Customer churn analysis-Telecommunication

Introduction

- What is Customer Churn

  Customer attrition, also known as **customer churn, customer turnover, or customer defection**, is the loss of clients or customers.Telephone service companies, Internet service providers, pay TV companies, insurance firms, often use customer attrition analysis and customer attrition rates as one of their key business metrics because the **cost of retaining an existing customer is far less than acquiring a new one**. Companies from these sectors often have customer service branches which attempt to win back defecting clients, because **recovered long-term customers can be worth much more to a company than newly recruited clients**

- What are the different types of Customer churn - Voluntary/Involuntary

Predictive analytics for Customer Churn

- **Predictive analytics** use churn prediction models that predict customer churn by assessing their **propensity of risk to churn**. Since these models generate a small prioritized list of potential defectors, they are effective at focusing customer retention marketing programs on the subset of the customer base who are most vulnerable to churn

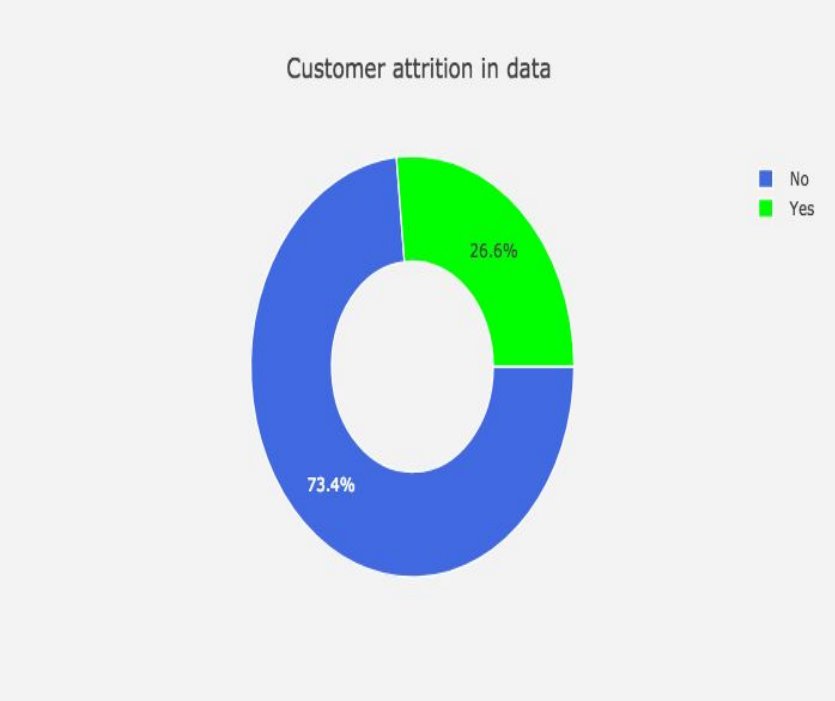
Dataset and Features

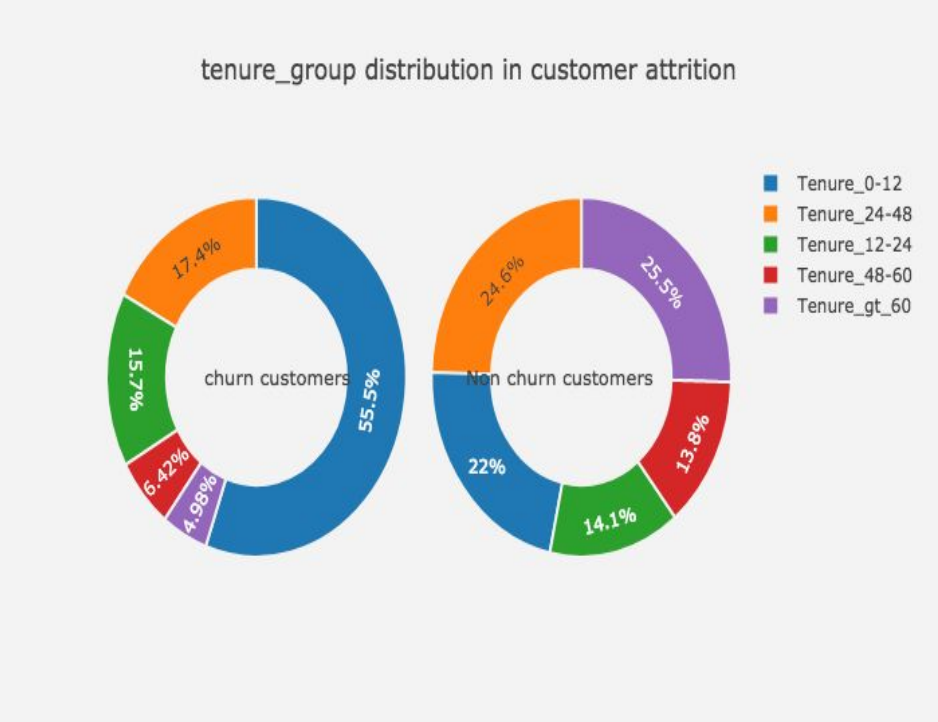
customerID - Ananoymized unique ID
Gender - Categorical (Male/Female)
SeniorCitizen- Categorical(0/1)
Partner - Whether the customer has a partner or not (Yes, No)
Dependents-Whether the customer has dependents or not (Yes, No)
tenure-Number of months the customer has stayed with the company
PhoneService-Whether the customer has a phone service or not (Yes, No)
MultipleLines-Whether the customer has multiple lines or not (Yes, No, No phone service)
InternetService-Customer's internet service provider (DSL, Fiber optic, No)
OnlineSecurity-Whether the customer has online security or not (Yes, No, No internet service)
OnlineBackup-Whether the customer has online backup or not (Yes, No, No internet service)
DeviceProtection-Whether the customer has device protection or not (Yes, No, No internet service)
TechSupport-Whether the customer has tech support or not (Yes, No, No internet service)
StreamingTV-Whether the customer has streaming TV or not (Yes, No, No internet service)
StreamingMovies-Whether the customer has streaming movies or not (Yes, No, No internet service)
Contract-The contract term of the customer (Month-to-month, One year, Two year)
PaperlessBilling-Whether the customer has paperless billing or not (Yes, No)
PaymentMethod-The customer's payment method (Electronic check, Mailed check, Bank transfer (automatic), Credit card (automatic))
MonthlyCharges-The amount charged to the customer monthly
TotalCharges-The total amount charged to the custome
Churn-yes or no

Data Manipulation

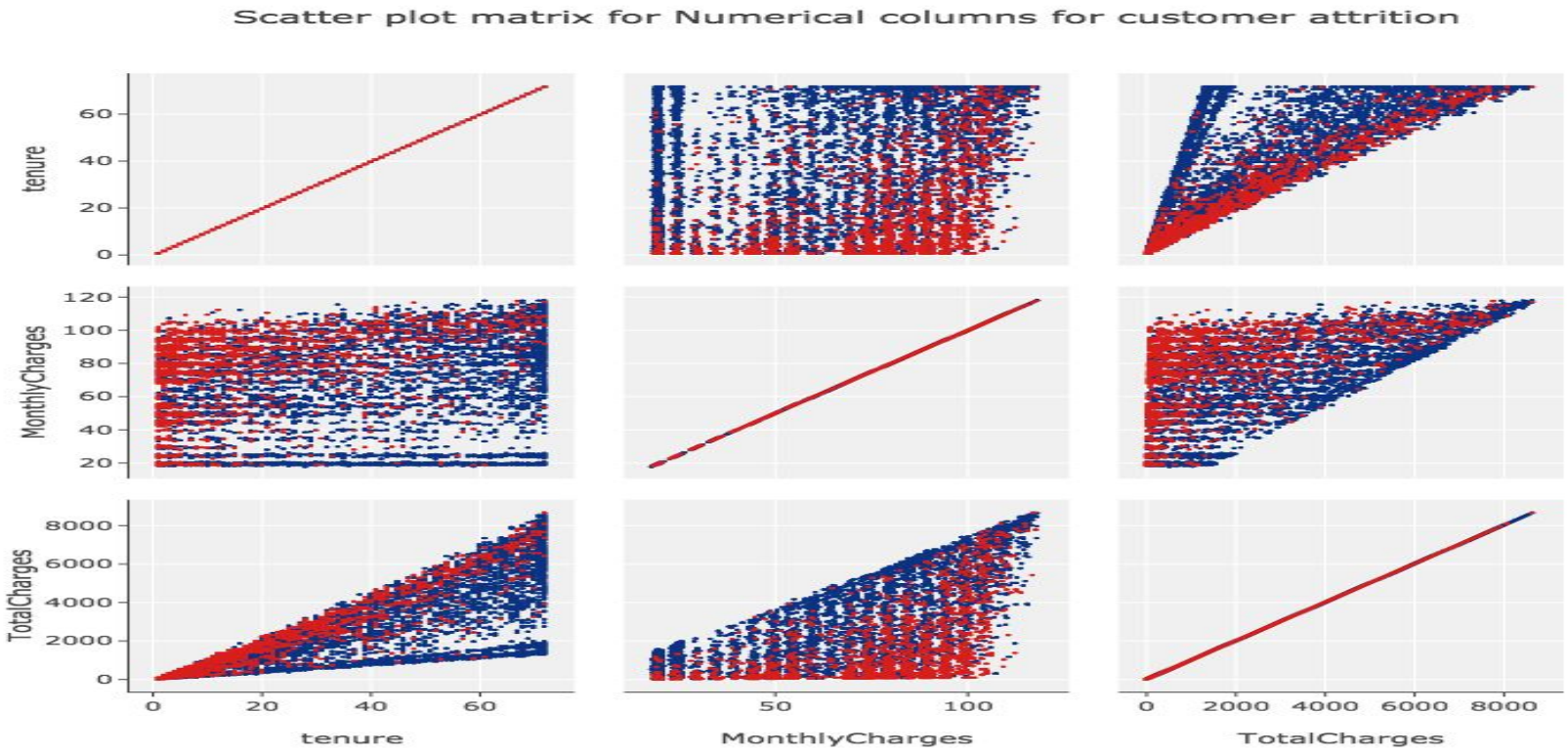
- Replacing spaces with null values in total charges column
- Dropping null values
- Clean further where there are phrases like “No internet ”----> “No”
- Categorize senior citizen column to 0 or 1
- Split Churn and not churn and connect to each feature and visualize
- Convert tenure to categorical variable. But why ?(Bins)
  - Tenure_12
  - Tenure_24
  - Tenure_48
  - Tenure_60

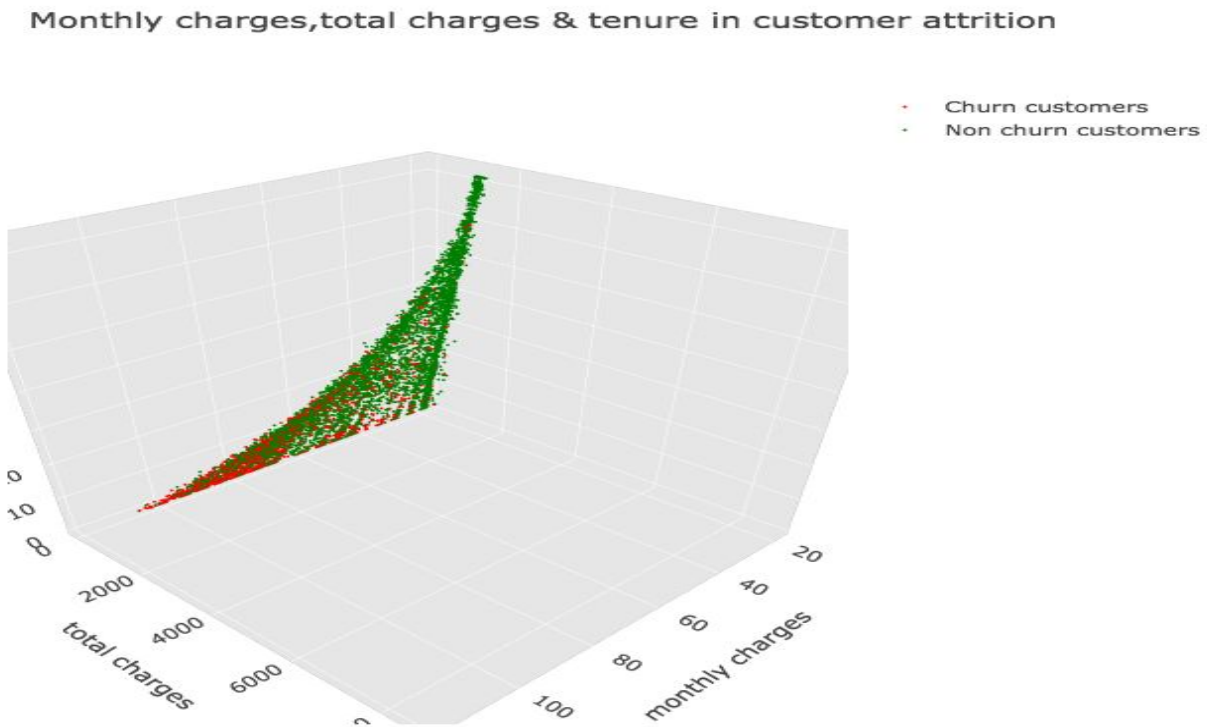
Exploratory Data Analysis



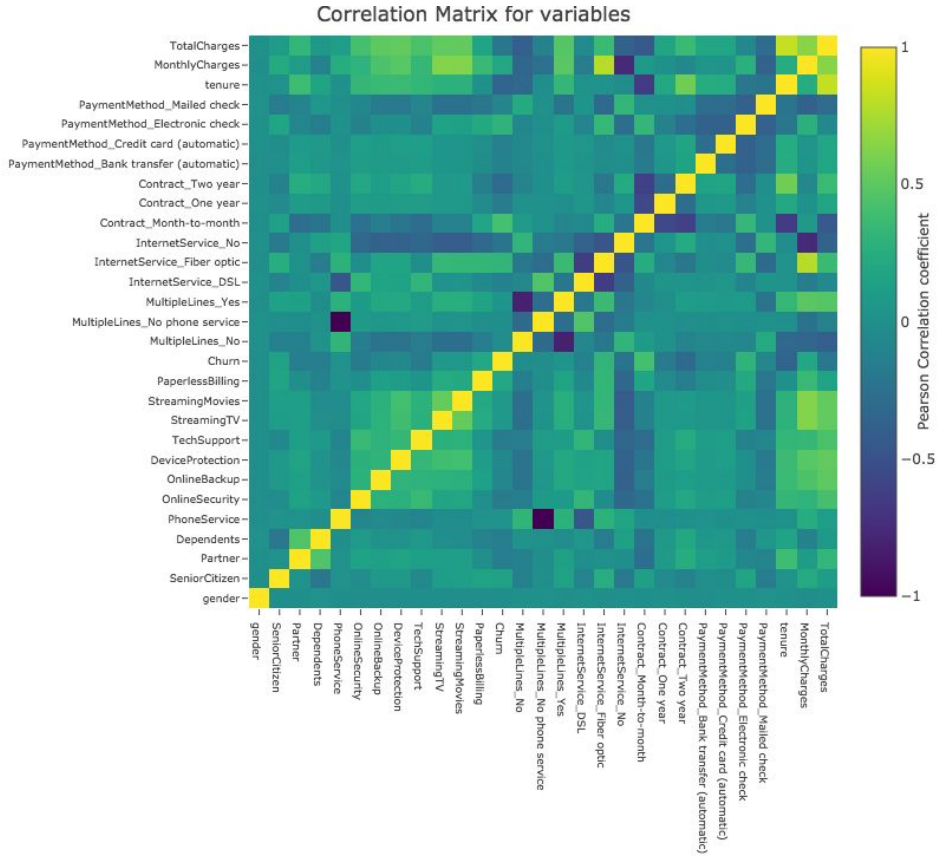


Exploratory Data analysis for continuous values




Monthly charges,total charges & tenure in customer attrition
Churn customers
Non churn customers
total charges
2000
4000
6000
monthly charges
20
40
60
80
100

Pearson correlation between each features



Model building

- Logistic Regression(with/with-out SMOTE)
- Decision trees
- Random Forest
- Boosting--->LightGBM, XGBoost

1. Accuracy
2. Precision
3. Recall
4. F-score