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## IME 672A: Data Mining & Knowledge Discovery

### Assignment 1: Customer Churn rate in a Telecom Company

We have provided the data of a Telecom Company and we have to analyze on which factors the customers are churning their service. So, first we Cleanse the Data Set and after that we Analyze the data on various attributes and find out in which case, they most likely to churn from the service.

#### Data Cleansing:

In the dataset we have provided the data of 7,043 customers with 21 attributes. Out of which 3 are numeric and 18 are categorical. After data cleansing, we convert 'TotalCharges' to numeric and got 11 null entries. Because the number of null entries is small, we can drop them from the main database.

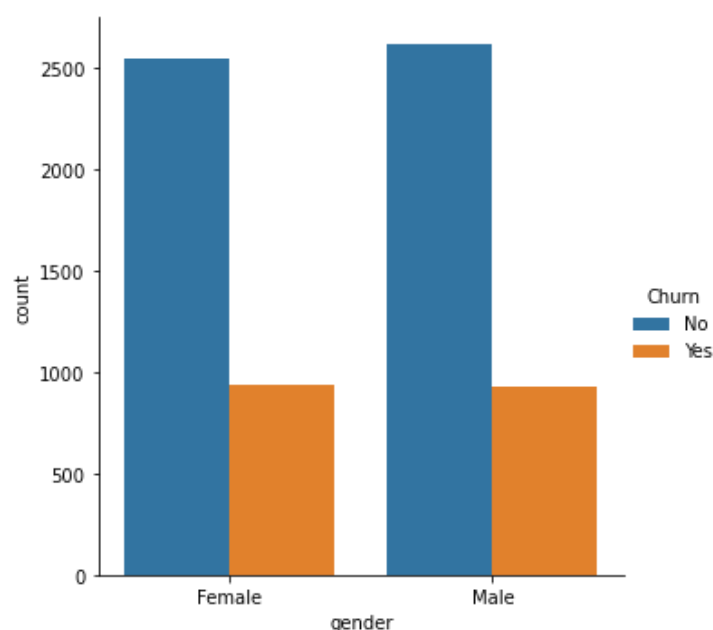
#### Analysis:

1. After that we analyze the percentage of customer which churned the telecom service and we got following results:

26.6% of customer churned from the service i.e. 1,869 customers out of 7,032 .

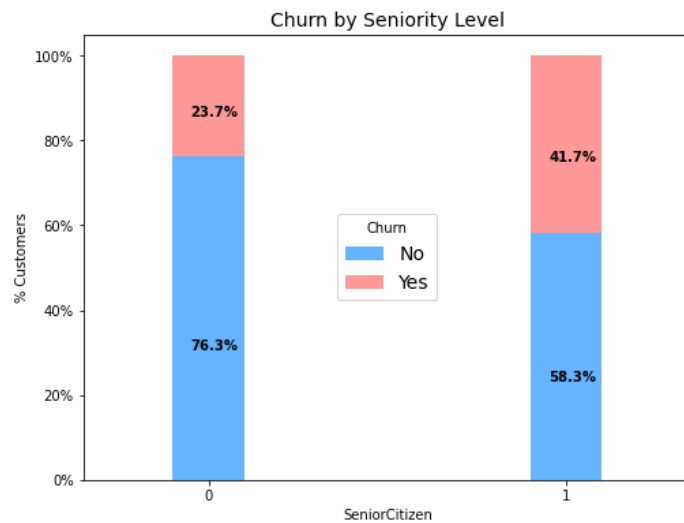
2. Customer which churn by Gender:

There is 50.5% male and 49.5% female customers out of which below is the graphical presentation of which leave the service:



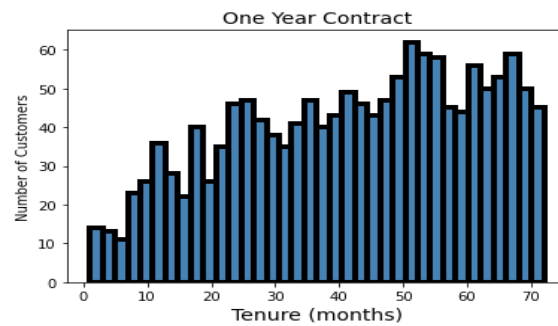
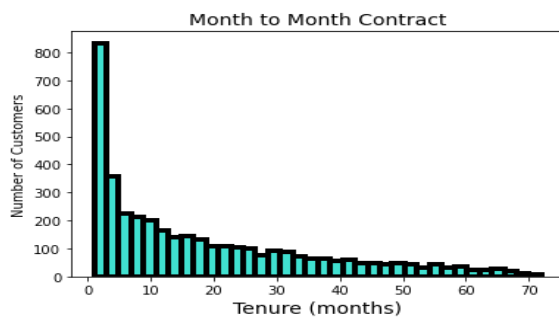
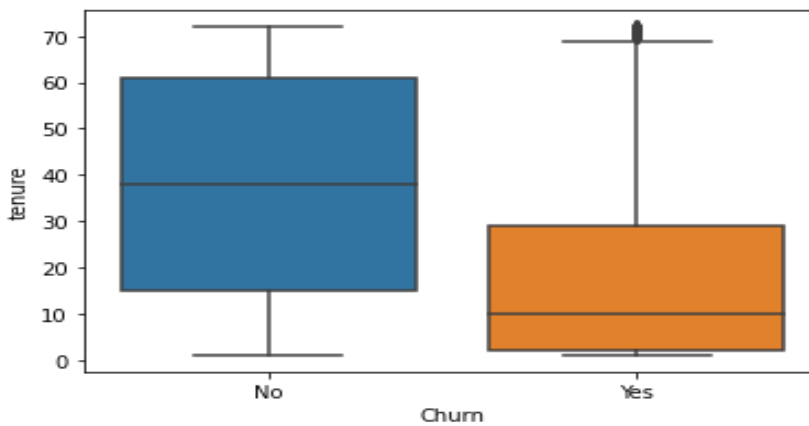
### 3. Customer who Churns by age group:

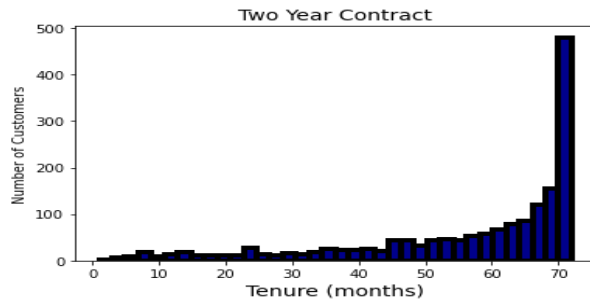
A senior citizen is more likely to churn for the telecom service.



### 4. Duration Plan adapted by customers:

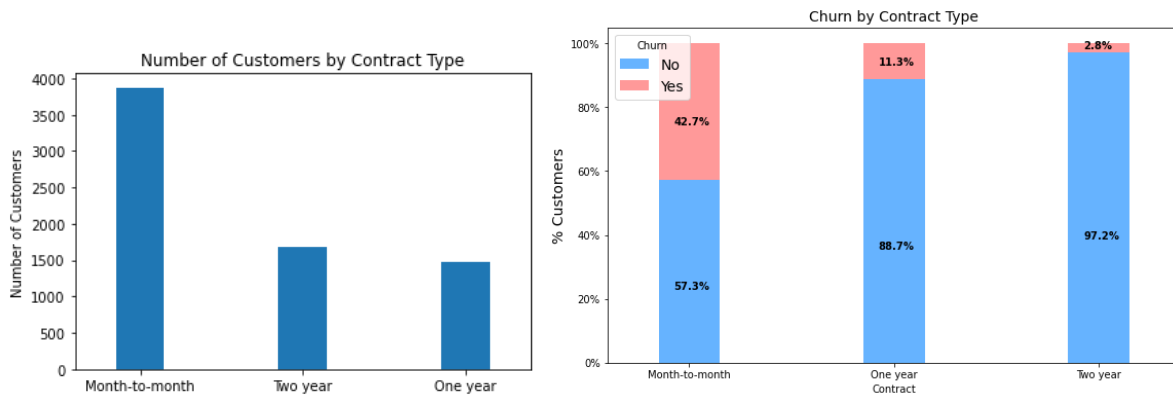
Customers with less time tenure are more likely to churn.





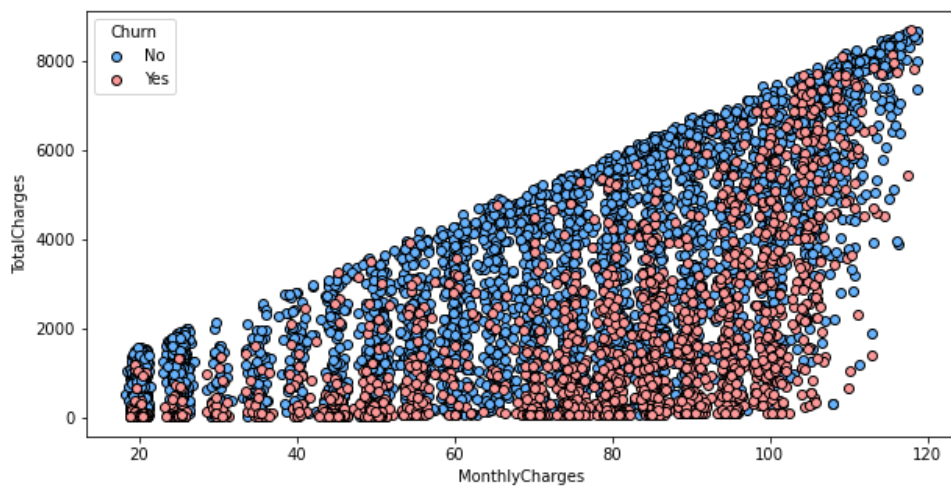
## 5. Type of plan adopted by customers:

Month-to-Month Customers most likely to churn and Two Year plan customers are most loyal.

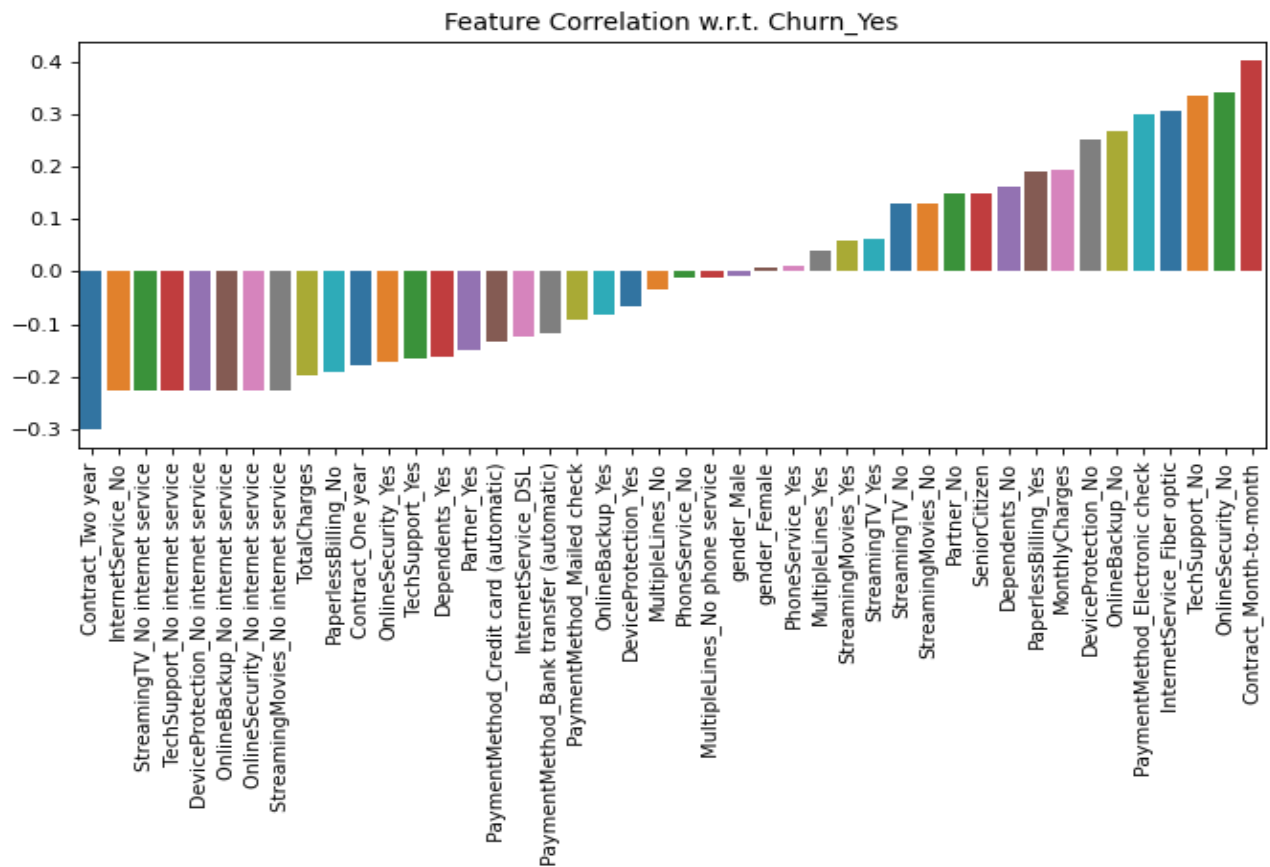


## 6. Monthly and Total Charges:

Customers having more monthly charges, but less total charge are more likely to churn.



## 7. Feature Correlation of churn with other attributes:



By the Correlation plot we find out that service and contract details affect the churn rate the most. Whereas personal characteristics like gender doesn't play a great role.

Hence, by this graph we can further say that:

- The customers who have Fiber-optic Internet Service are more likely to cancel than those who have DSL.
- Customers who don't have Online Security, Device Protection, Online Backup and Tech Support are more likely to leave.
- Customers that have Payment Method as Electronic Check have more likely to leave.
- New users are more likely to leave the service.