# Teleco customer Churn Prediction

EDA &Preproccesing

# Agenda

- Introduction
- Analysis Results
- Preprocessing and modeling
- The End

# Introduction

- Customer churn is the percentage of customers that stopped using company's product or service during a certain time frame.

- Our data 7043x21

- It included:

- Demographic info about customers: (Customer ID, gender,SeniorCitizen,Partner,Dependents)

- Services that each customer has signed up for:(PhoneService,MultipleLines,InternetService,OnlineSecurity,DeviceProtection,TechSupport,StreamingTV,StreamingMovies)

- Customer account information:(Tenure,Contract,PaperlessBilling,PaymentMethod,MonthlyCharges,TotalCharges,Churn)
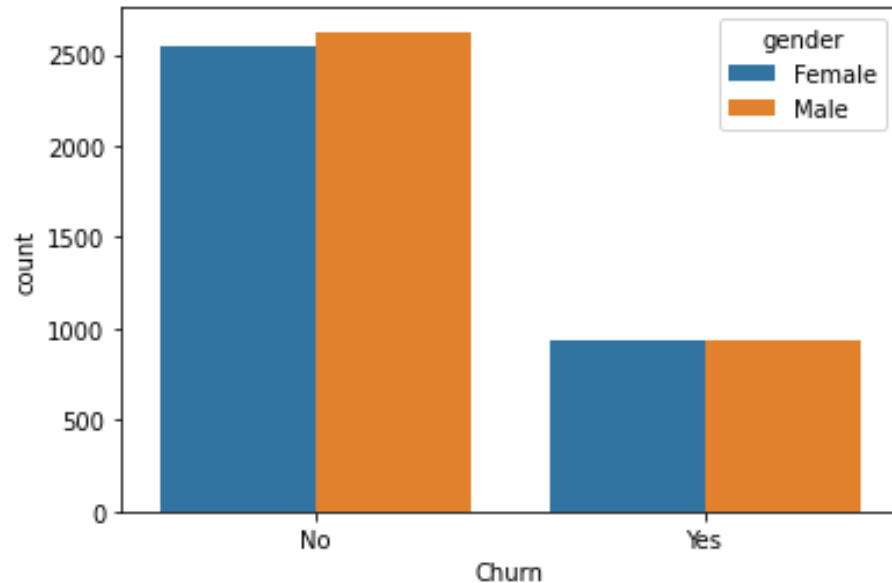
# Data analysis

# What's the percentage of customers that
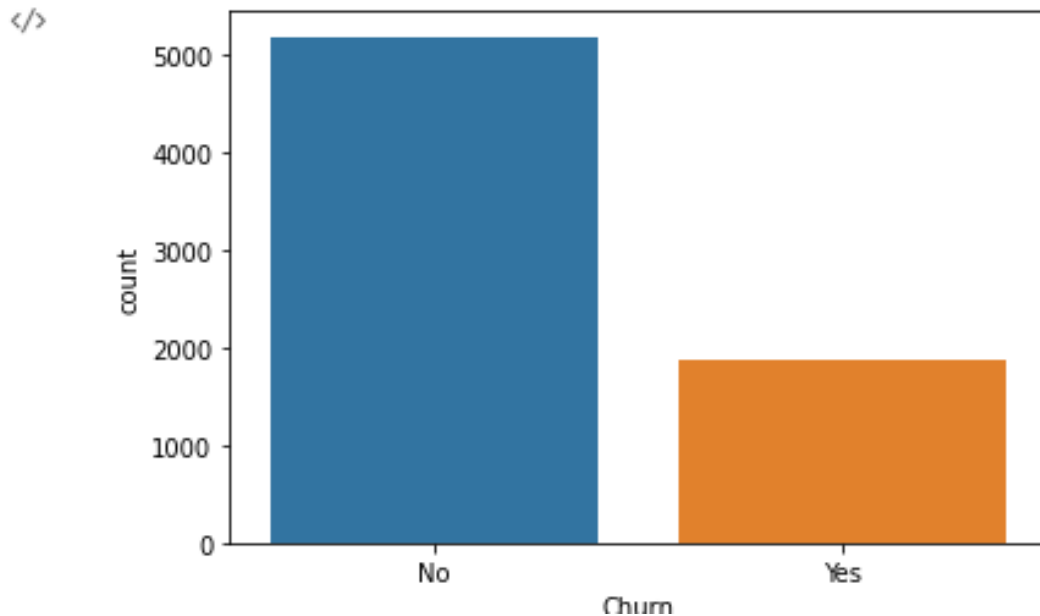
- We have 26.6%
  of customers switched to another company.
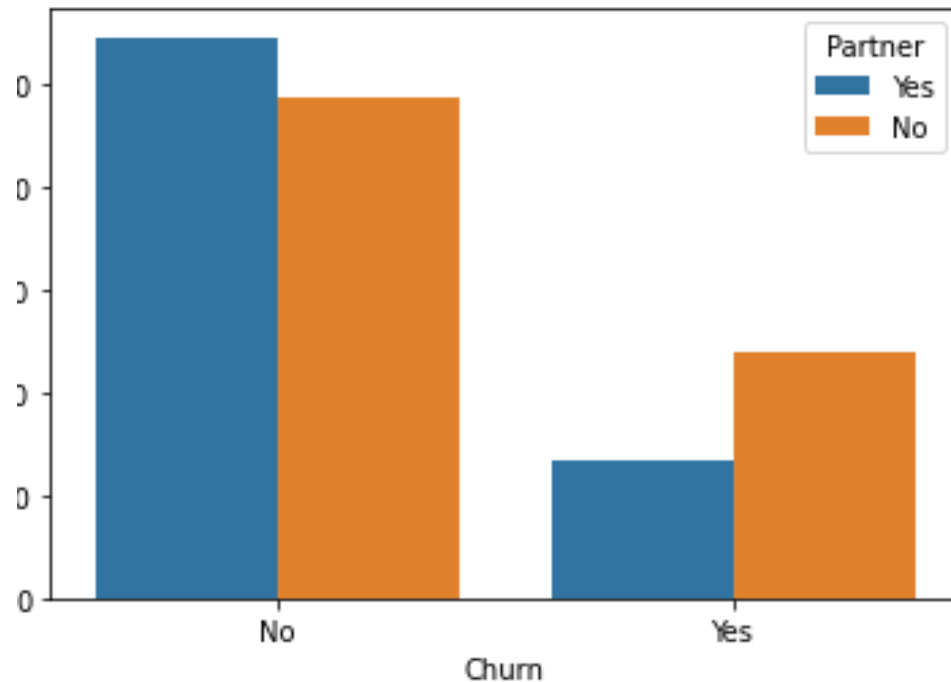
# What gender is the most to churn?

- Female is normally more than male



| | Male | Female |
|---|---|---|
| Number | 3555 | 3488 |
| Churn | 939 | 939 |
| parsentage | 26.4% | 26.9% |

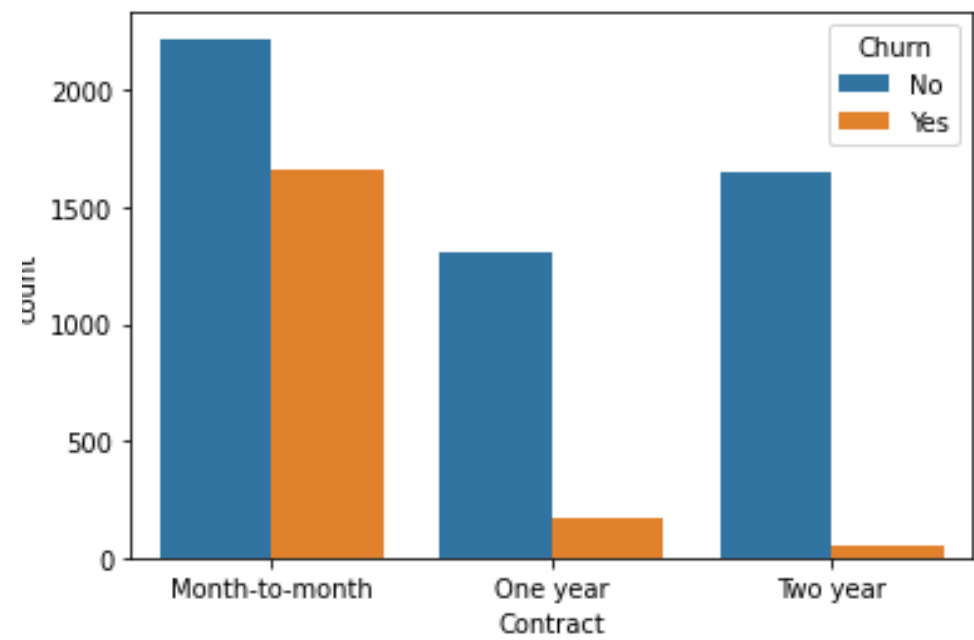# Whether the customer has a partner or not (Yes, No)

- A customer with a partner has a probability of 19.66 % churn

- A customer without a partner has a probability of 32.96 % churn



|  | Partner | NoPatner |
|---|---|---|
| Num | 3402 | 3641 |
| Churn | 669 | 1200 |
| % | 19.6% | 32.9% |

# What contract is most to churn?

- People who has contract Month-to-month is nearlly to churn than one year and two year.



|  | Mon-t-mon | One year | Two year |
|---|---|---|---|
| Num | 3875 | 1695 | 1473 |
| Churn | 1655 | 166 | 48 |
| % | 42.% | 9.9% | 2.8% |

# What type internet provider has most churn?

- A lot of customers choose the Fiber optic service and it's also evident that the customers who use Fiber optic have high churn rate, this might suggest a dissatisfaction with this type of internet service.
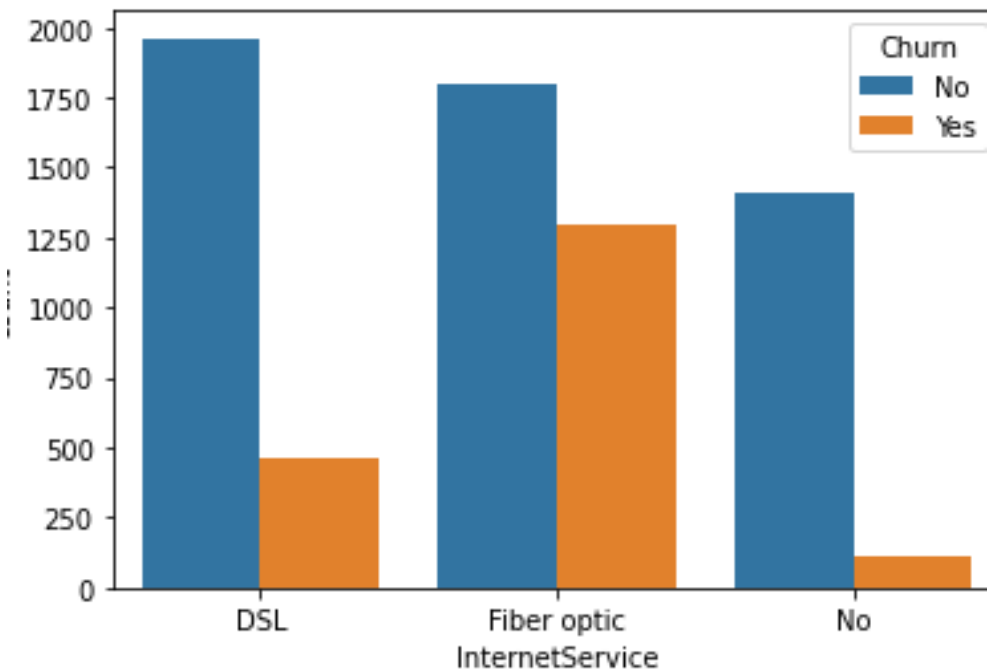


|  | DSL | Fiber optic | No |
|---|---|---|---|
| Num | 2421 | 3096 | 1526 |
| Churn | 459 | 1297 | 113 |
| % | 18.9% | 41.8% | 7.4% |

# What is the payment method has most Churn?

- A customer that use Electronic check for paying has a probability of 45.29 % churn

- Customers who chose Credit-Card automatic transfer or Bank Automatic Transfer and Mailed Check as Payment Method were less likely to move out.
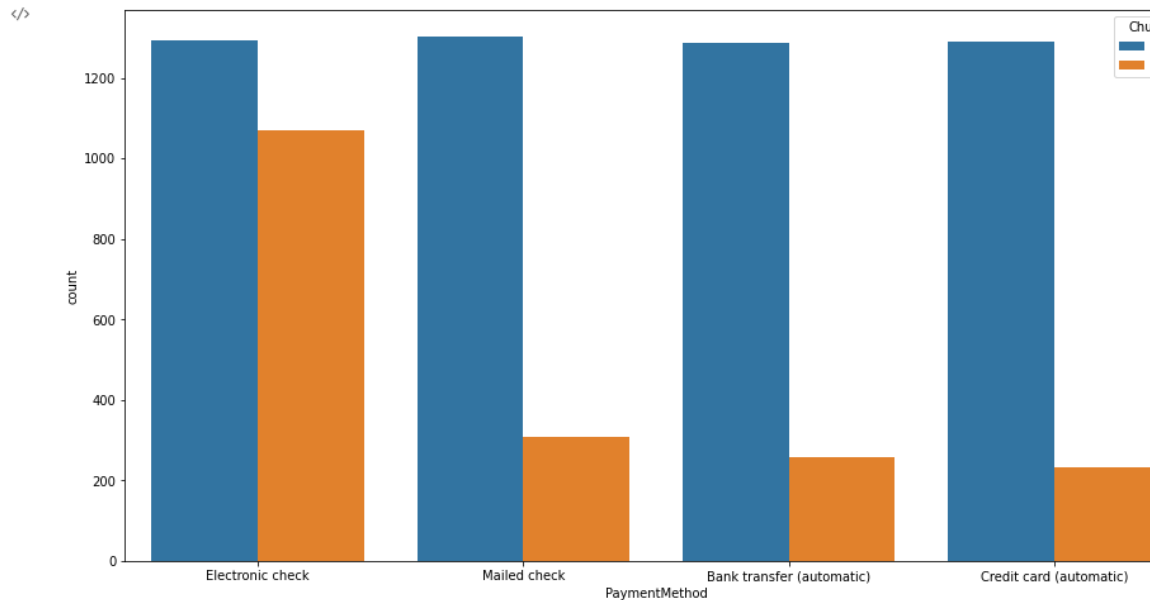


|  | Electronic check | Mailed check | Bank transfer | Credit card |
|---|---|---|---|---|
| Num | 2365 | 1612 | 1544 | 1522 |
| Churn | 1071 | 308 | 258 | 232 |
| % | 45.2% | 19.1% | 16.7% | 15.2 |

# Dependents case

• Customers without dependents are more likely to churn.
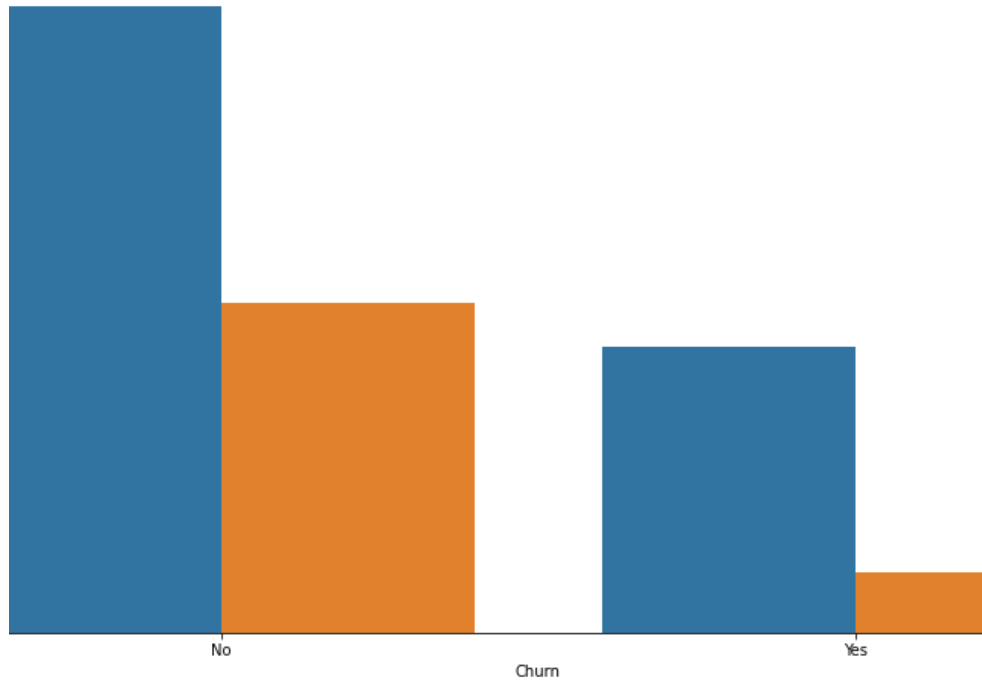


| | Dependents | Not Dependents |
|---|---|---|
| Num | 2110 | 4933 |
| Churn | 326 | 1543 |
| % | 15.4% | 31.7% |

# Senior Citizen case

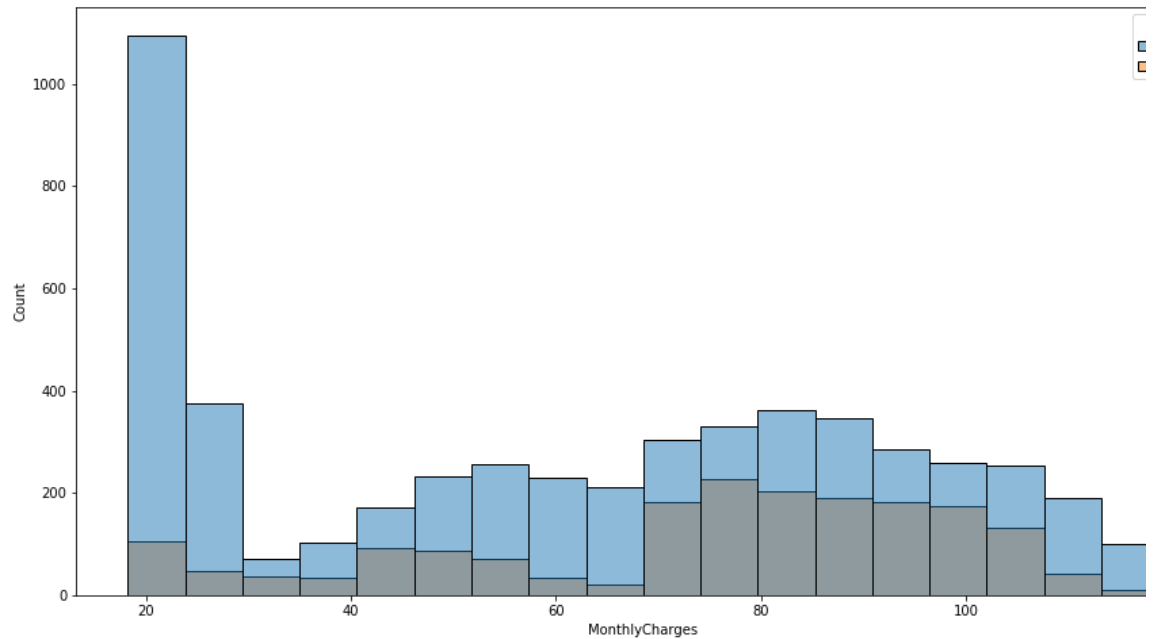• A customer that is a senior citizen has a probability of 41.68 % churn
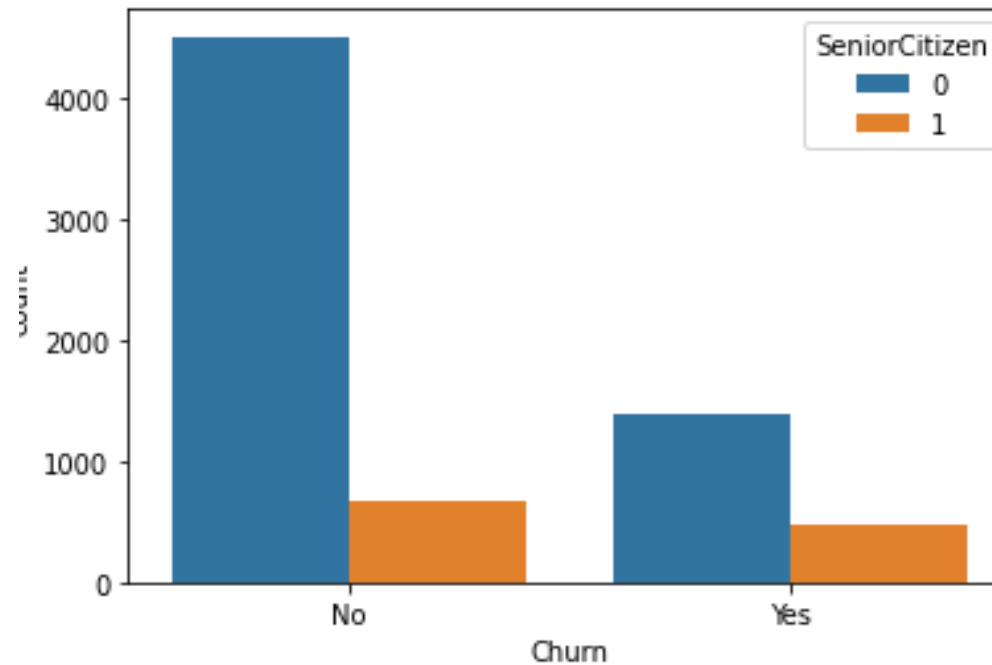


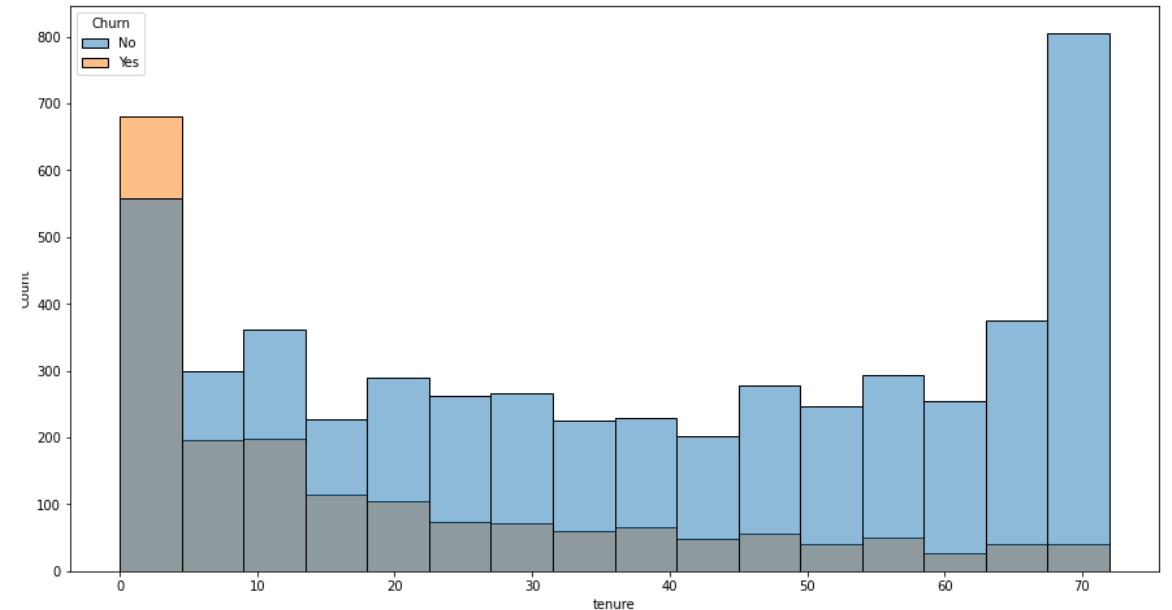| | Senior Citizen | Not Senior Citizen |
|---|---|---|
| Num | 1142 | 5901 |
| Churn | 476 | 1393 |
| % | 41.6% | 23.6% |

# How Monthly charges affect Churn

- **Customer has higher monthly charges are more likly to churn**

# Tenure case

- **Customers who stayed with the company for longer time are more less likely to churn now.**

Perproccesing

Fill missing values

Chick the outliers

Split into input & output

Dealing with catagorial data(get_dummies)

Split into train and test

Handle imbalanced data(SMOTE)

Feature scaling(StandardScaler)

# Some Solution to reduse Churn

Make offers to family and friends that belong to those who have partners and depedents or not

Addressind the fiber optic problem ,whether by strengthening the infrastruture

Reduse paperless fees

Submitting offers to increase the contract fron month-to-month to one year or two

# The End