Customer Churn Prediction

IME672A

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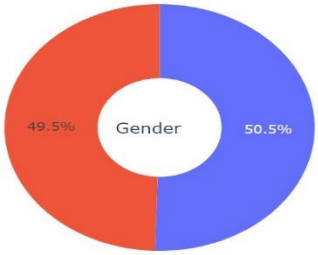
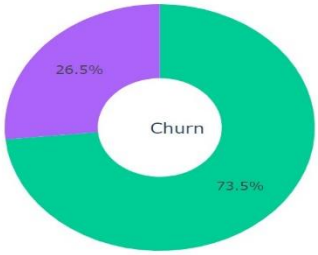
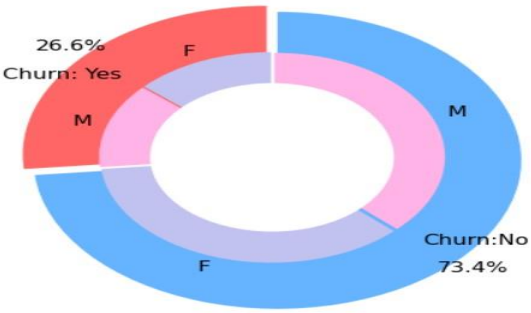
Customer churn is defined as when customers or subscribers discontinue doing business with a firm or service.

Data Visualization

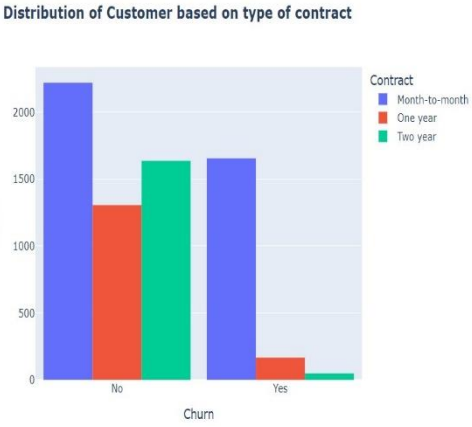




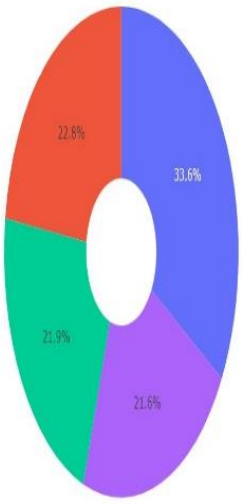


Here, Gender distribution almost equally and 26.6% of customer switched to another firm

Churn based on following attributes of customer

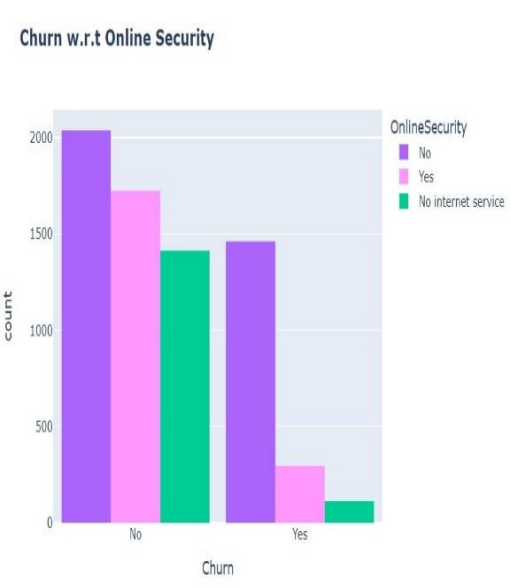


About 75% of customer with Month-to-Month Contract opted to move out as compared to 13% of customers with One Year Contract and 3% with Two Year Contract

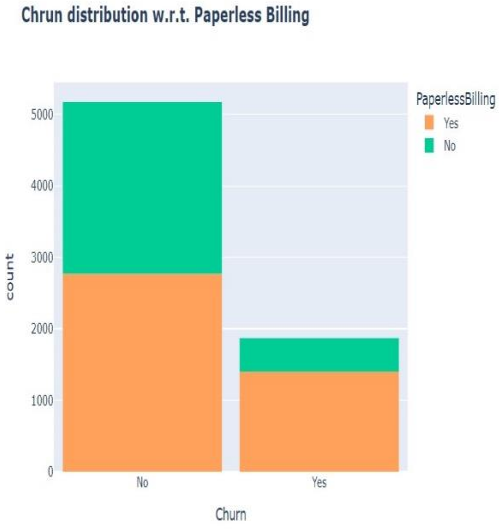


Pie chart distribution based on payment done by customers

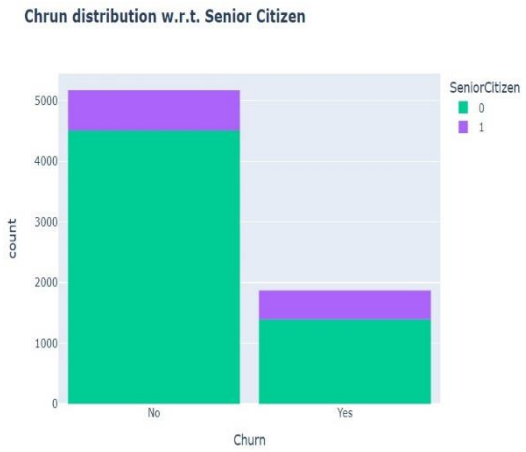
Payment made by electronic check mostly made by customer moved out w.r.t other payment method



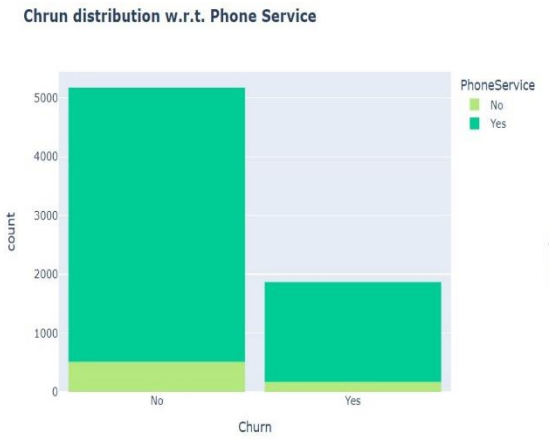
Most customers churn in the absence of online security



Customers with Paperless Billing are most likely to churn.

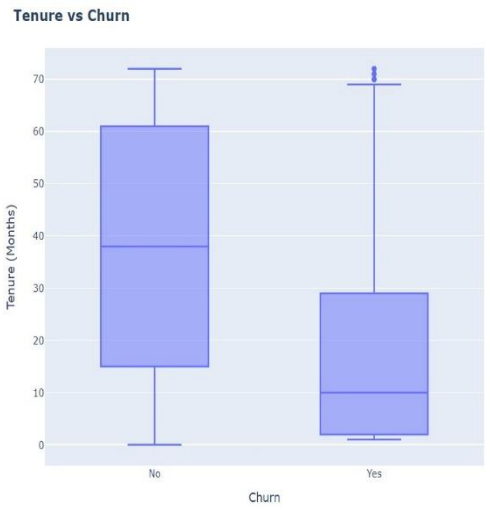


It can be observed that the fraction of senior citizen is very less.Most of the senior citizens churn.

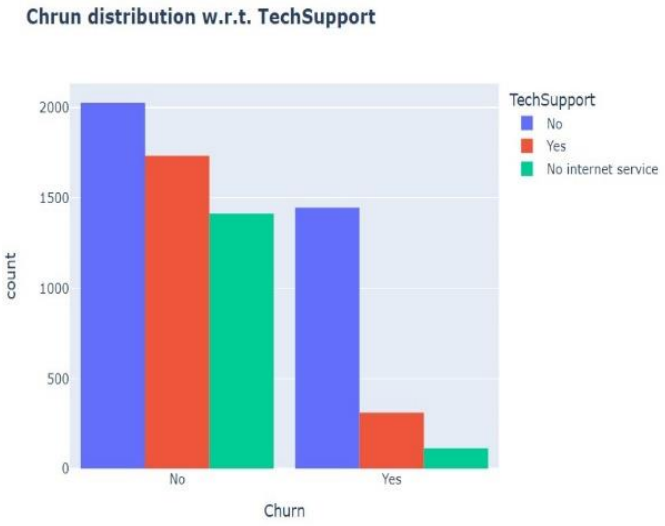


Very small fraction of customers don't have a phone service and out of that, 1/3rd Customers are more likely to churn.

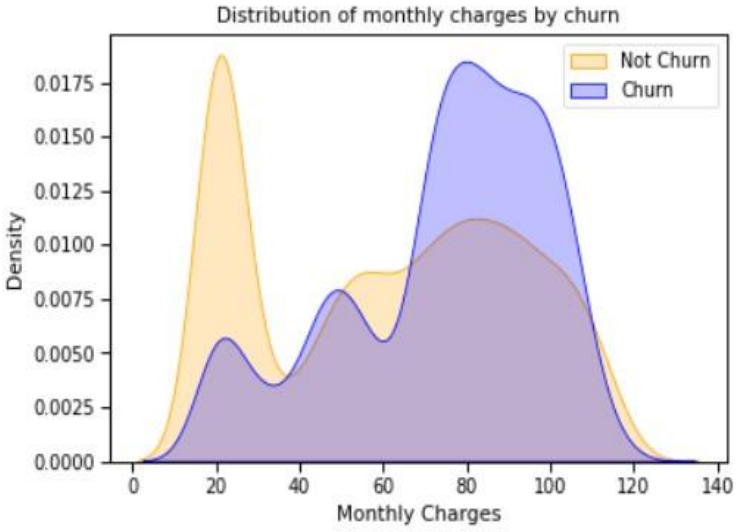
Customers that does not have partners are more likely to churn



New customers are more likely to churn



Customers with no Tech-Support are most likely to migrate to another service provider.



Customers with higher Monthly Charges are more likely to churn

About data:

- Customers who left within the last month – the column is called Churn
- Services that each customer has signed up for – phone, multiple lines, internet, online security, online backup, device protection, tech support, and streaming TV and movies
- Customer account information - how long they've been a customer, contract, payment method, paperless billing, monthly charges, and total charges
- Demographic info about customers – gender, age range, and if they have partners and dependents

Data Preprocessing

- I have dropped CustomerID because it's irrelevant to attributes of customer
- I have mapped Yes to 1, No to 0 and Male to 1 & Female to 0

Build ANN(Artificial Neural Network) model using tensorflow/keras

- I have scale down [0 1] attribute like Tenure, charges
- Accuracy of model is 76.69 %

Classification report

	precision	recall	f1-score	support
0	0.81	0.87	0.84	999
1	0.62	0.51	0.56	408
accuracy			0.77	1407
macro avg	0.72	0.69	0.70	1407
weighted avg	0.76	0.77	0.76	1407

Confusion matrix