Customer Churn Analysis using Power BI:

Internship Report

Intern: Kshetrimayum Galax Singh

Ref : SKS/A2/C0106

Company: Saiket Systems (https://www.saiket.in/)

Domain: Machine Learning

Batch: Jan-Feb 2024

GitHub repo: https://github.com/galax19ksh/Customer-churn-analysis/

Contact: +91 7005788363

Mail: galaxkshetrimayum16@gmail.com

What is Customer Churn?

Customer churn, also known as customer attrition, refers to the loss of customers over time. It's basically when customers stop using your product or service and decide not to return. It's important for businesses to track and understand their churn rate, as it can have a significant impact on their bottom line.

Telecom industry:

Customers in the telecom industry can choose from a variety of service providers and actively switch from one to the next. The telecommunications business has an annual churn rate of 15-25 percent in this highly competitive market.

Causes of churn:

- **Poor customer service:** Long wait times, unhelpful interactions, unresolved issues.
- **Product dissatisfaction:** Product not meeting expectations, lack of features, bugs.
- **Competitor offerings:** Better options available at competitive prices.

- **Pricing issues:** Prices perceived as too high, hidden fees, unexpected charges.
- **Changes in customer needs:** Needs evolve, your offering doesn't adapt.

Customer retention:

Keeping your customers happy while managing a large crowd can feel like juggling flaming bowling pins. Time and resources are limited, making it impossible to shower everyone with personalized attention. But what if you could predict who's about to jump ship?

Here's where customer churn prediction comes in. Just like a weather forecast, it uses data to tell you which customers are at high risk of leaving. This lets you focus your efforts on saving the "at-risk" ones, maximizing your impact and saving precious resources.

Think of it like this: Instead of sending everyone a generic umbrella, you only give them to those caught in a downpour.

Objectives:

- Finding the % of Churn Customers and customers that keep in with the active services.
- Analysing the data in terms of various features responsible for customer Churn
- Finding a most suited machine learning model for correct classification of Churn and non-churn customers.

Data Source: https://drive.google.com/file/d/1wSOU_MYqbDanEf_BkypegNKkxzOfbJXU/view?usp=drive_link

Tools used:

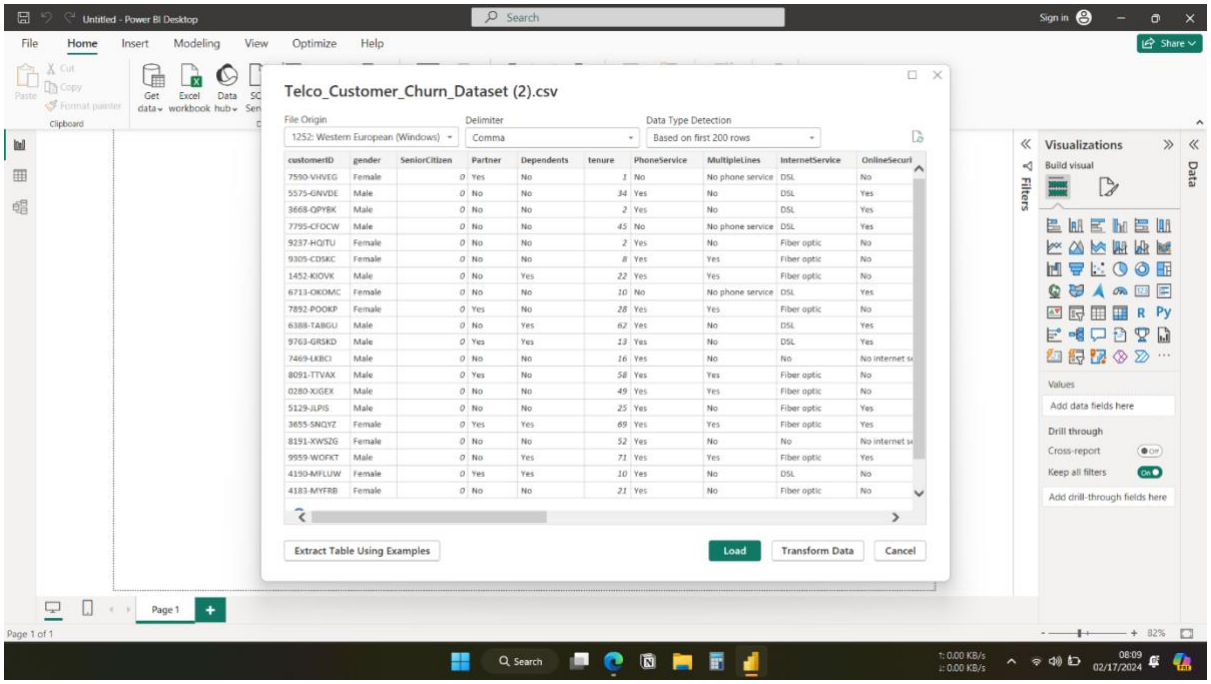
- Power BI
- Google Colab

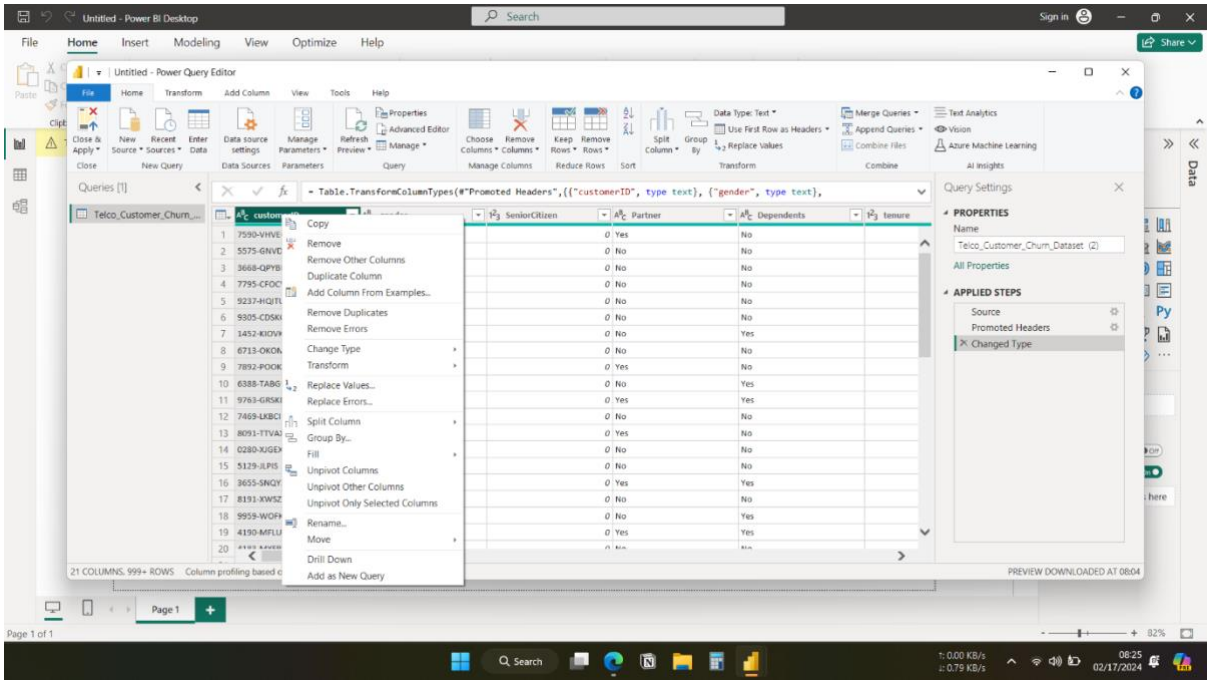
Libraries used:

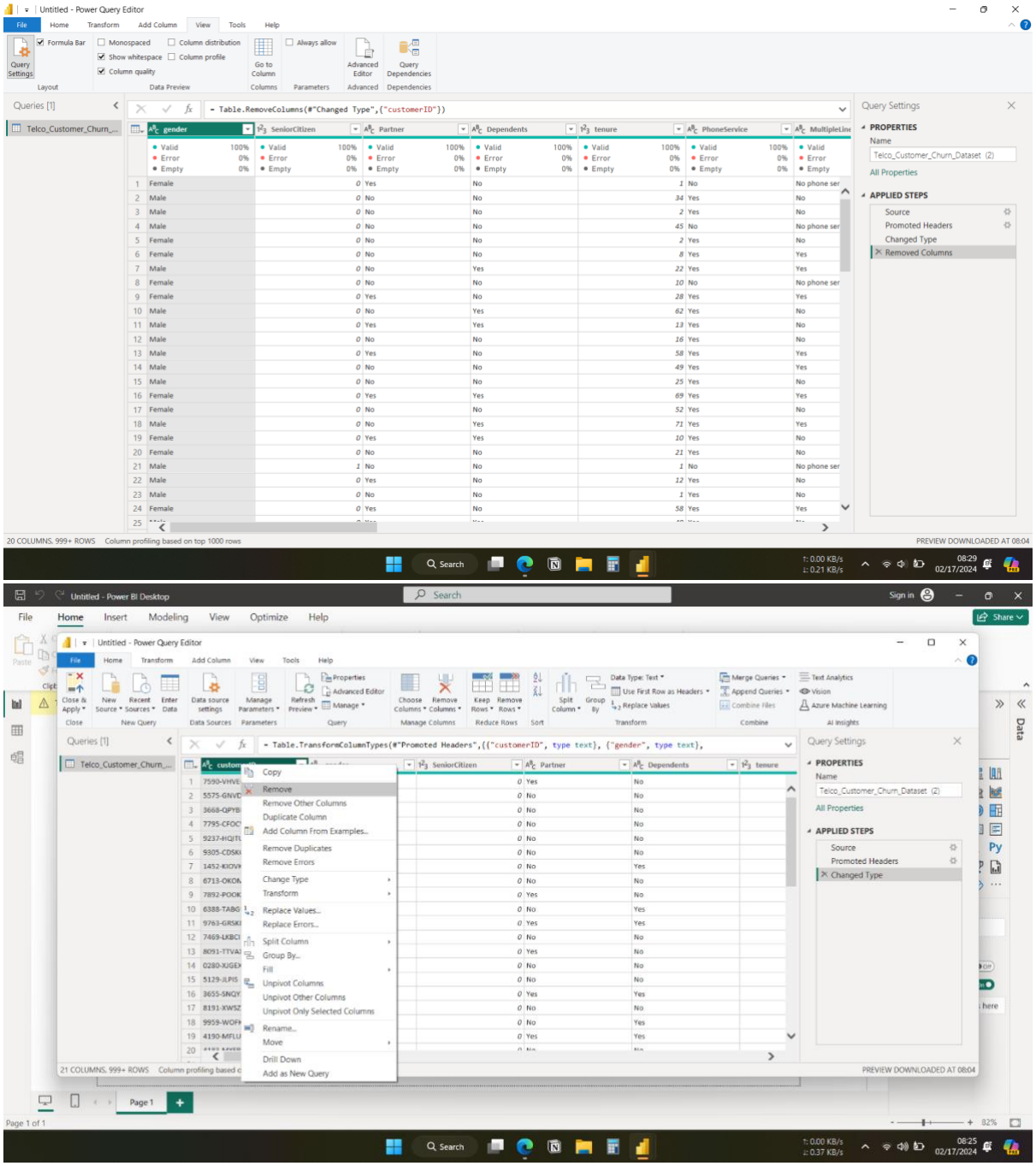
Pandas, numpy, matplotlib, sklearn, seaborn

Visualization using Power BI:

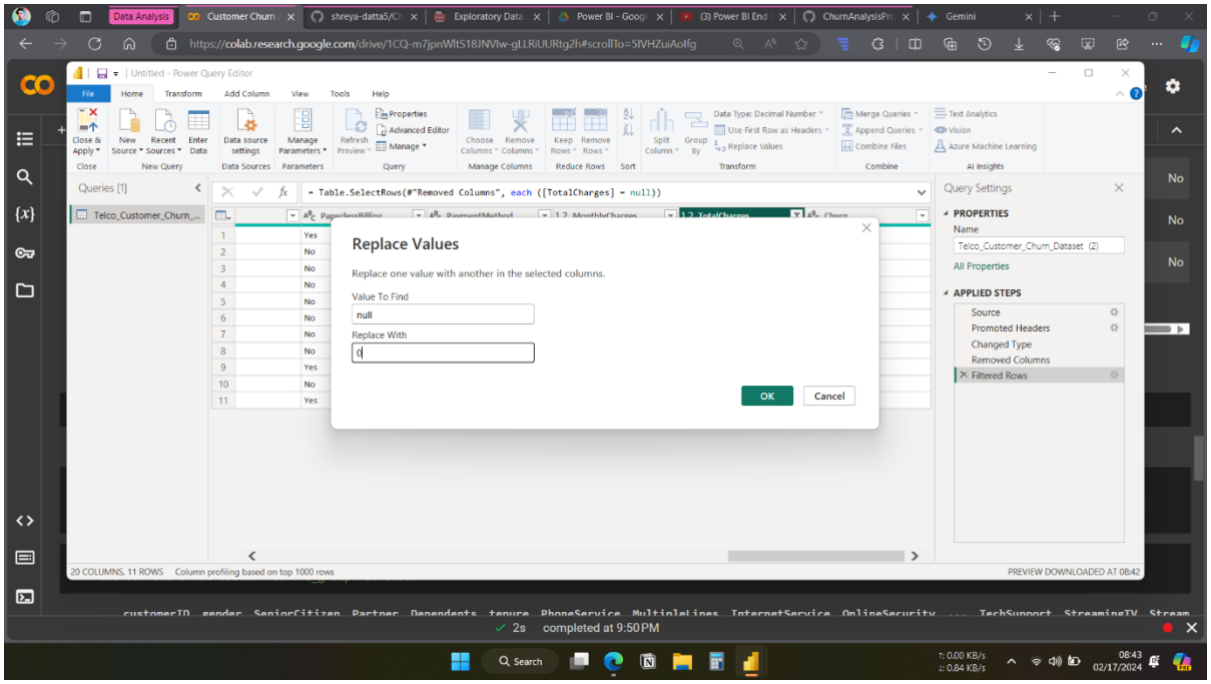
- Load CSV file into Power BI desktop
- Check if there is any missing values
- Remove unnecessary columns

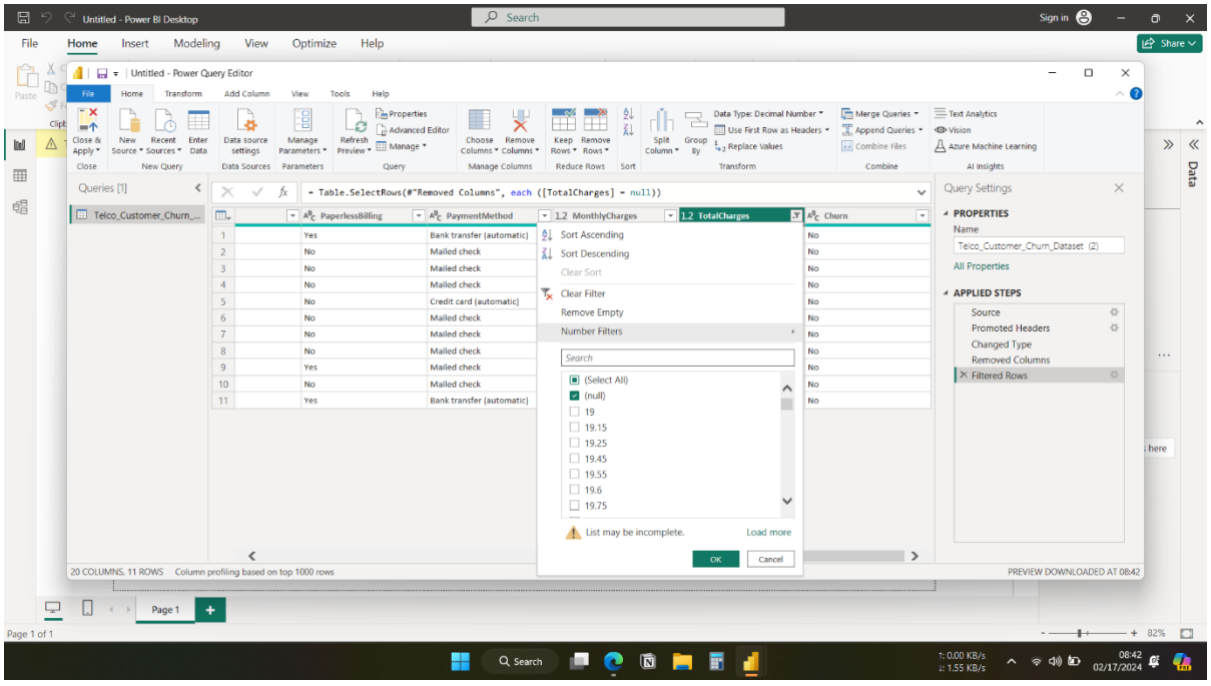

Untitled - Power BI Desktop
Search
Sign in
File
Home
Insert
Modeling
View
Optimize
Help
Share
Telco_Customer_Churn_Dataset (2).csv
File Origin
1252: Western European (Windows)
Delimiter
Comma
Data Type Detection
Based on first 200 rows
customerID
gender
SeniorCitizen
Partner
Dependents
tenure
PhoneService
MultipleLines
InternetService
OnlineSecuri
Extract Table Using Examples
Load
Transform Data
Cancel
Visualizations
Build visual
Values
Add data fields here
Drill through
Cross-report
Keep all filters
Add drill-through fields here
Filters
Data
Page 1
Page 1 of 1
82%

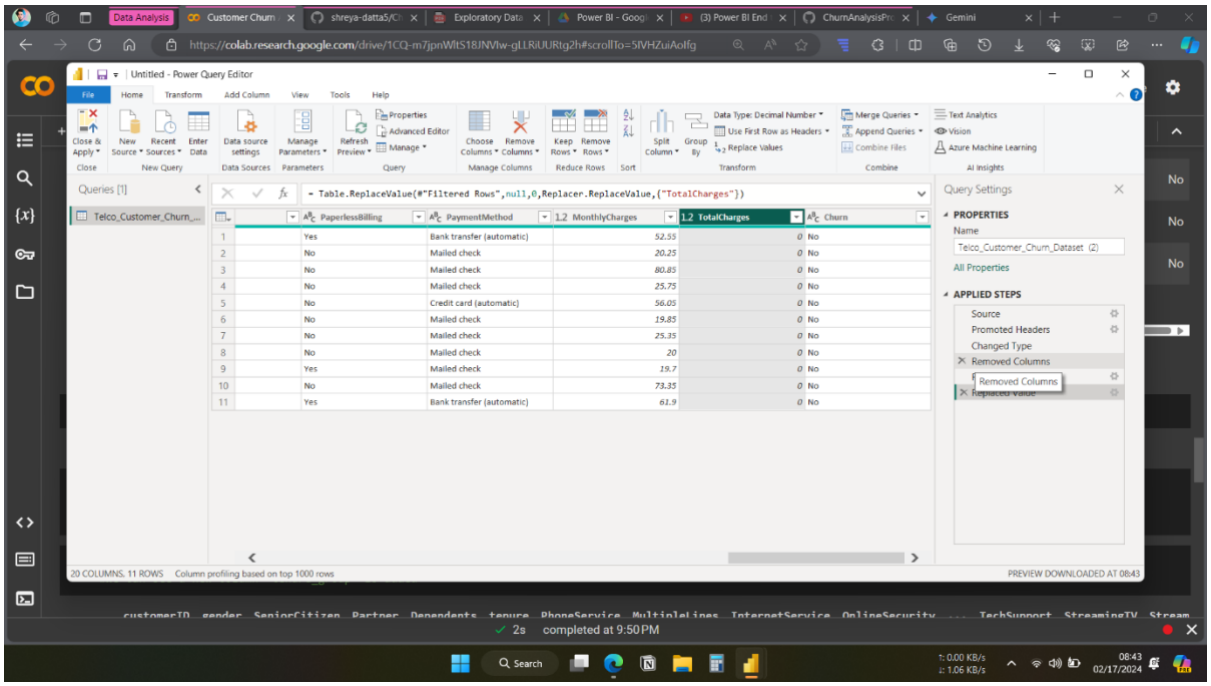

Untitled - Power BI Desktop
Search
Sign in
File
Home
Insert
Modeling
View
Optimize
Help
Share
Untitled - Power Query Editor
Transform
Add Column
Tools
Close & Apply
New Source
Recent Sources
Enter Data
Data source settings
Manage Parameters
Refresh Preview
Properties
Advanced Editor
Manage
Choose Columns
Remove Columns
Keep Rows
Remove Rows
Split Column
Group By
Data Type: Text
Use First Row as Headers
Replace Values
Merge Queries
Append Queries
Combine Files
Text Analytics
Vision
Azure Machine Learning
Queries [1]
Telco_Customer_Churn_...
= Table.TransformColumnTypes(#"Promoted Headers",{{"customerID", type text}, {"gender", type text},
SeniorCitizen
Partner
Dependents
tenure
Copy
Remove
Remove Other Columns
Duplicate Column
Add Column From Examples...
Remove Duplicates
Remove Errors
Change Type
Transform
Replace Values...
Replace Errors...
Split Column
Group By...
Fill
Unpivot Columns
Unpivot Other Columns
Unpivot Only Selected Columns
Rename...
Move
Drill Down
Add as New Query
Query Settings
PROPERTIES
Name
Telco_Customer_Churn_Dataset (2)
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
21 COLUMNS, 999+ ROWS
PREVIEW DOWNLOADED AT 08:04
Data
Page 1
Page 1 of 1
82%


Untitled - Power Query Editor
File
Home
Transform
Add Column
View
Tools
Help
Queries [1]
Telco_Customer_Churn_...
= Table.RemoveColumns(#"Changed Type",{"customerID"})
gender
SeniorCitizen
Partner
Dependents
tenure
PhoneService
MultipleLine
Query Settings
PROPERTIES
Name
Telco_Customer_Churn_Dataset (2)
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
Removed Columns
20 COLUMNS, 999+ ROWS
Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 08:04
Search
08:29
02/17/2024

Untitled - Power BI Desktop
Search
Sign in
File
Home
Insert
Modeling
View
Optimize
Help
Share
Untitled - Power Query Editor
Queries [1]
Telco_Customer_Churn_...
= Table.TransformColumnTypes(#"Promoted Headers",{{"customerID", type text}, {"gender", type text},
Copy
Remove
Remove Other Columns
Duplicate Column
Add Column From Examples...
Remove Duplicates
Remove Errors
Change Type
Transform
Replace Values...
Replace Errors...
Split Column
Group By...
Fill
Unpivot Columns
Unpivot Other Columns
Unpivot Only Selected Columns
Rename...
Move
Drill Down
Add as New Query
Query Settings
PROPERTIES
Name
Telco_Customer_Churn_Dataset (2)
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
21 COLUMNS, 999+ ROWS
PREVIEW DOWNLOADED AT 08:04
Page 1
Page 1 of 1
Data
Search
08:25
02/17/2024

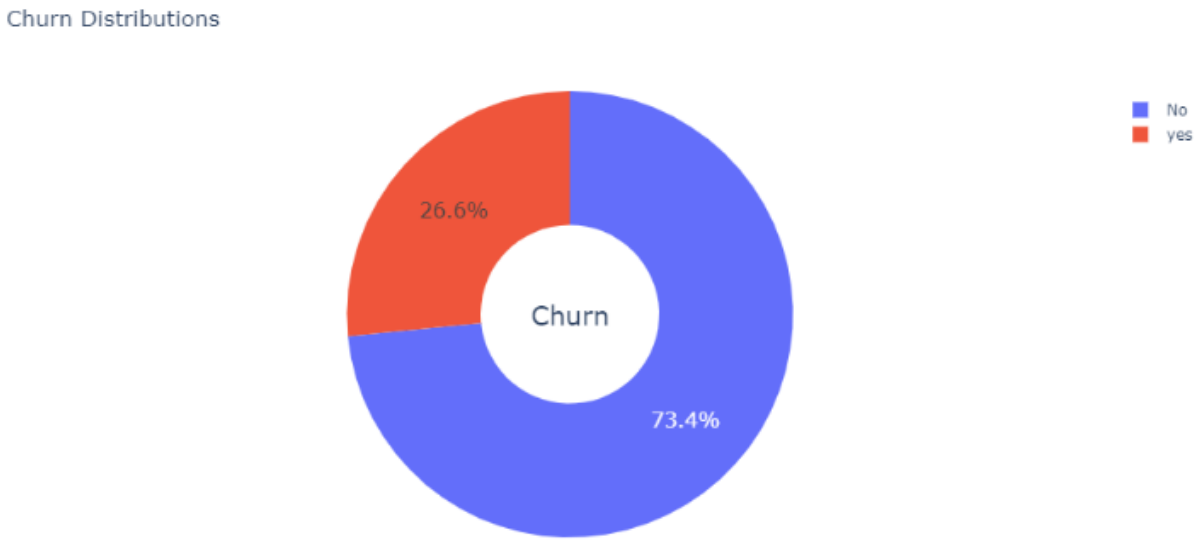

Replace Values
Replace one value with another in the selected columns.
Value To Find
null
Replace With
0
OK
Cancel


Sort Ascending
Sort Descending
Clear Sort
Clear Filter
Remove Empty
Number Filters
Search
(Select All)
(null)
19
19.15
19.25
19.45
19.55
19.6
19.75
List may be incomplete.
Load more
OK
Cancel


Untitled - Power Query Editor
Queries [1]
Telco_Customer_Churn_...
= Table.ReplaceValue(#"Filtered Rows",null,0,Replacer.ReplaceValue,{"TotalCharges"})
PaperlessBilling
PaymentMethod
MonthlyCharges
TotalCharges
Churn
1 Yes Bank transfer (automatic) 52.55 0 No
2 No Mailed check 20.25 0 No
3 No Mailed check 80.85 0 No
4 No Mailed check 25.75 0 No
5 No Credit card (automatic) 56.05 0 No
6 No Mailed check 19.85 0 No
7 No Mailed check 25.35 0 No
8 No Mailed check 20 0 No
9 Yes Mailed check 19.7 0 No
10 No Mailed check 73.35 0 No
11 Yes Bank transfer (automatic) 61.9 0 No
Query Settings
PROPERTIES
Name
Telco_Customer_Churn_Dataset (2)
All Properties
APPLIED STEPS
Source
Promoted Headers
Changed Type
Removed Columns
Removed Columns
20 COLUMNS, 11 ROWS
Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 08:43
2s completed at 9:50 PM

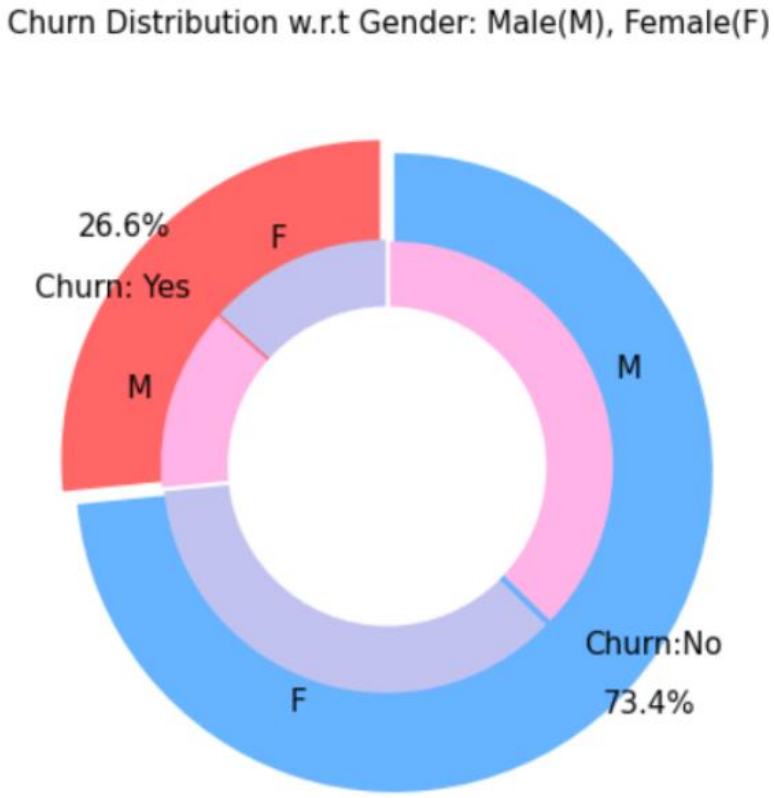
Exploratory Data Analysis:

1. Churn distribution



26.6 % of customer switched to another firm.

2. churn distribution with respect to gender

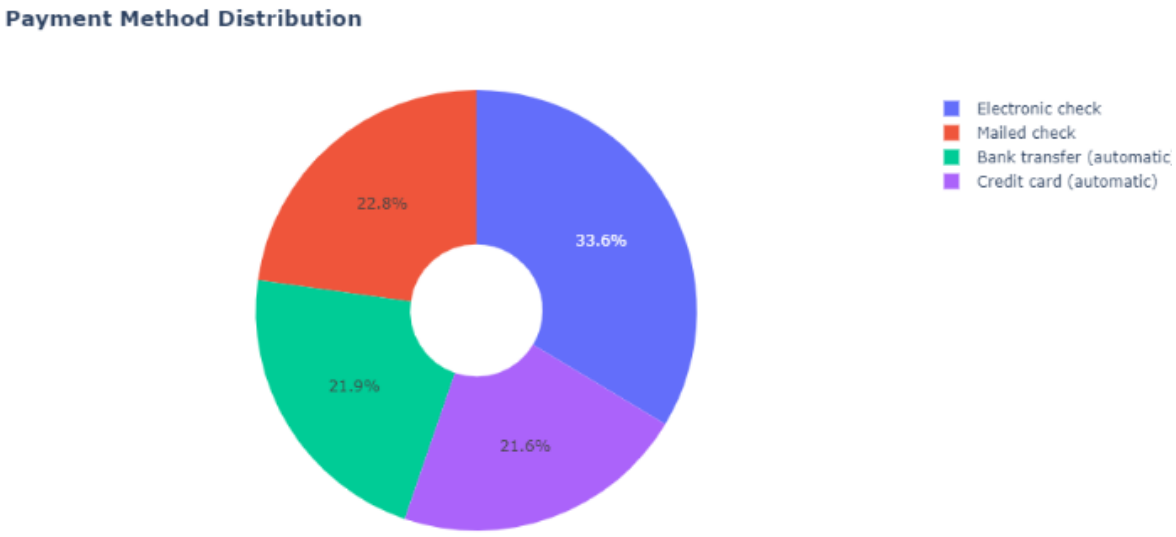


There is negligible difference in customer percentage/count who chnaged the service provider. Both genders behaved in similar fashion when it comes to migrating to another service provider/firm.

3. Customer contract distribution:

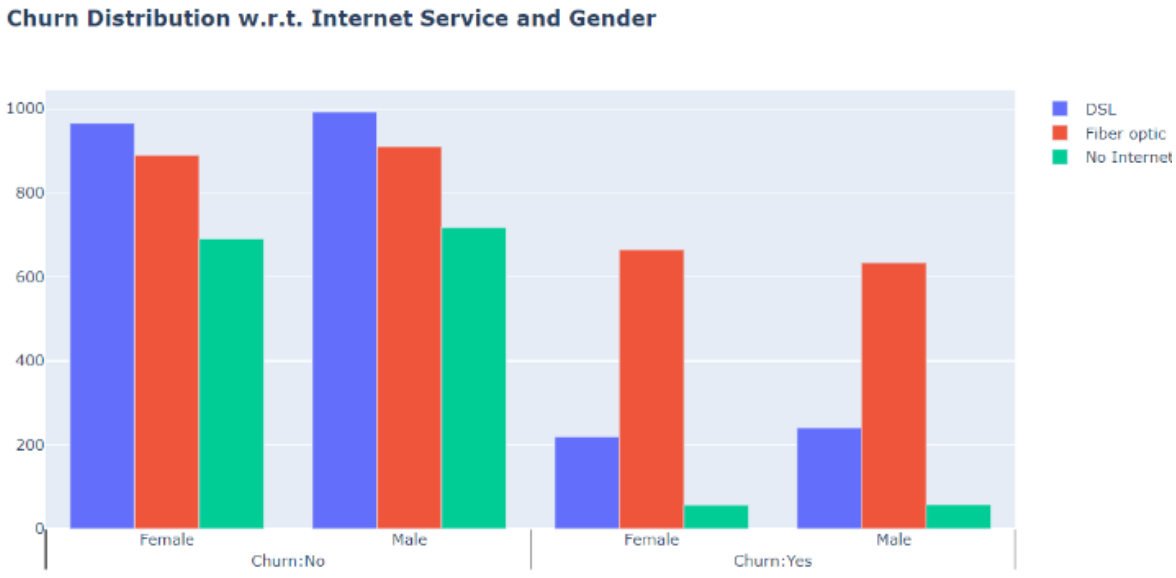
About 75% of customer with Month-to-Month Contract opted to move out as compared to 13% of customrs with One Year Contract and 3% with Two Year Contract

4. Payment methods:



Major customers who moved out were having Electronic Check as Payment Method. Customers who opted for Credit-Card automatic transfer or Bank Automatic Transfer and Mailed Check as Payment Method were less likely to move out.

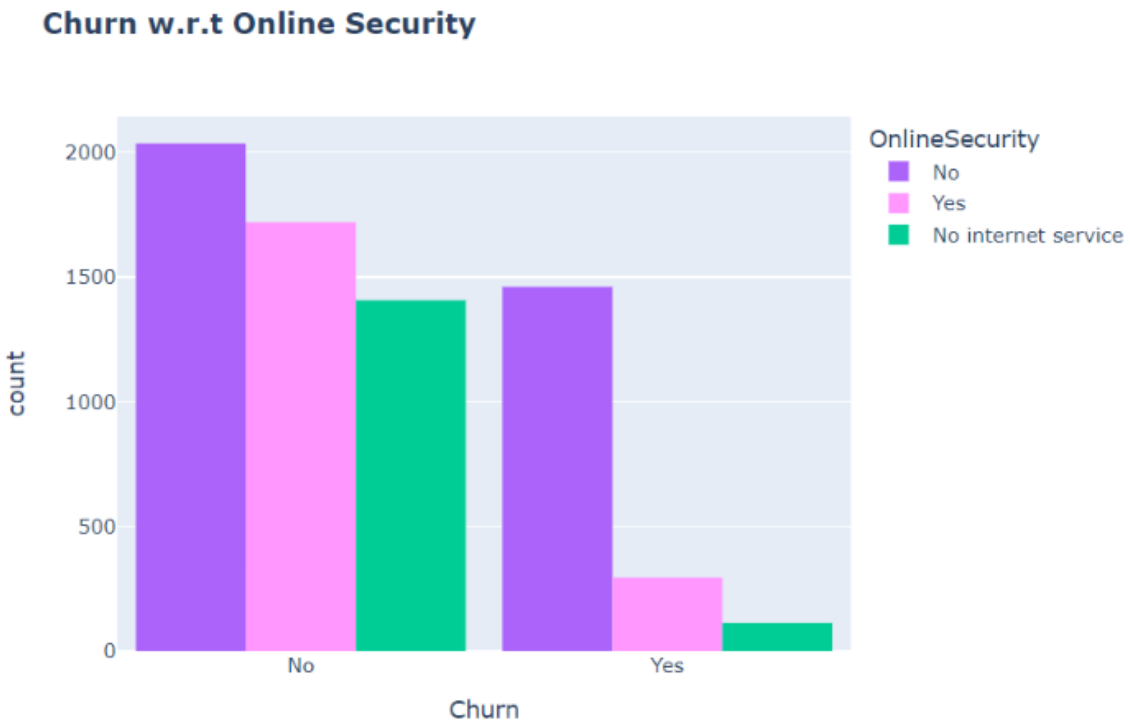
5. Internet services:



Several 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

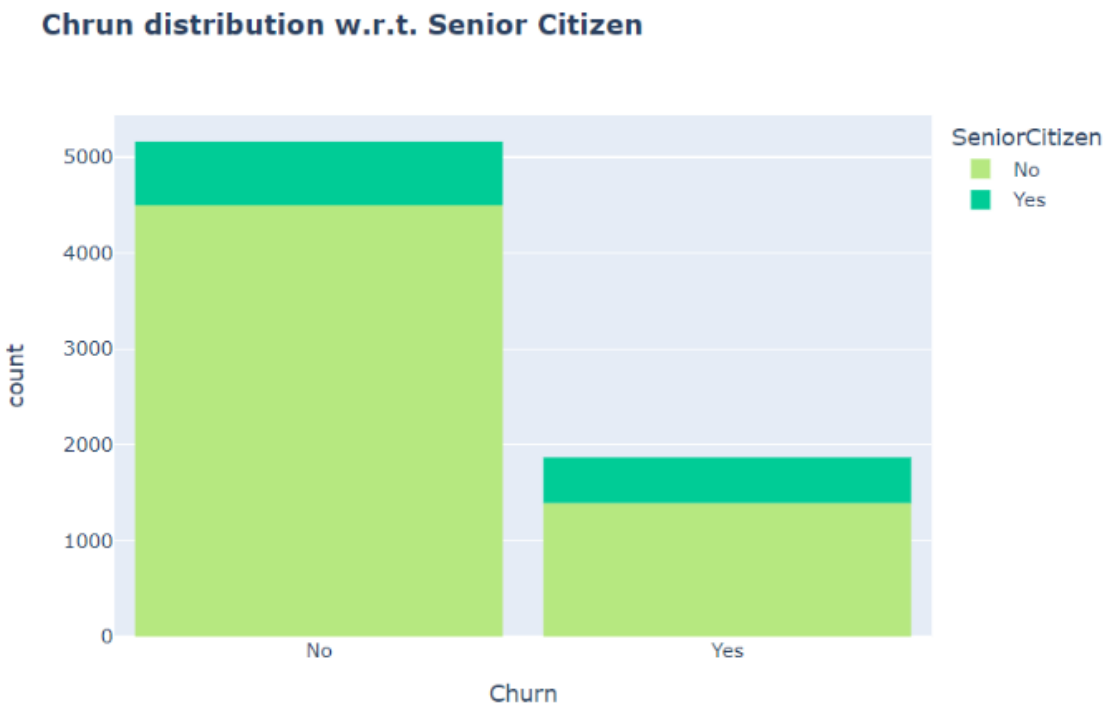
service. Customers having DSL service are majority in number and have less churn rate compared to Fibre optic service.

6. Online Security:



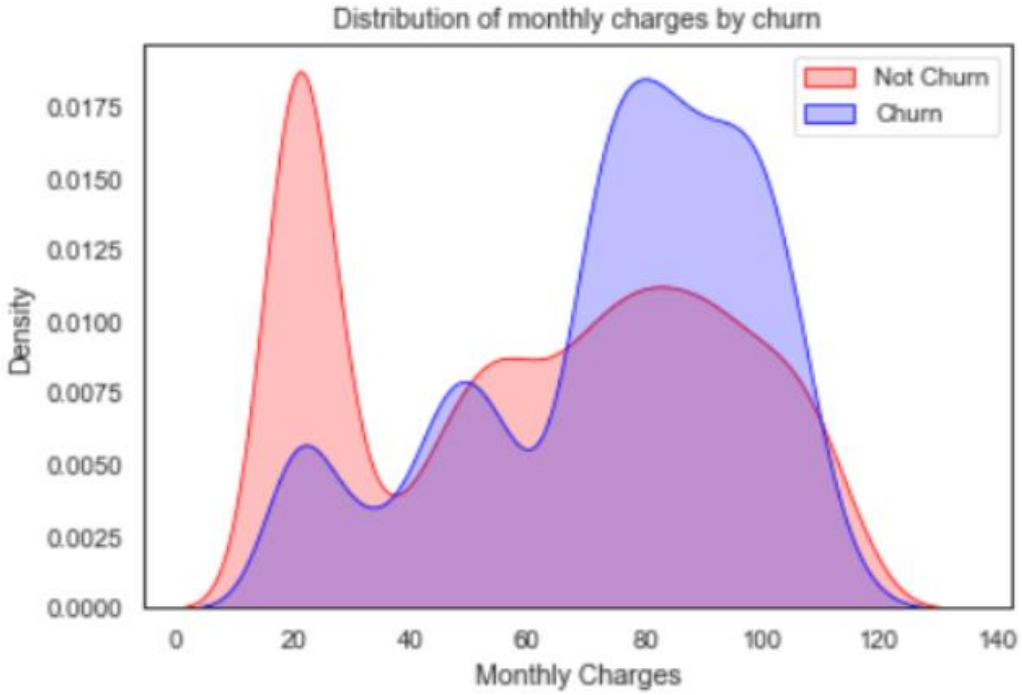
Majority of churners don't have online security.

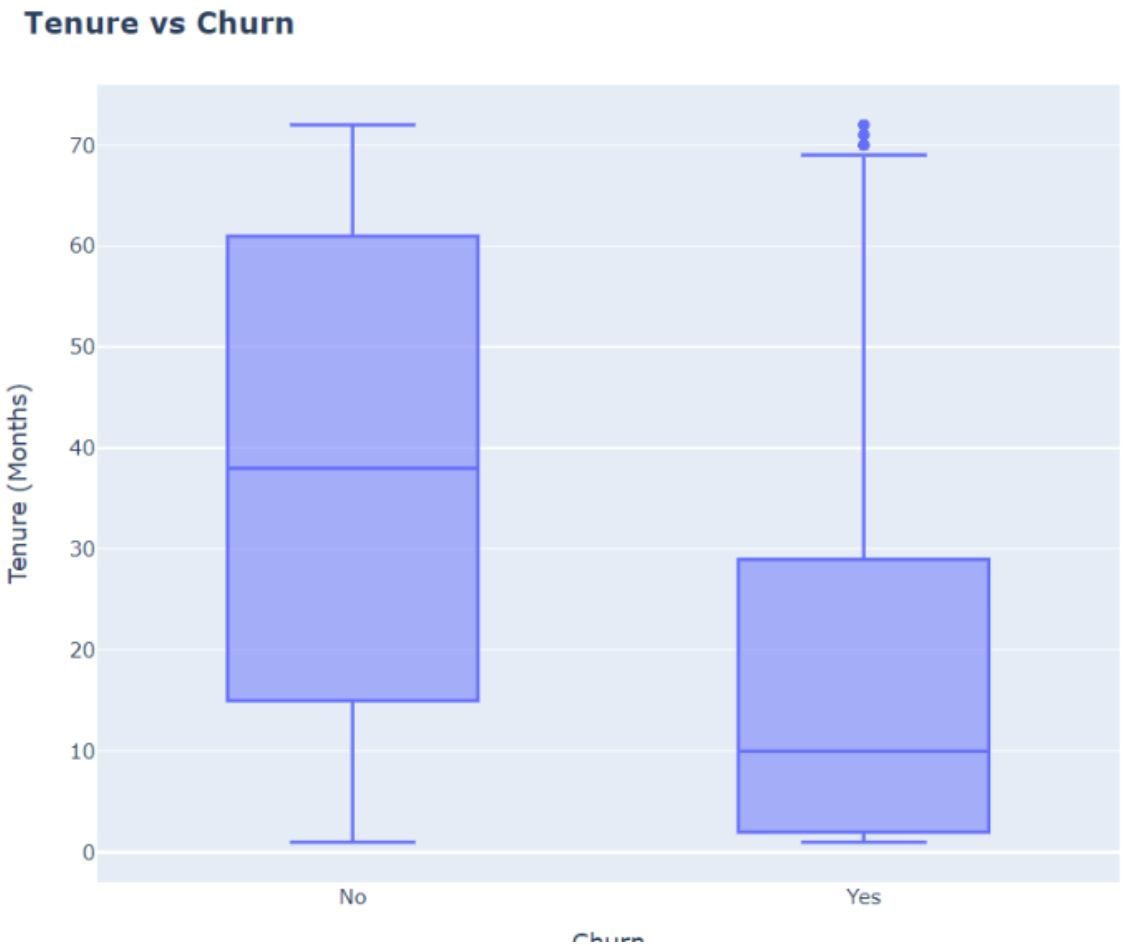
7. Senior Citizen:



Most of the senior citizens churn; the number of senior citizens are very less in over all customer base.

8. Distribution with Charges and tenure:





Customers with higher Monthly Charges are also more likely to churn.
New customers are more likely to churn.