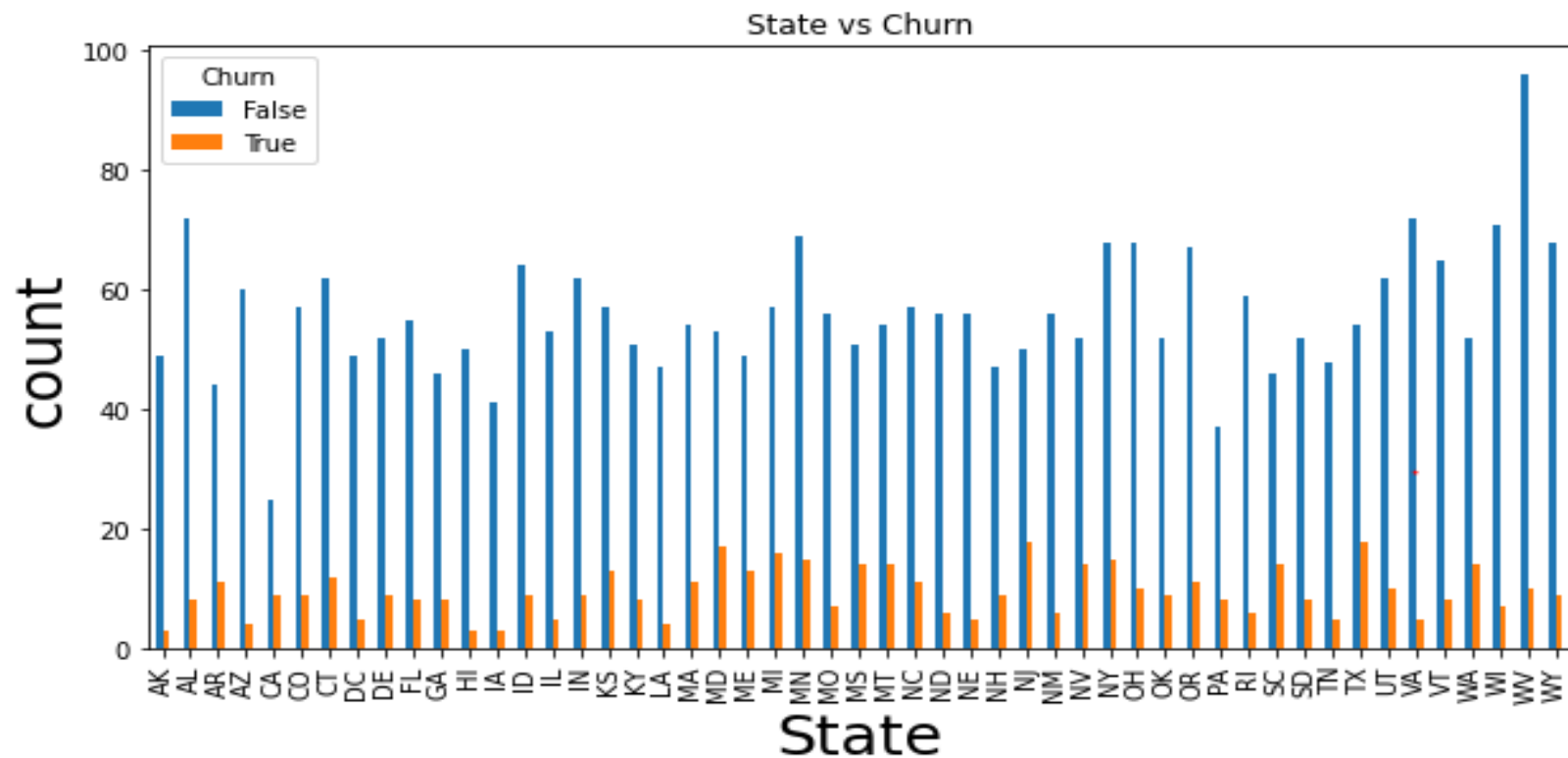


# Exploratory Data Analysis

Analyzing customer attrition - 483 out of 3333 customers churned (14.49% loss)



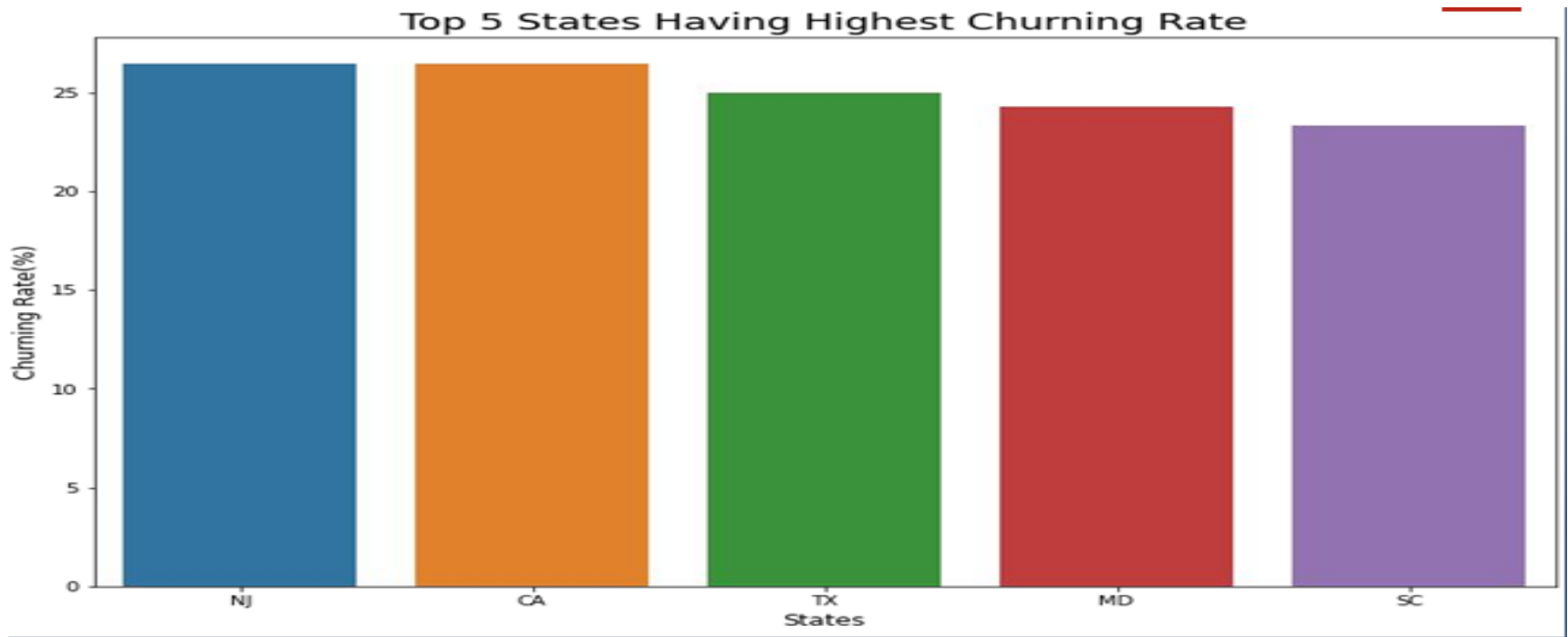
## Churn According to States





## Top 5 States having highest churning rate

New Jersey, California, Texas, Maryland and South Carolina are the states where churning rates are high.

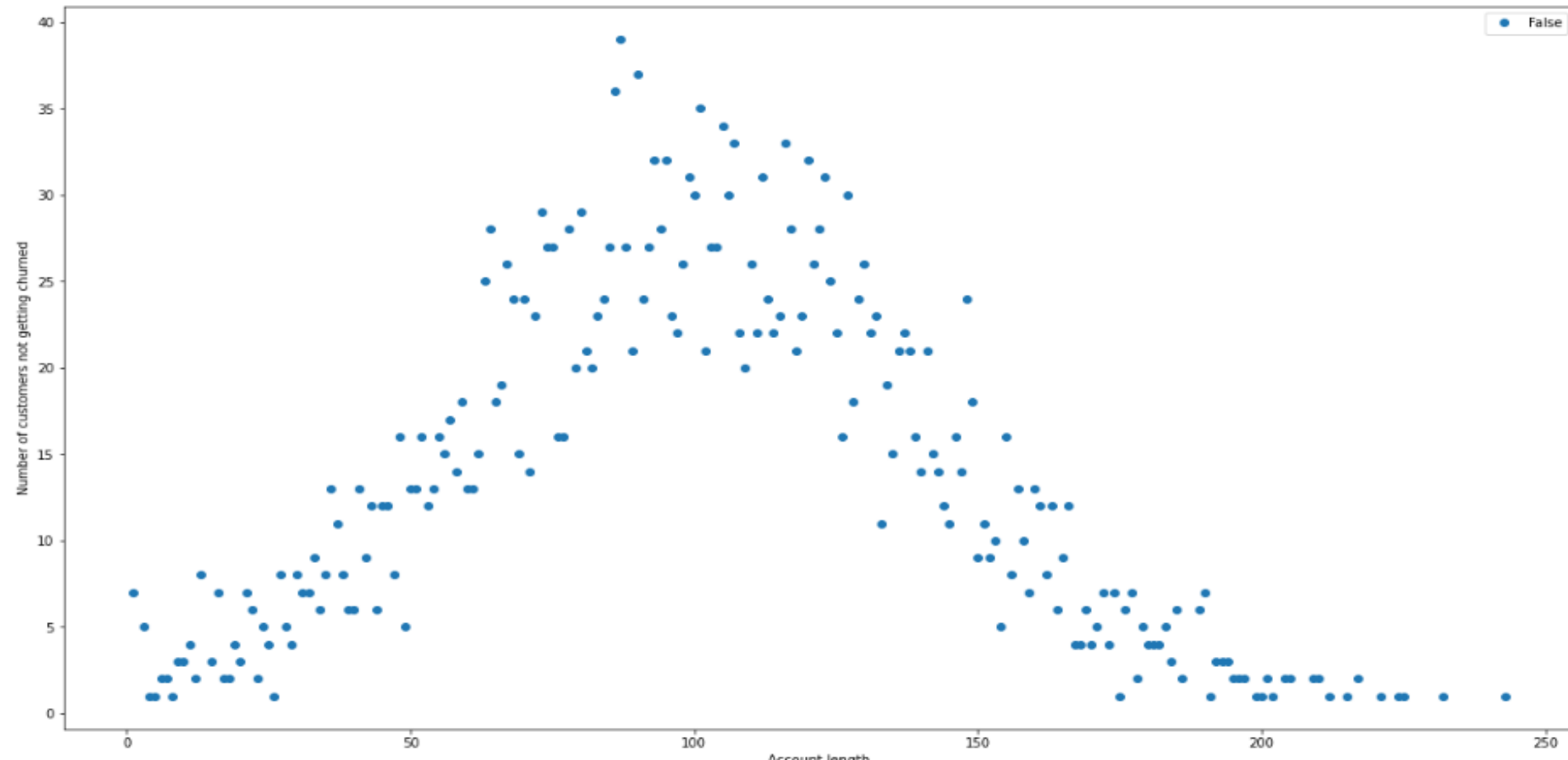


These places have bit more churn rate than usual, A network and price strategy upgradation would be strongly suggested in these areas!.

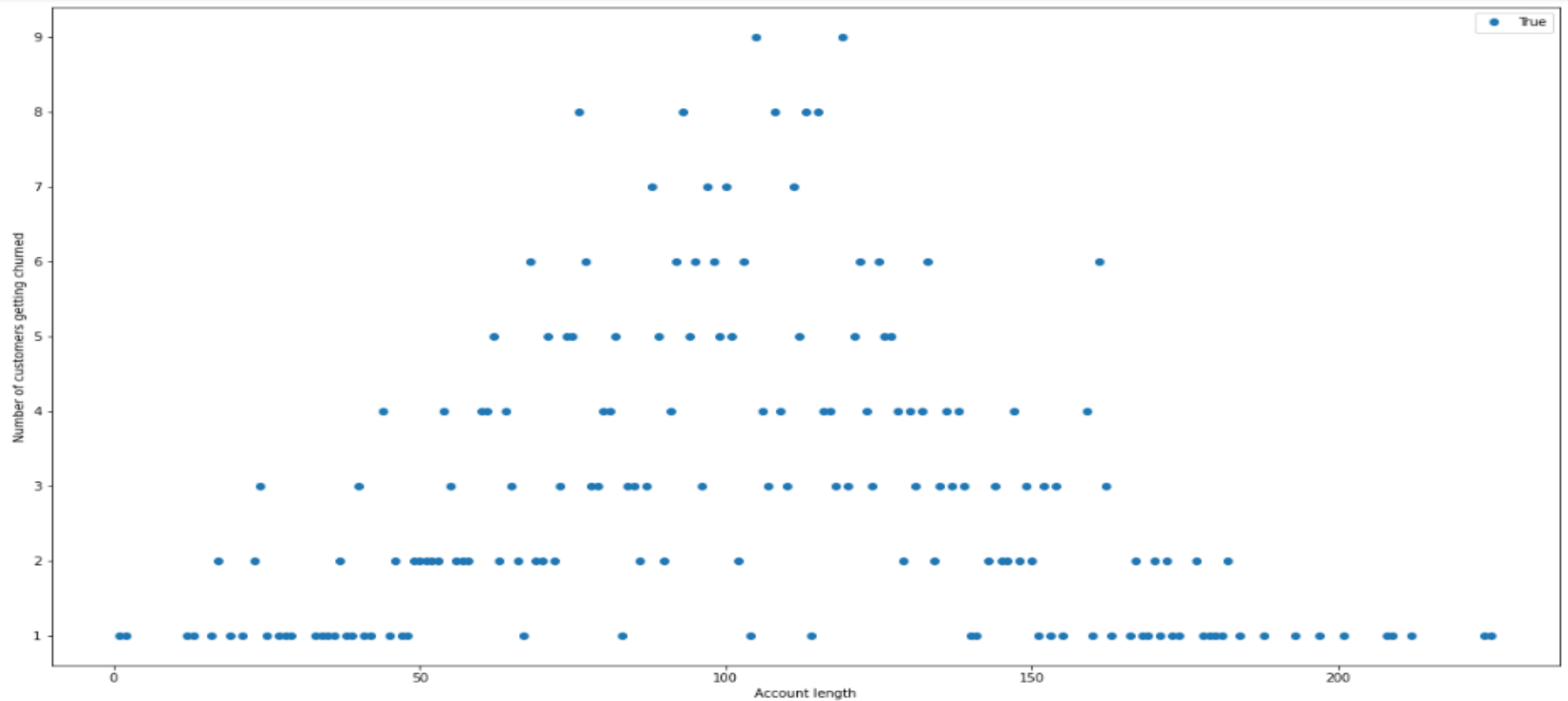
# Account length analysis

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As we can see from the below plot (Account length vs. Number of people not getting churned) that number of people not getting churned increases till account length reaches the range of 90-120 days and then it starts declining.



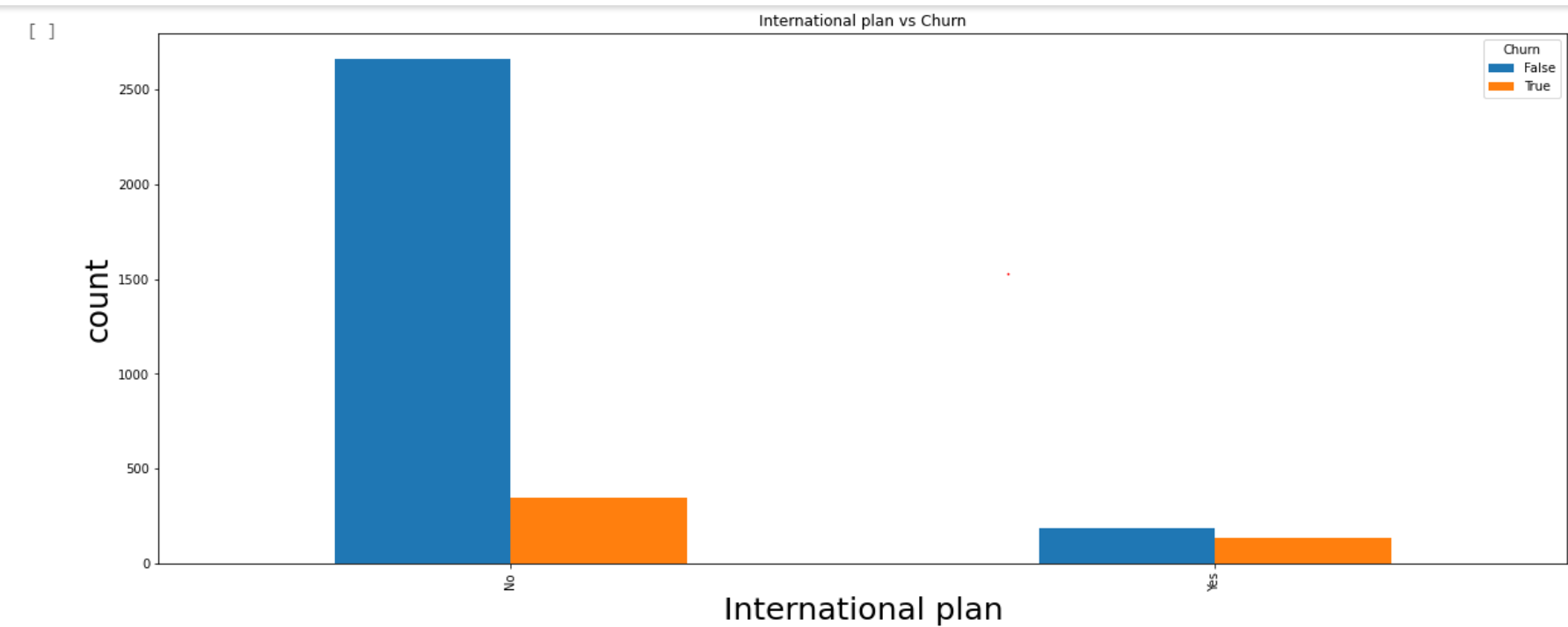
Below plot ( Account length vs Number of people getting churned) tells us that number of people getting churned is highest when account length reaches the range of 90 - 120 days. But the rate of people getting churned is less than the rate at which people are not getting churned in this range.



There is a lot of volatility when account length is between 90 and 120 days. We can provide some attractive offers/discounts to the customers when they complete the milestone of 90 days. This will help in retaining more customers and hence reducing the churning rate.

# Churning and International services analysis

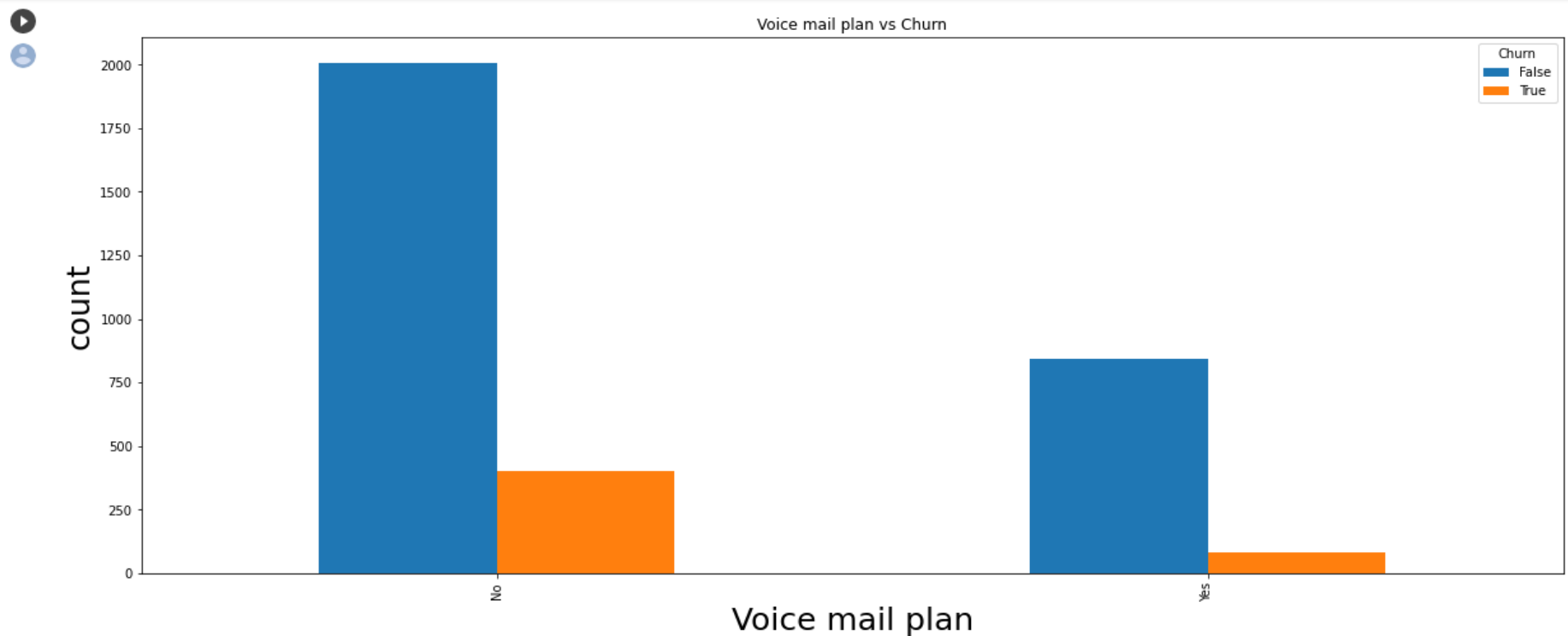
323 customers opted for International plan but 137 churned i.e. 42.4% loss.



Different Pricing Strategy would lead to lower churn rate.

## Churning and Voicemail service analysis

922 (28%) customers are using Voicemail services and 80 of them are churning. For this service domain we have 8.6% ~9% loss.

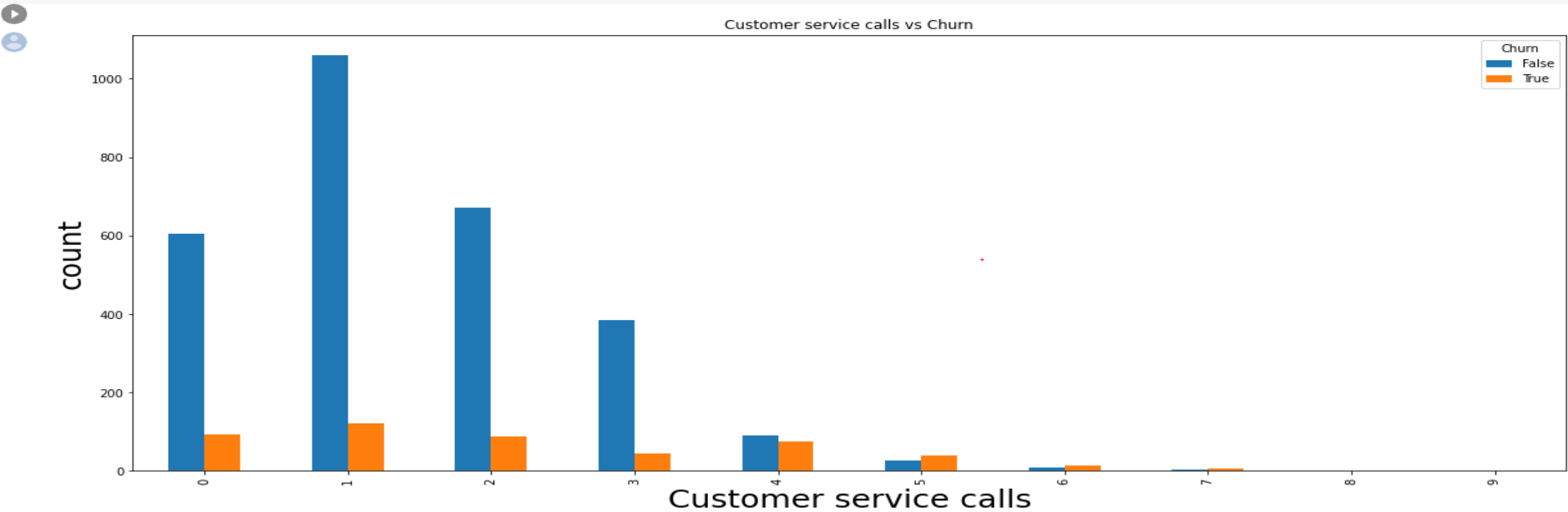


Voice-Mail Service surely needs Upgradation.

# Churning and customer service calls analysis

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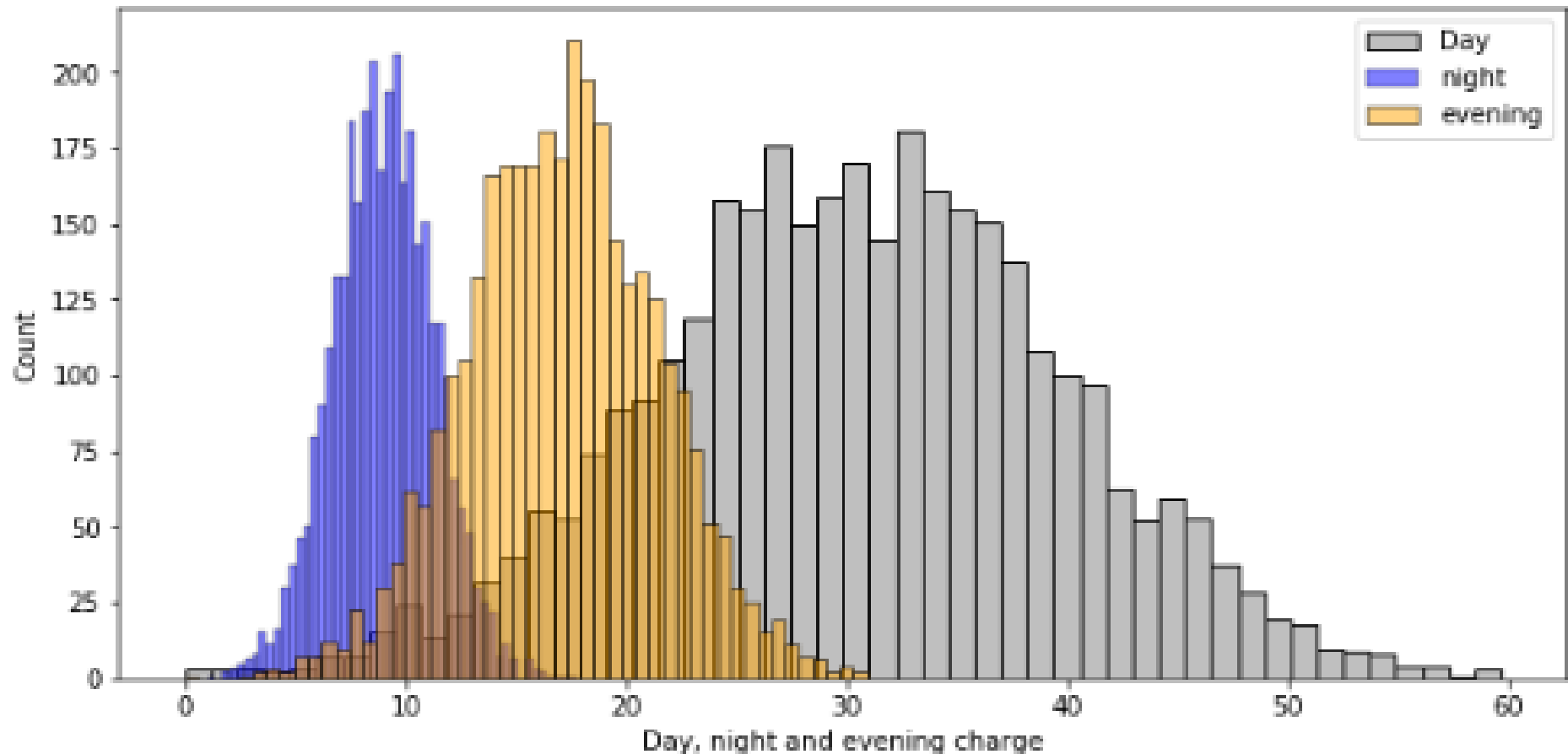
Customers calling in customer care services more than thrice are more likely to churn.



While some consumers are lazy and have switched to another network operator without resolving their issue, customers who have just contacted once have a high churn rate, indicating that their issue was not resolved on the first attempt. In such circumstances, feedback is required. It should provide the customer assurance that their problem will be resolved in the first attempt.

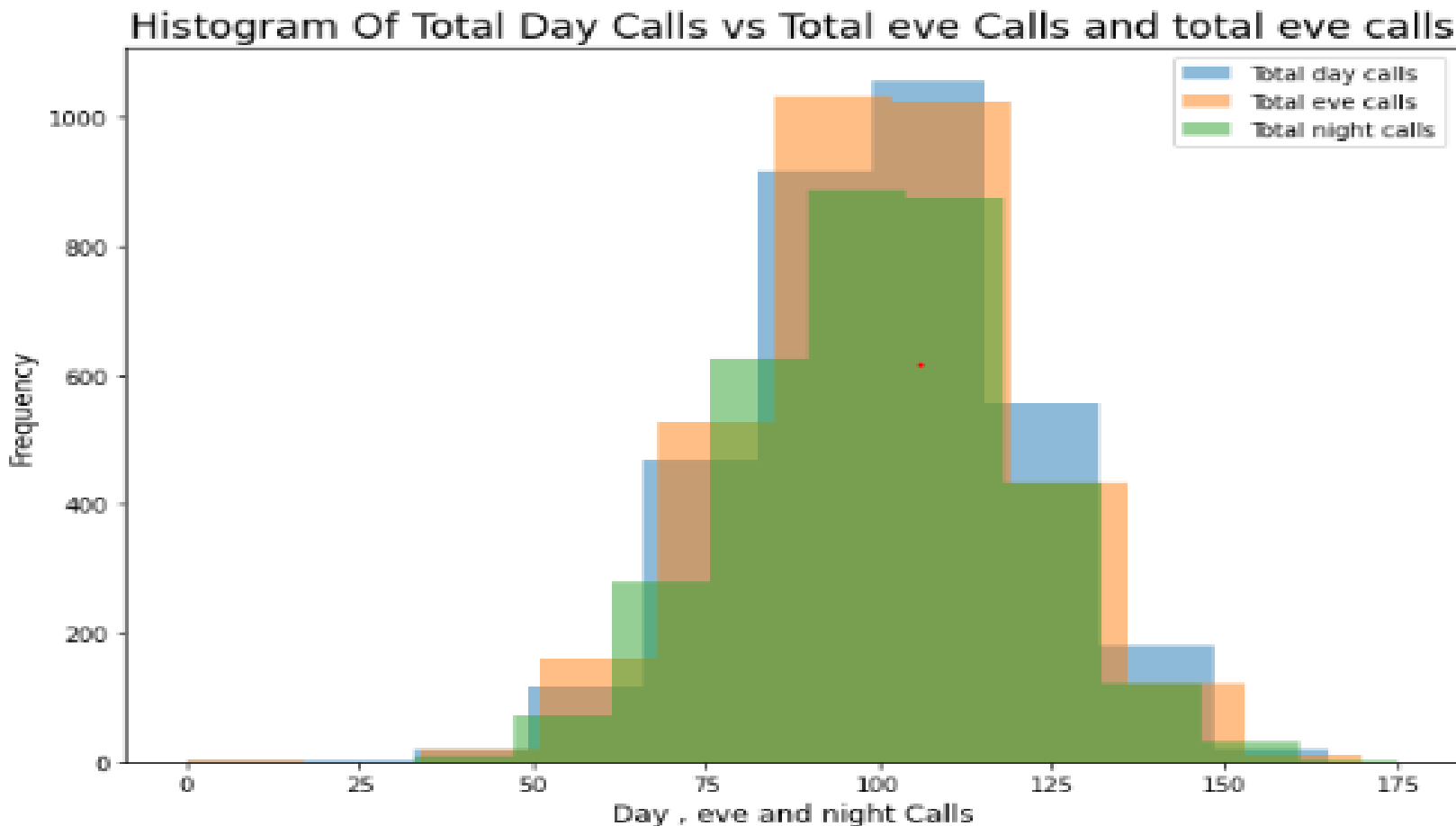
## Comparison of day, evening and night charges

Most of the revenue comes from the daytime charges but this spectrum of customers churns frequently.



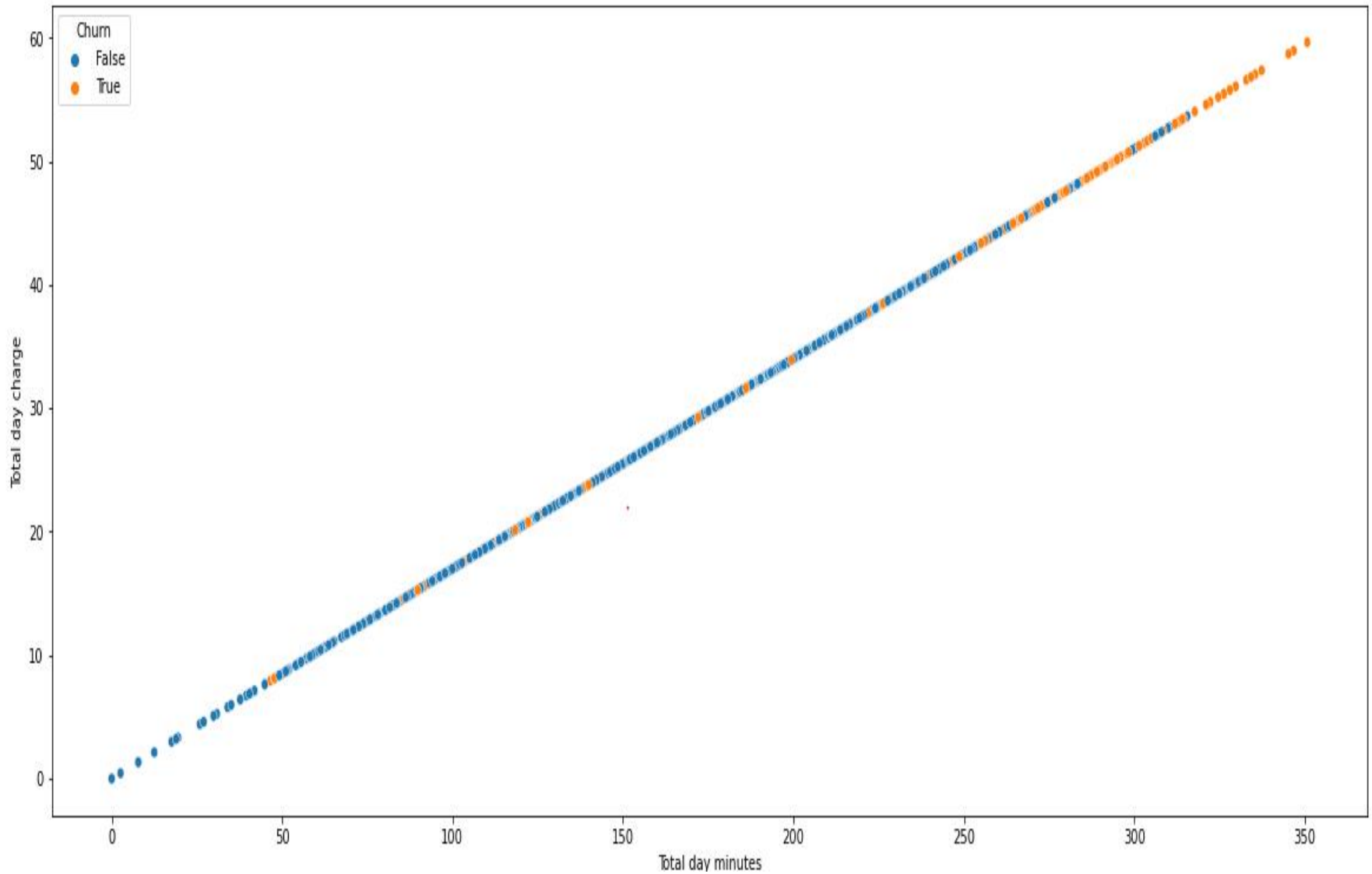
## Comparison of day, evening and night calls

As we can see that in the below graph that approximately same number of calls are made in day, night and evening.





## Total day calling charge effects the churn rate

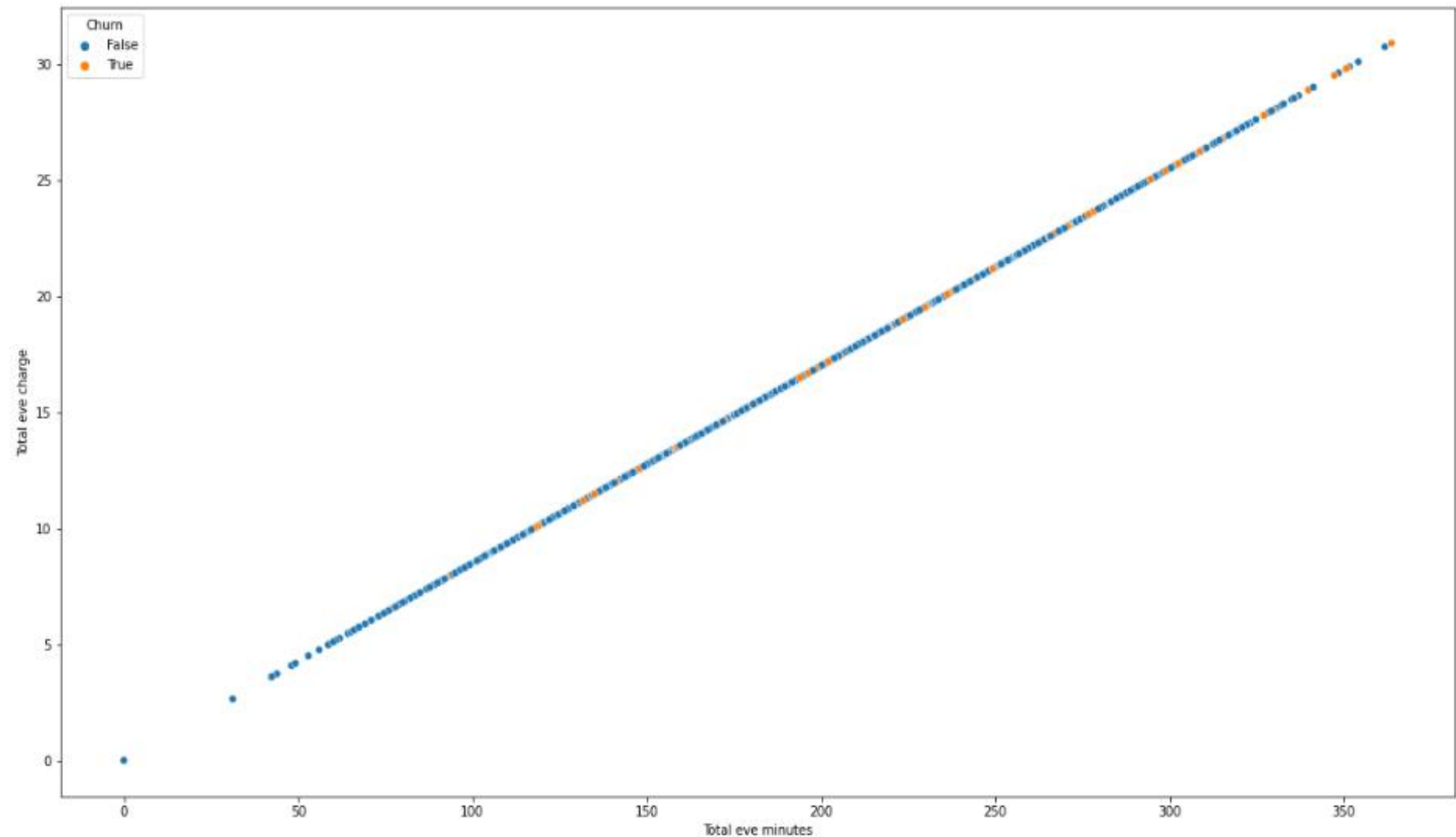


It is clearly evident from the above scatter plot that churning rate increases as total day minute and day charge increases. Most of the customers who have total day calling minutes more than 250 minutes and total day charge more than \$40 are churned.

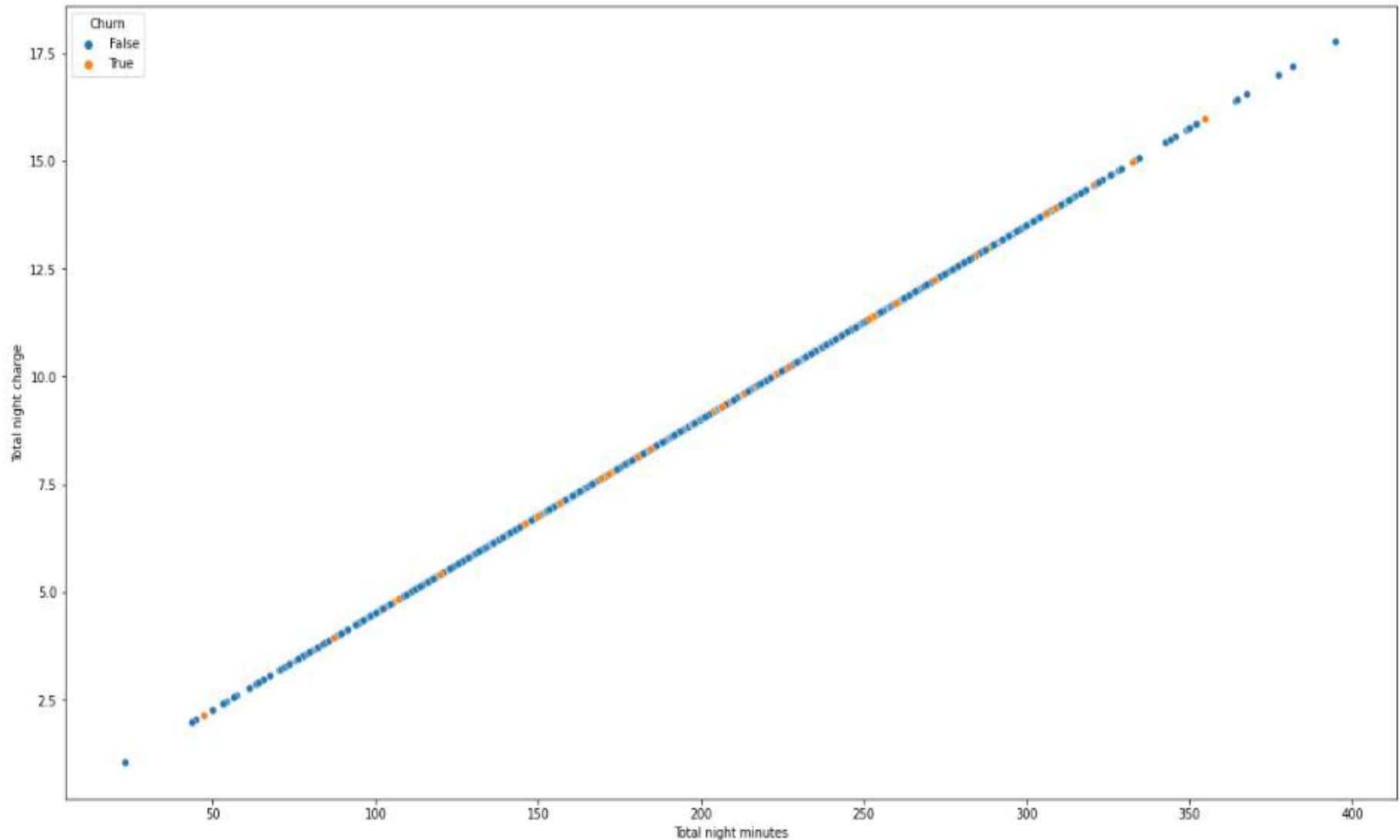
It clearly indicates that there is defect in the pricing strategy of the company.

1. Strategy of pricing needs to be re-evaluated.
2. The Clients who have high call minutes and calls need a discount in the end.

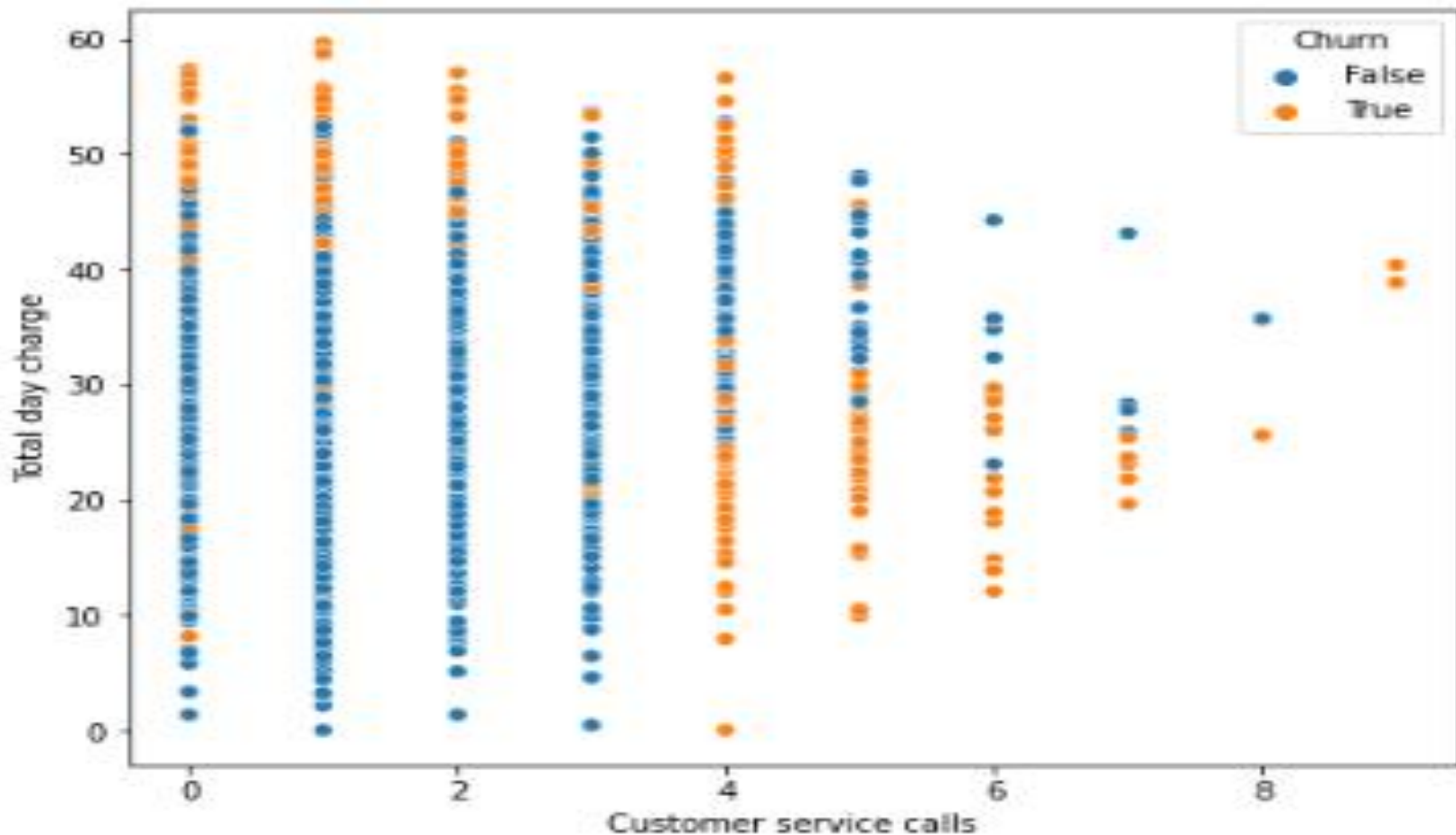
# Scatterplot for evening charge and evening calling minutes



# Scatterplot for night charges and night calling minutes

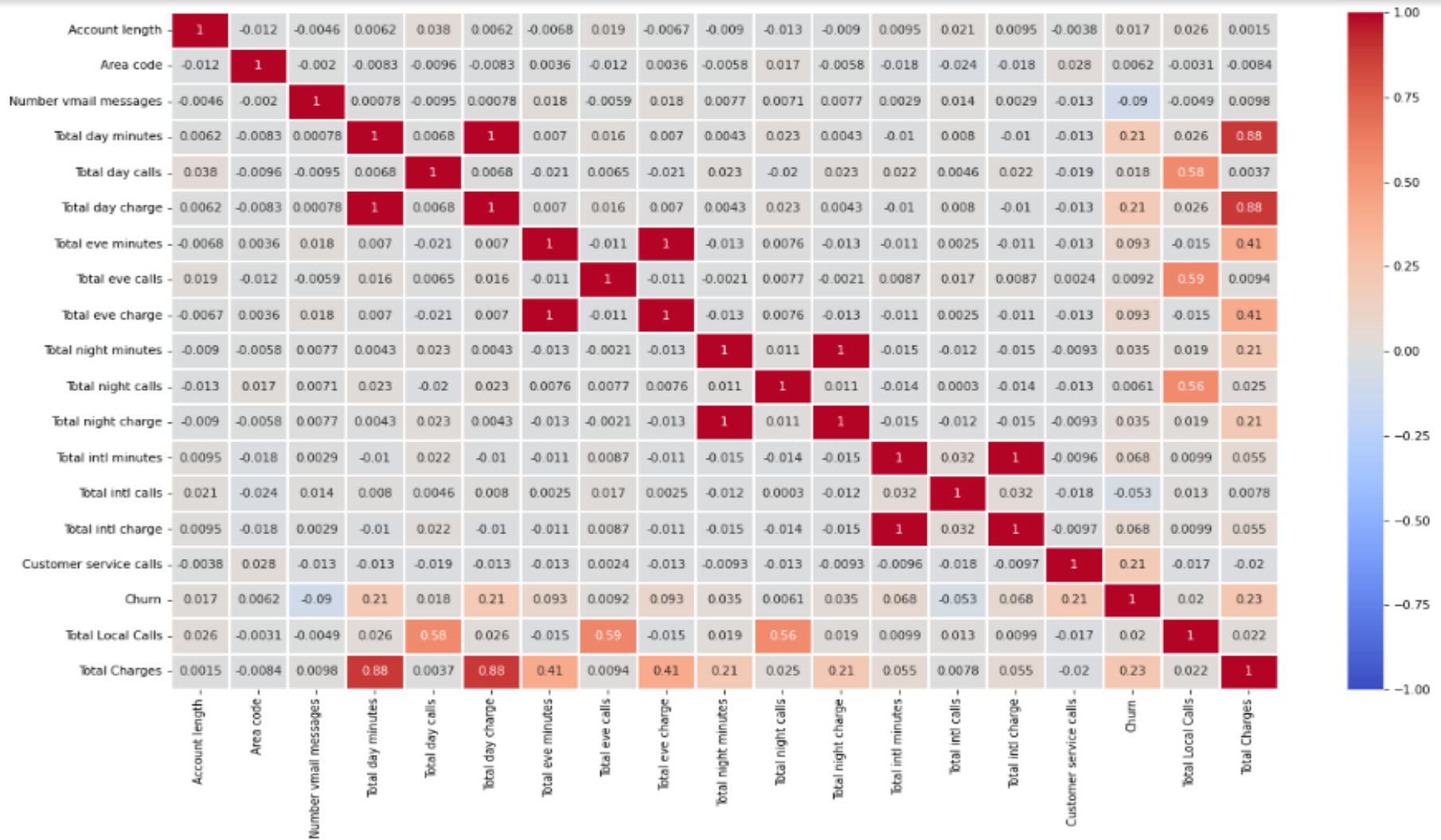


From the below plot we can clearly see that when the customer service calls are less than 3 then the total day charge has the predominant effect on churning and as the customer service calls increase and go beyond 4 it replaces total day charge and has the predominant effect on churning.



# How everything in dataset is correlated?

Charges & customer service calls are clearly leading to churn with same magnitude.



## **Recommendations:-**



- 1) To reduce churning, Orange telecom needs greater infrastructure in terms of marketing, technology, and services in the top 5 states with the highest churning rate and the fewest consumers, particularly in California and New York.
- 2) Provide attractive offers and discounts to customers when they complete the milestone of 90 days. This will help in retaining more customers and hence reducing the churning rate. If scheme feedback is good we can continue giving offers for multiple of 90 days as well for retaining subscribers for long period of time.
- 3) Need to resolve the issue faced by any customer at first attempt i.e. during the first customer service call. Customer feedback is necessary in such circumstances and they should be given an assurance that their issue will be resolved.
- 4) Customers opting for international plan tends to churn more. Different pricing strategy with better services will help retaining the customers.
- 5) Customers with total day calling charge more than 40 are more likely to get churned. Providing discounts when day calling bill goes beyond \$40 will help retaining customers.

**Thank You**