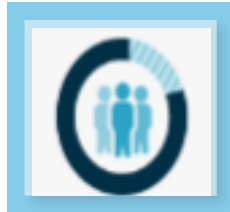Home Page: This is the title page having data analysis project overview information.

Customer Demographics: Visual pieces of information are presented to showcase customers' demographic distribution like gender, senior citizen, and partner in comparison with churned customers.

Subscriptions: The visual comparison of total vs churned customers in subscriptions to various services provided by the telecom service provider.
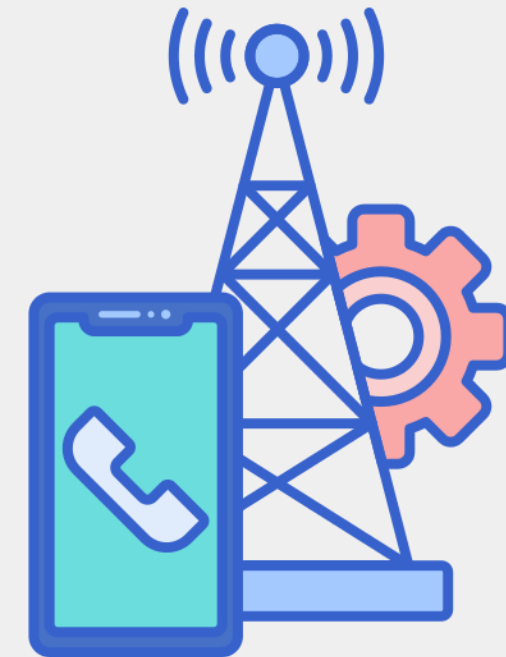
Customer Information: Each customer's complete profile has been summarized to inspect the customer's services and demographic information with a click.

Key Insights: This page contains the key takeaways of all the findings drawn based on the customer churn data analysis.

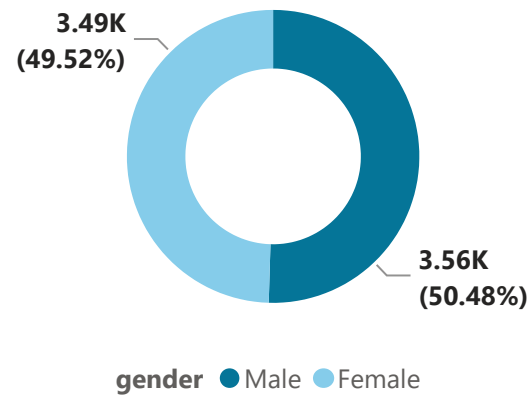# Customer Churn Analysis (Telecom Sector)

Customer Demographics Analysis

CUSTOMERS DISTRIBUTION
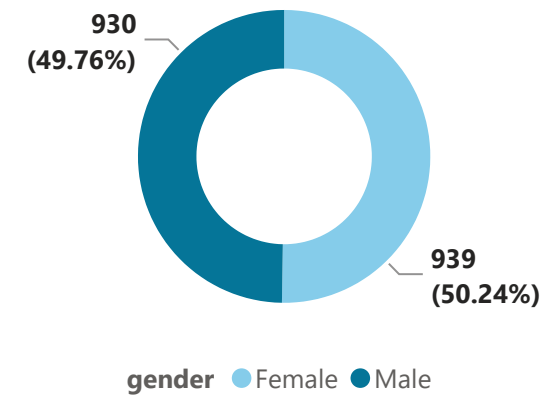
Total Customers
7043

Customers By Gender

3.49K (49.52%)

3.56K (50.48%)

gender ● Male ● Female

Monthly Revenue

$456.12K

Total Revenue

$16.06M

Senior Citizen

83.79%

16.21%

No   Yes

SeniorCitizen

Tenure wise Distribution

100%

0-20	2,878
20-40	1,408
60-100	1,407
40-60	1,350

46.9%

Contract

20.91% (20.91%)

24.07% (24.07%)

55.02% (55.02%)

Contract
● Month-to-...
● Two year
● One year

Customer by Partner

51.70%   48.30%

No   Yes

Partner

CHURNERS DISTRIBUTION

Churned Customers
1869

Churned Customers By Gender

930 (49.76%)

939 (50.24%)
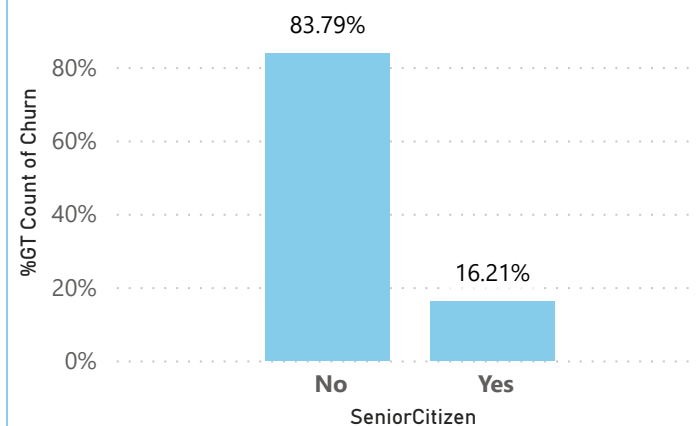
gender ● Female ● Male

Monthly Revenue Loss

$139.13K

Total Revenue Loss
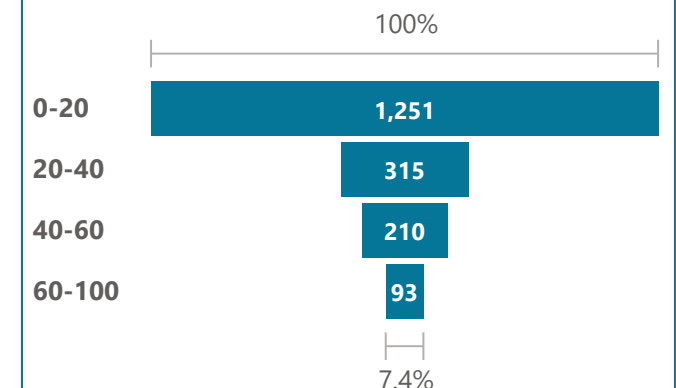
$2.86M

Senior Citizen

74.53%

25.47%

No   Yes
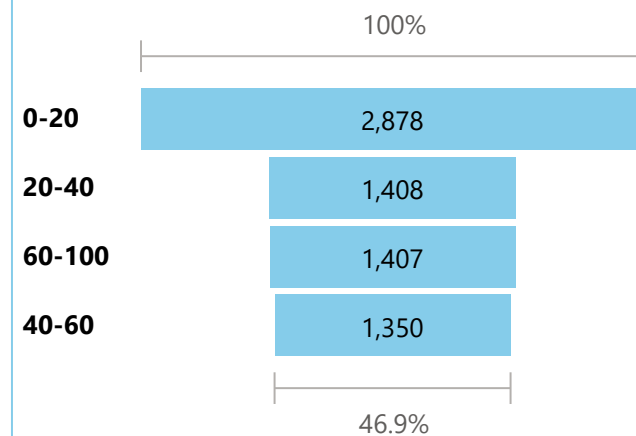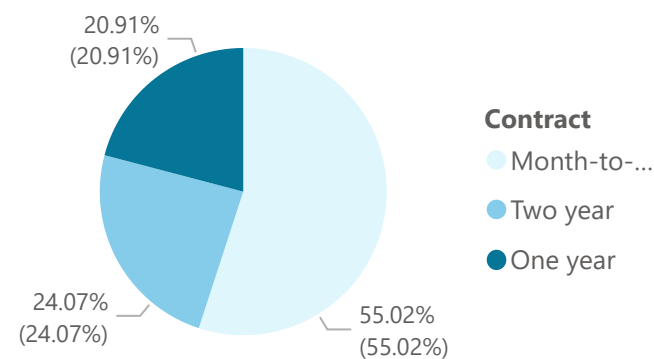
SeniorCitizen
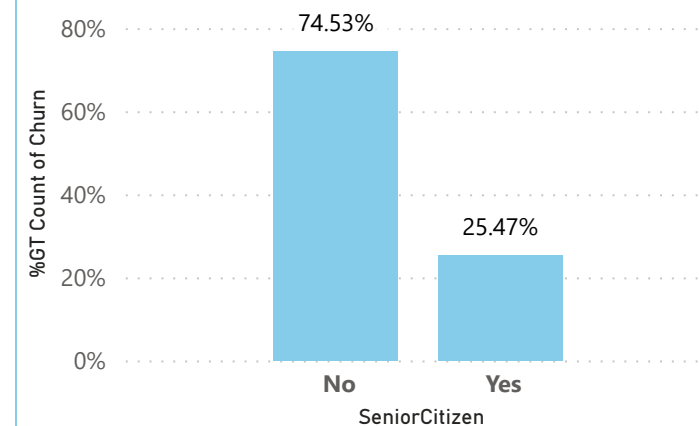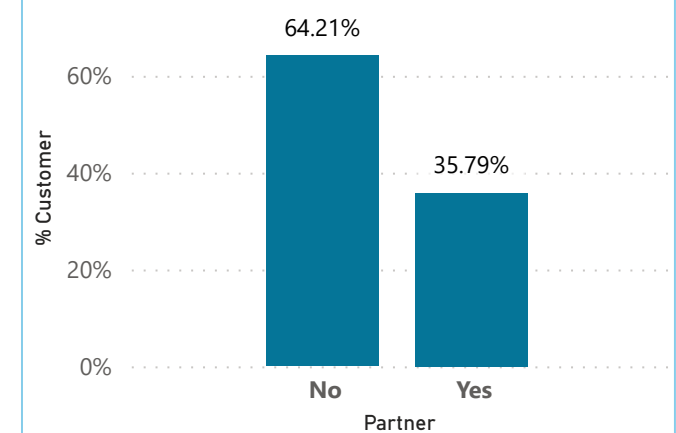
Tenure wise Distribution of Churned Customers

100%

0-20	1,251
20-40	315
40-60	210
60-100	93

7.4%

Contract

8.88% (8.88%)

88.55% (88.55%)

Contract
● Month-to-...
● One year
● Two year

Customer by Partner

64.21%   35.79%

No   Yes
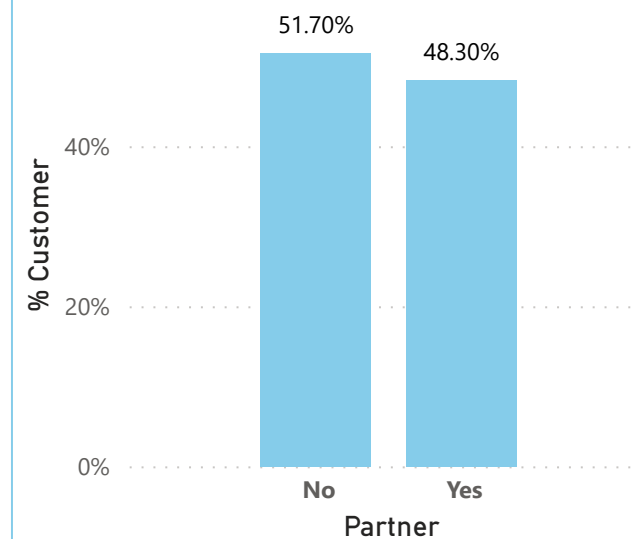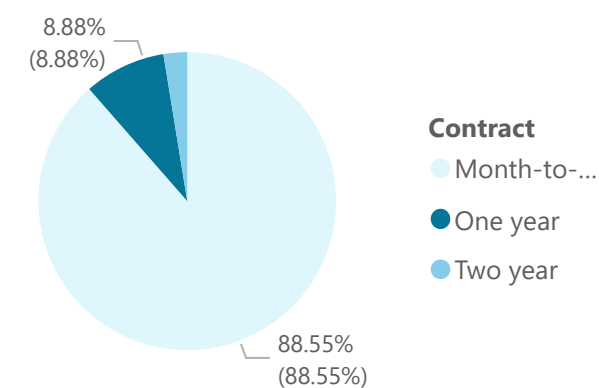
Partner

Subscriptions Analysis

CUSTOMERS SUBSCRIPTIONS

Total Customers
7043

Internet Services
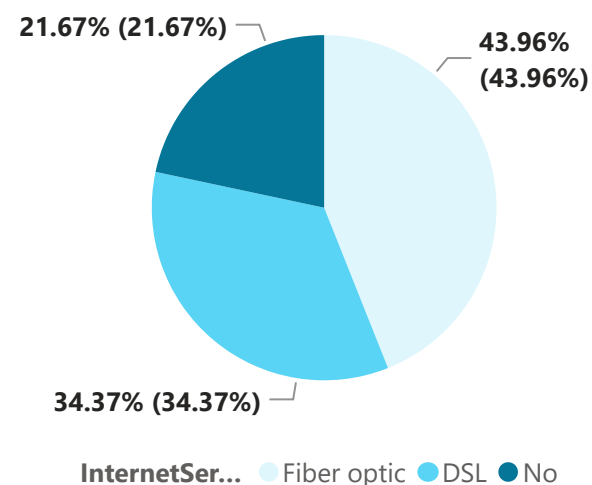
21.67% (21.67%)
43.96% (43.96%)
34.37% (34.37%)

InternetSer... Fiber optic DSL No

Online Security

40%
20%
0%
No   Yes   No internet service

% Churn Total Count

Online Backup

43.84%
34.49%
21.67%
40%
20%
0%
No   Yes   No internet service

% Churn Count Total Count

Tech Support Service

49.31%
29.02%
21.67%
50%
0%
No   Yes   No internet service

% Churn Count Total Count

Streaming TV

39.90%
38.44%
21.67%
40%
30%
20%
10%
0%
No   Yes   No internet service

% Churn Count Total Count

Streaming Movies

39.54%
38.79%
21.67%
40%
30%
20%
10%
0%
No   Yes   No internet service
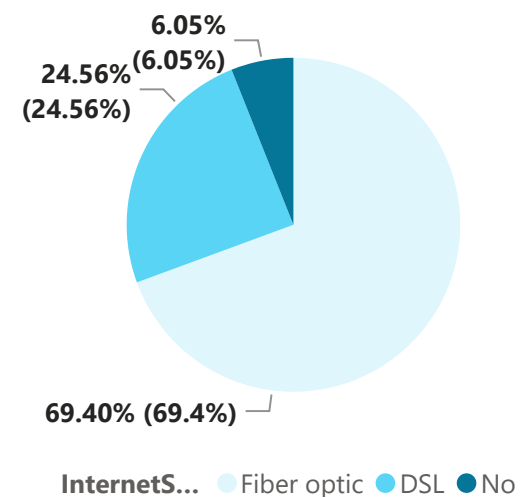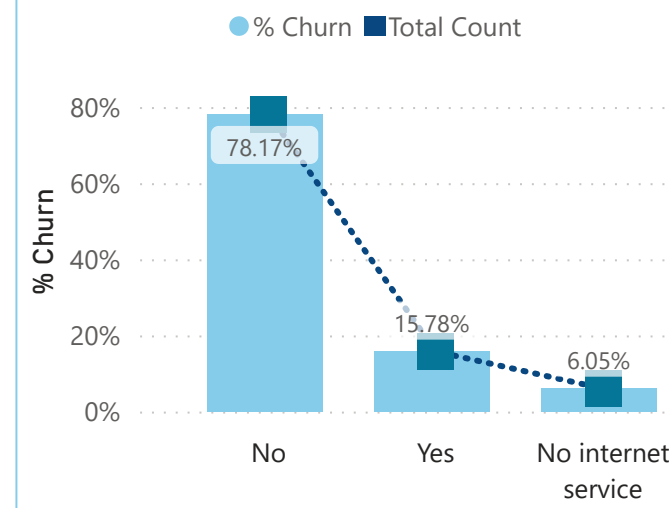
% Churn Count Total Count
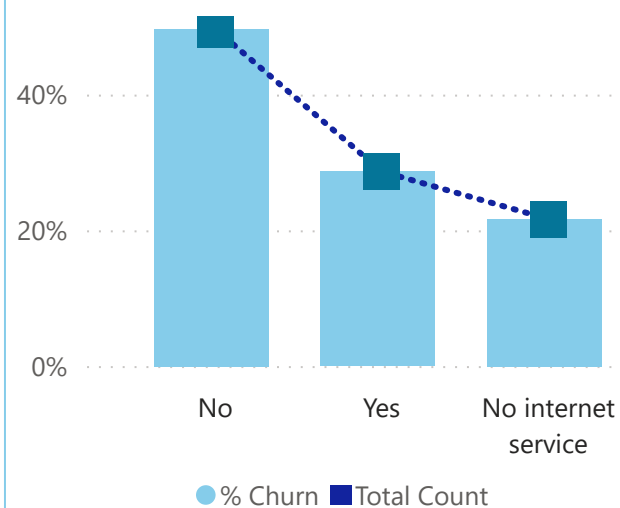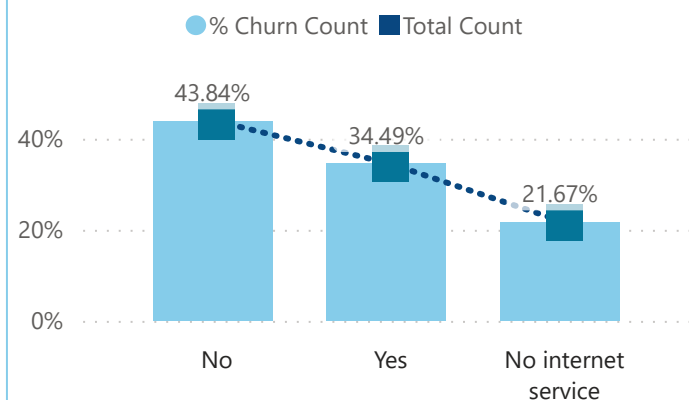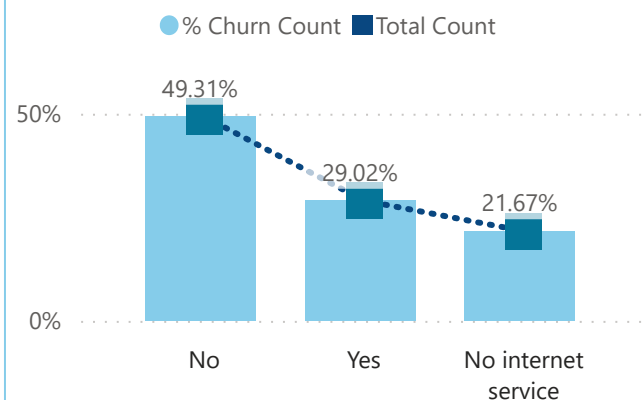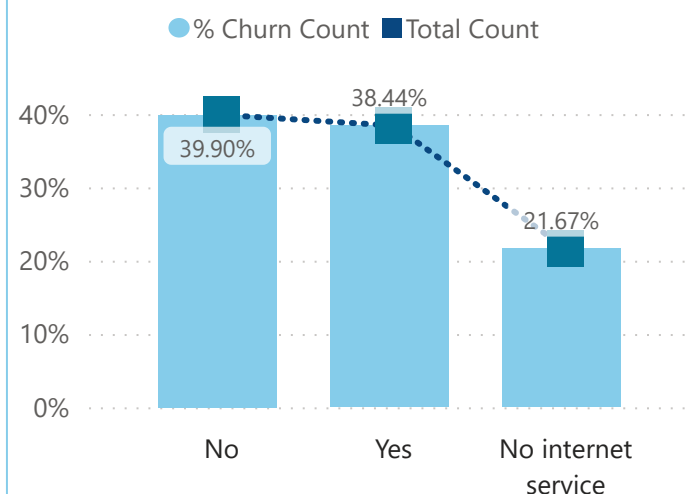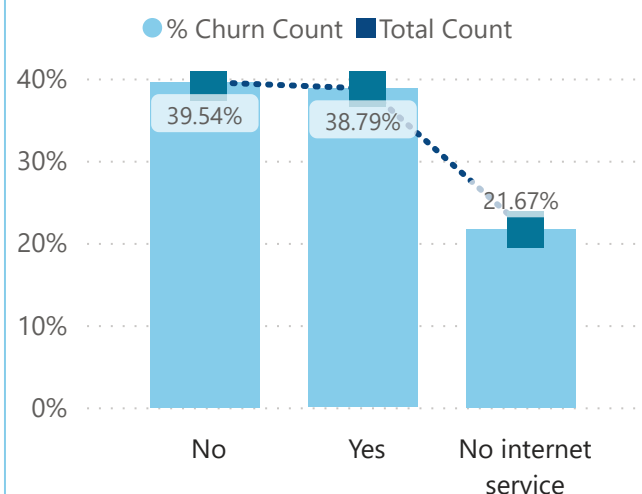
CHURNERS SUBSCRIPTIONS

Churned Customers
1869

Internet Services Churned Customers

6.05% (6.05%)
24.56% (24.56%)
69.40% (69.4%)

InternetS... Fiber optic DSL No

Online Security

78.17%
15.78%
6.05%
80%
60%
40%
20%
0%
No   Yes   No internet service

% Churn % Churn Total Count

Online Backup

65.97%
27.98%
6.05%
50%
0%
No   Yes   No internet service

% Churned Customer Total Count

Tech Support Service

77.37%
16.59%
6.05%
50%
0%
No   Yes   No internet service

% Churn Count Total Count

Streaming TV

50.40%
43.55%
6.05%
60%
40%
20%
0%
No   Yes   No internet service

% Churn Count Total Count

Streaming Movies

50.19%
43.77%
6.05%
60%
40%
20%
0%
No   Yes   No internet service

% Churn Count Total Count
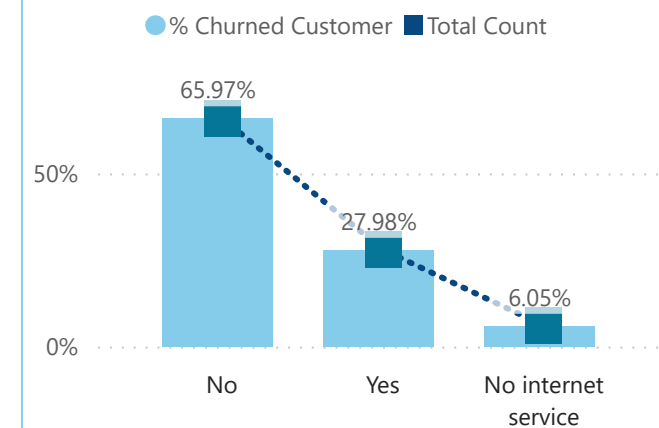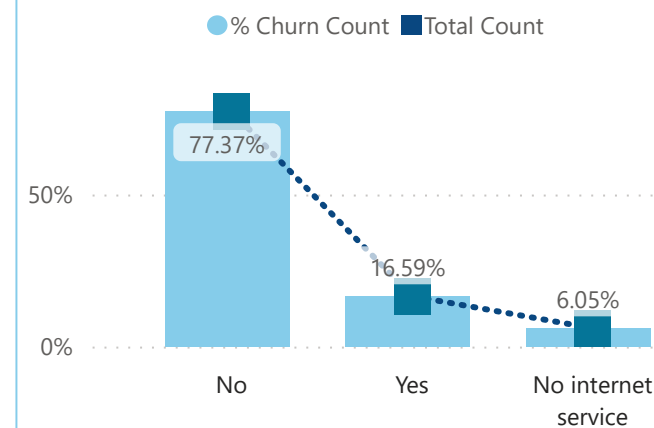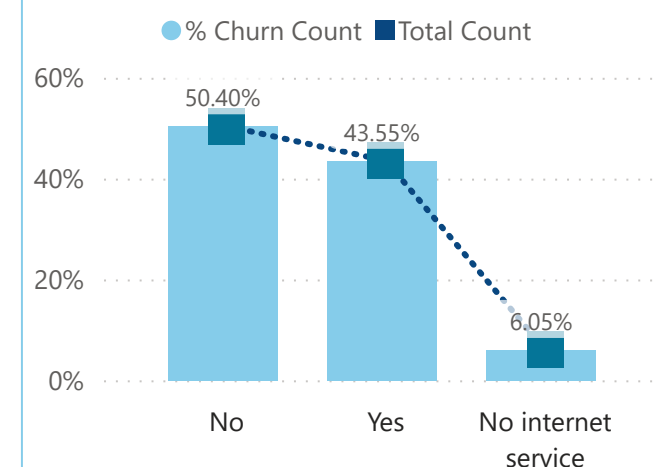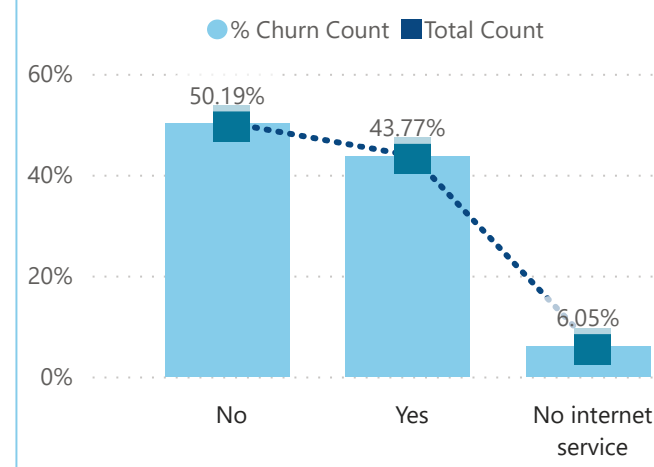
Customer Information

Customer ID

- [ ] 0002-ORFBO
- [ ] 0003-MKNFE
- [ ] 0004-TLHLJ
- [ ] 0011-IGKFF
- [ ] 0013-EXCHZ
- [ ] 0013-MHZWF
- [x] 0013-SMEOE
- [ ] 0014-BMAQU
- [ ] 0015-UOCOJ
- [ ] 0016-QLJIS
- [ ] 0017-DINOC
- [ ] 0017-IUDMW
- [ ] 0018-NYROU
- [ ] 0019-EFAEP
- [ ] 0019-GFNTW
- [ ] 0020-INWCK
- [ ] 0020-JDNXP
- [ ] 0021-IKXGC
- [ ] 0022-TCJCI
- [ ] 0023-HGHWL
- [ ] 0023-UYUPN

Demographics

Gender	Fem...
Senior Citizen	Yes
Partner	Yes
Dependents	No

Customer Status

Churned	No

Account Type

Contract	Two ...
Tenure	71
Monthly Charges	$109.7
Total Charges	$7.9K
Paperless Billing	Yes
Device Protection	Bank trans...

Subscriptions

Internet Services	Fiber...
Phone Services	Yes
Multiple Lines	No
Online Backup	Yes
Online Security	Yes
Device Protection	Yes
Tech Support	Yes
Streaming Movies	Yes
Streaming TV	Yes

Key Insights

The key observation drawn by analyzing the dataset using **PowerBi** and **Python** is that the contract type and tenure are key factors for customer churn. The month-to-month contract-type customers with short-term relations with the company are highly likely to churn as they don't have any service contract to keep them obliged for the services.

Customer demographics like Gender, Partner, Dependent, and Senior Citizen do not show any significant trend in data analysis.

The customers having fiber optic connection and availing additional services like tech support and entertainment services like Streaming Movies/ TV, and customer support are less likely to churn whereas customers having only fiber optic plan with no additional services are highly likely to churn as this could be expensive on their pocket.

Based on machine learning model testing, the random forest classifier with SMOTEEN is having highest accuracy in predicting customer churn with 90% accuracy. The decision tree model is also good at predicting accuracy with high F1 score, Precision, and Recall values..