

Capstone Project - 1

Telecom Churn Analysis

Team Members

Arunav Goswami

Ashraf Ali Korbu

Mohammed Saad Pasha

Nayanjyoti Sharma

Pratik Vishwakarma

Introduction

- **Churn** : It is a problem for Telecom companies as it is more expensive to acquire new customers than to keep the existing ones from leaving.
- **Company** : Orange S.A., formerly France Telecom S.A., is a French Multinational telecommunications corporation.
- It has 266 million customers worldwide and is the 11th largest mobile network operator in the world.
- **Data set** : The data set given is for the country **USA**, consisting of all 51 states. And the data set is of **.csv** format.

Project Objectives

- To discover key factors responsible for customer churn.
- Perform EDA (Exploratory Data analysis) on different Variables present in the data set.
- To come up with ways or recommendation to ensure customer retention.

Data set description



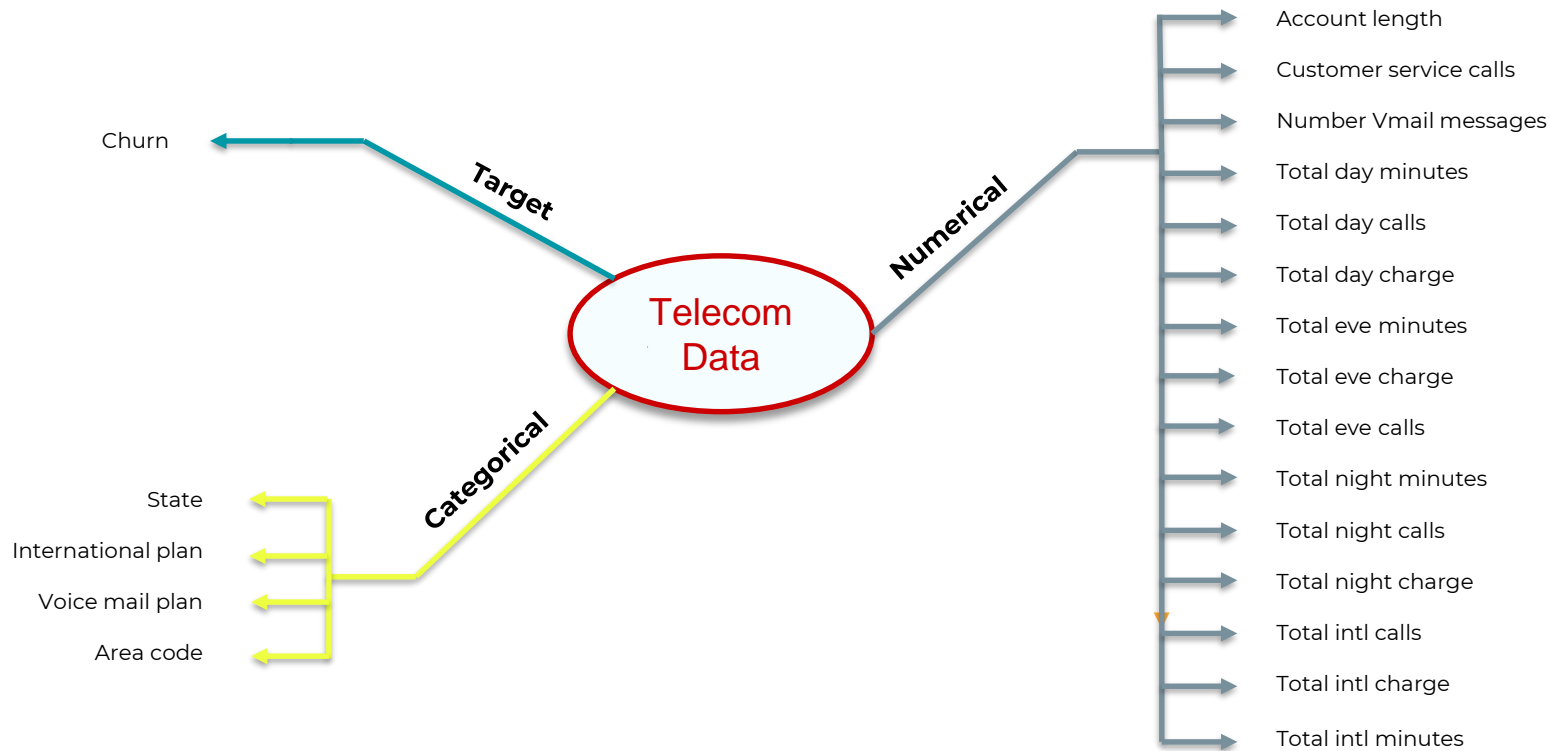
```
df.info()
```



```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3333 entries, 0 to 3332
Data columns (total 20 columns):
 #   Column                                Non-Null Count  Dtype
---  -
 0   State                                3333 non-null   object
 1   Account length                       3333 non-null   int64
 2   Area code                            3333 non-null   int64
 3   International plan                   3333 non-null   object
 4   Voice mail plan                      3333 non-null   object
 5   Number vmail messages                3333 non-null   int64
 6   Total day minutes                    3333 non-null   float64
 7   Total day calls                      3333 non-null   int64
 8   Total day charge                     3333 non-null   float64
 9   Total eve minutes                    3333 non-null   float64
10  Total eve calls                      3333 non-null   int64
11  Total eve charge                     3333 non-null   float64
12  Total night minutes                  3333 non-null   float64
13  Total night calls                    3333 non-null   int64
14  Total night charge                   3333 non-null   float64
15  Total intl minutes                   3333 non-null   float64
16  Total intl calls                     3333 non-null   int64
17  Total intl charge                    3333 non-null   float64
18  Customer service calls               3333 non-null   int64
19  Churn                                3333 non-null   bool
dtypes: bool(1), float64(8), int64(8), object(3)
memory usage: 498.1+ KB
```

- There are a total of **3333** numbers of Rows present in the data set.
- The total number of columns present is **20**.
- There are **no missing values**.

Data Summary

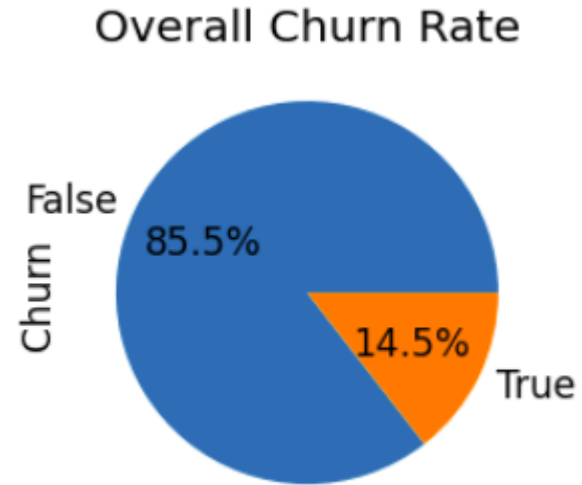
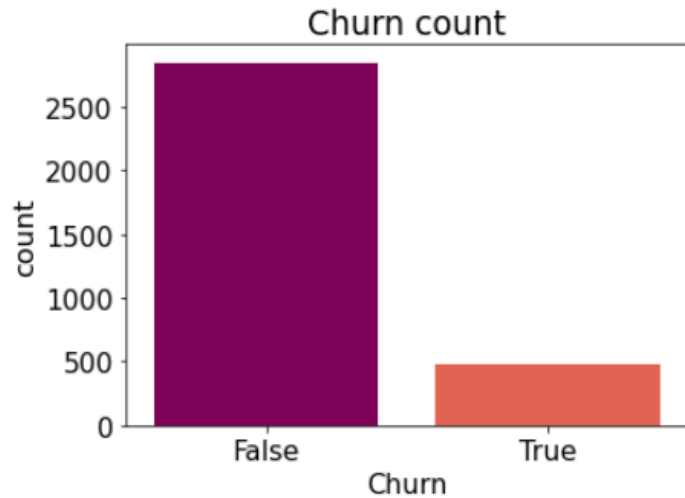


EDA (Exploratory Data Analysis)

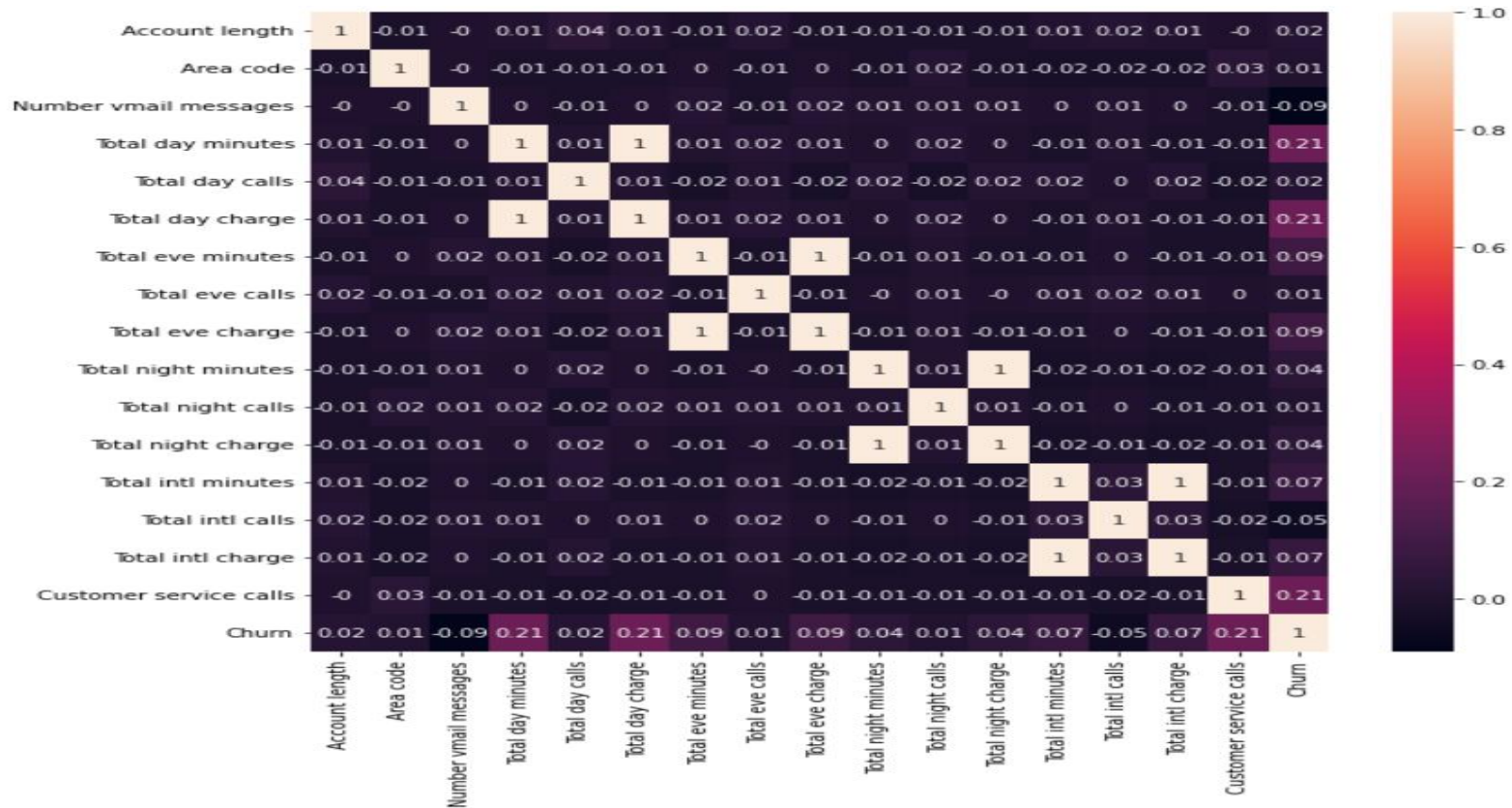
- Exploratory Data Analysis is an approach to analyze data sets and to summarize their main characteristics, often with visual methods.
- Data visualization using **Matplotlib** and **Seaborn**.
- Performing EDA helps in seeing what the data can tell us.



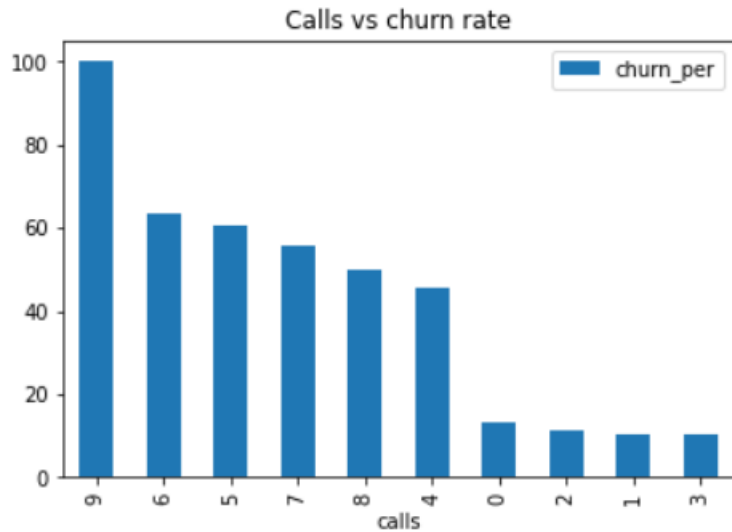
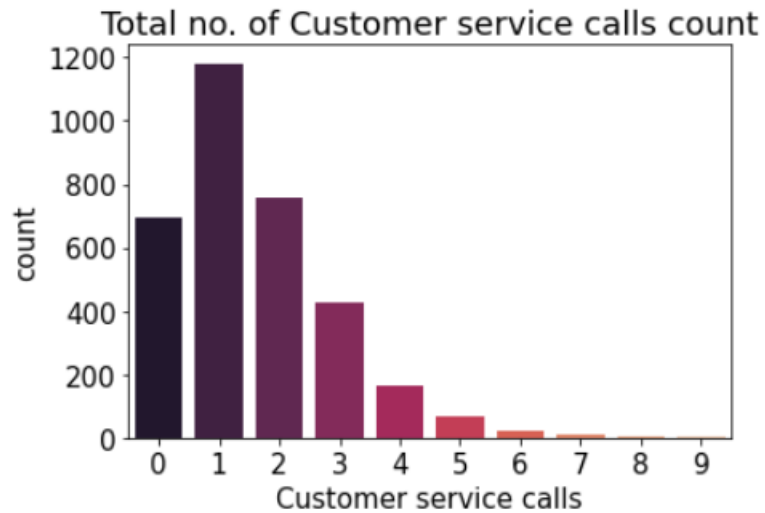
EDA (continued)



EDA (continued)

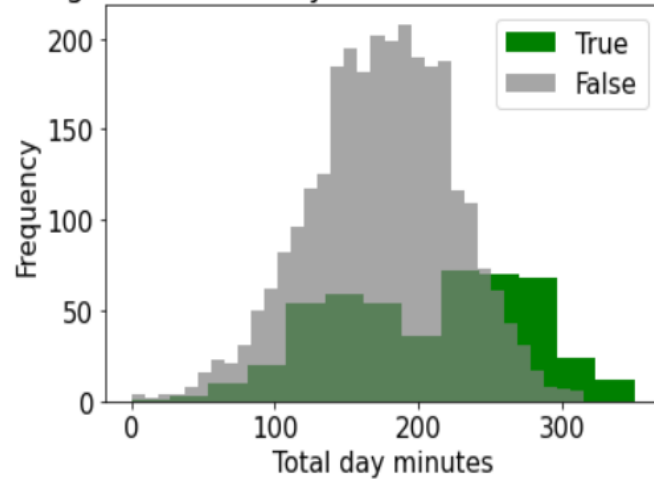


EDA(continued)



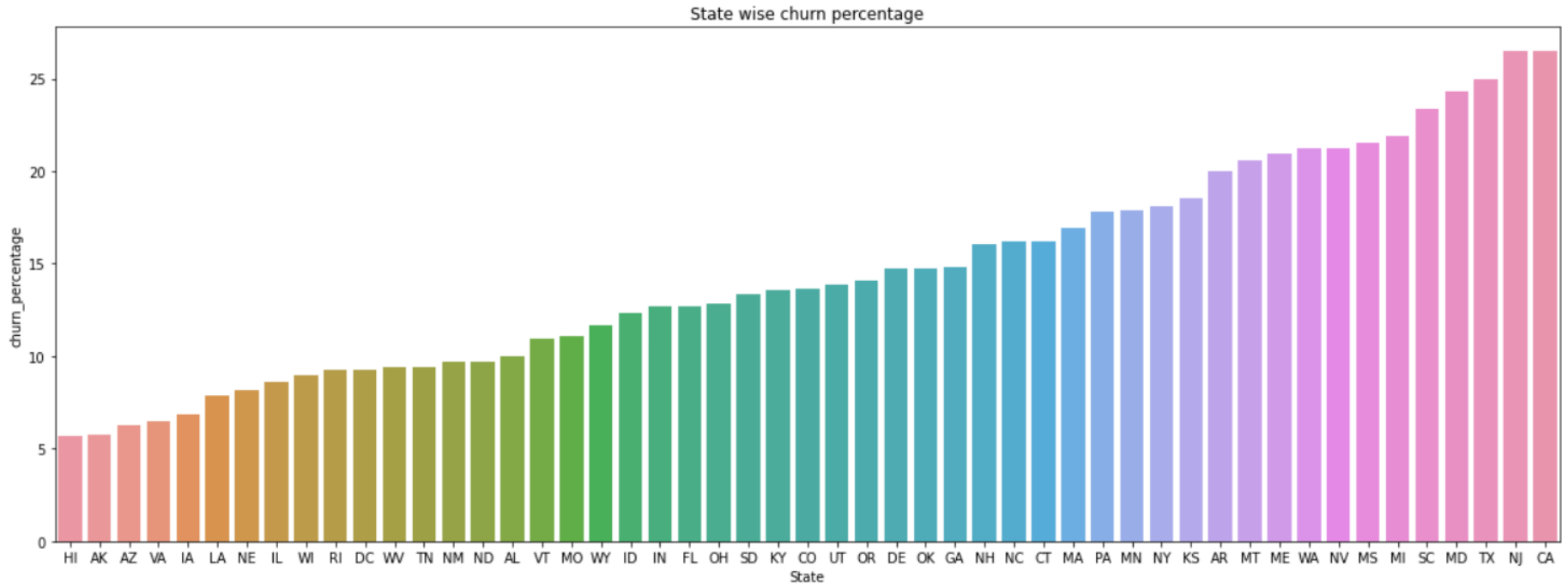
EDA(continued)

Histogram of Total day minutes breakdown by Churn

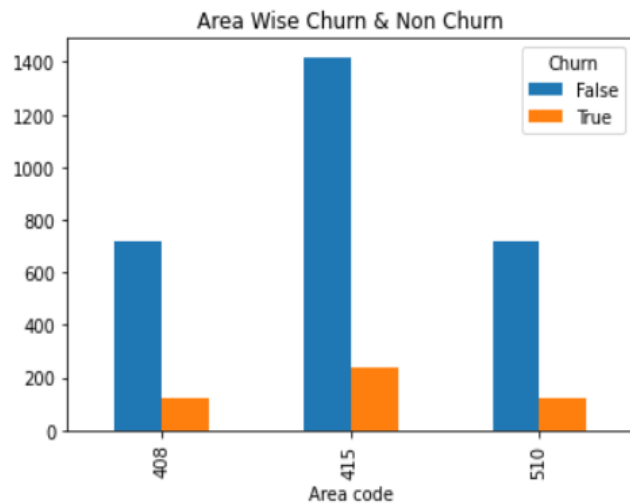


EDA (continued)

State wise churn percentage:-

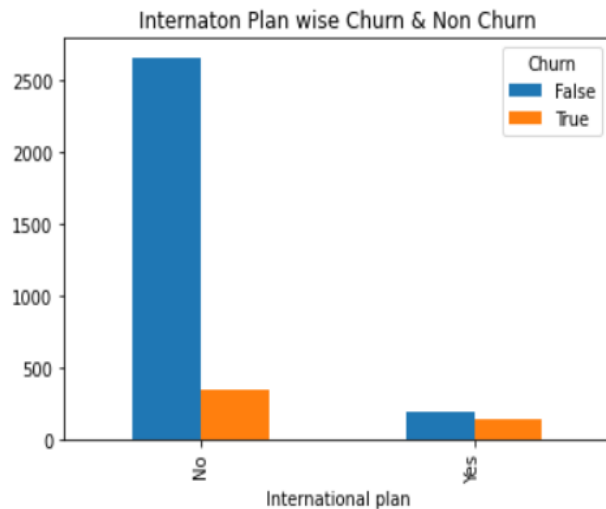


EDA (continued)



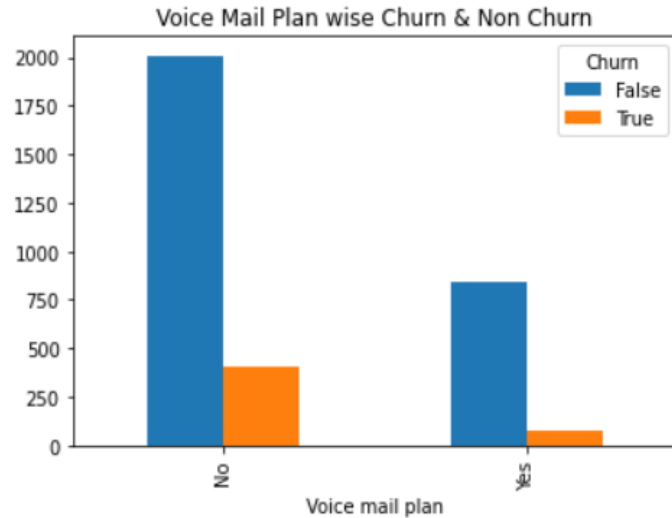
	Non Churn	Churn	churn_per
Area code			
408	716	122	14.558473
415	1419	236	14.259819
510	715	125	14.880952

EDA (continued)



11.5 % churn rate for no international plan & 42.41 % for international plan

EDA (continued)



16.7 % churn rate for no voice mail plan & 8.6 % for voice mail plan

Observations

- Churn rate increases with increase in customer service calls
- Customers with longer talk time in the morning have high chance of discontinuing the subscription.
- High populated areas have high churn rate.
- Customers with international plan have high chance of leaving the subscription.
- For customers with no voice mail plan, the chance of discontinuing the subscription is greater than those with voice mail plan.



Conclusion

From the observations, we can conclude that the company needs to work on the following fields for customer retention:

- Offer better service in most populated areas.
- Provide better long talk time plans.
- Take feedback and suggestions on a regular basis, try to implement it and strive for better communication.
- Company can offer better International plans.
- Offer more Incentives in the form of discounts and cashbacks to churn customers



Challenges

- Selection of features was quite a challenge.
- For some of the variables like **'Account length'**, we have no idea about its relevance to Churn.
- We cannot consider all these variables as the exact reasons why customers left because they might leave for the better price offered by competitors or the bad economy at a certain time, etc.
- Churn does not take into consideration the types of customers that are leaving – new vs old



Thank You