TELCO CUSTOMER CHURN

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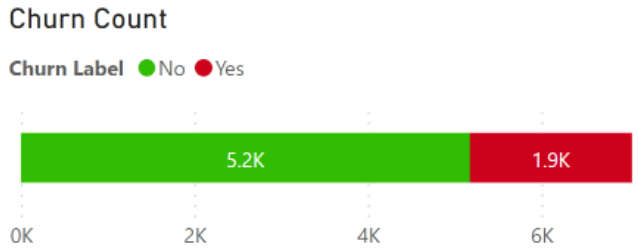
6th July 2022

DATA ANALYTICS

Analysing Data of Customer Churn

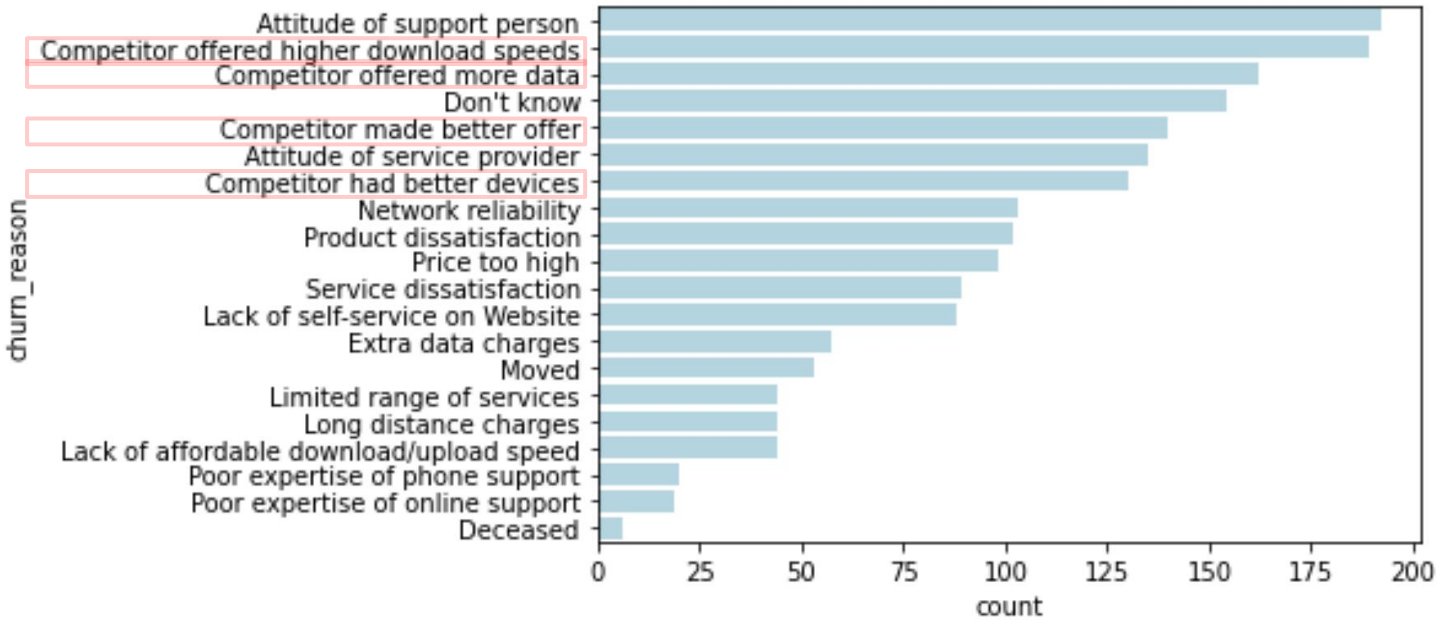
For Actionable Insights

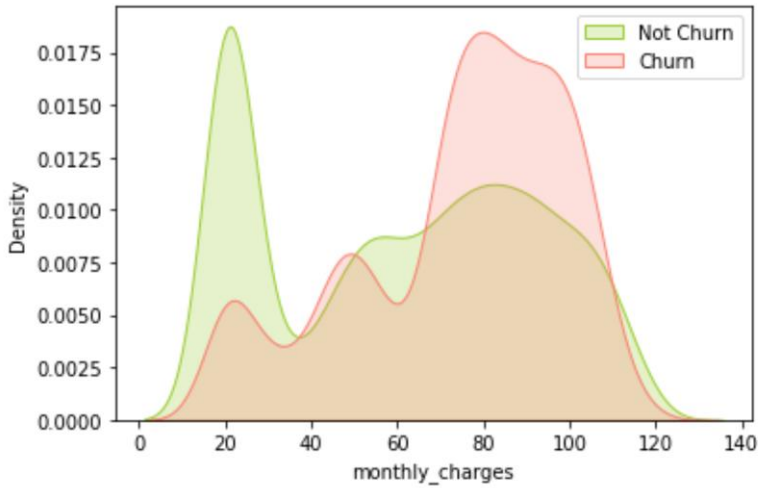
PRICING

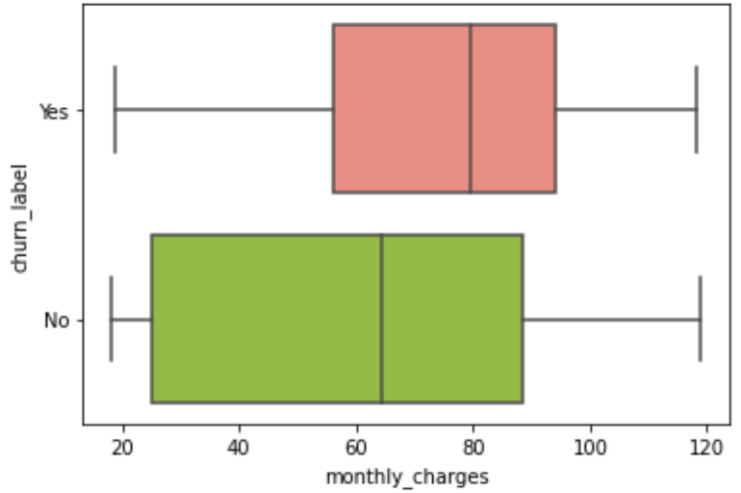


- Top reasons for churn are pull factors where competitors offered better services, devices and prices.
- Churns increases as the price increases
- 50% of churners left when the price is $80 and above.
- Price wasn't the top reason for churners. Competitors may offer bundled or superior services at the same price, resulting our pricing as less competitive.

Possible Action:
- Adjust pricing with better bundles
- Match competitors offers such as devices





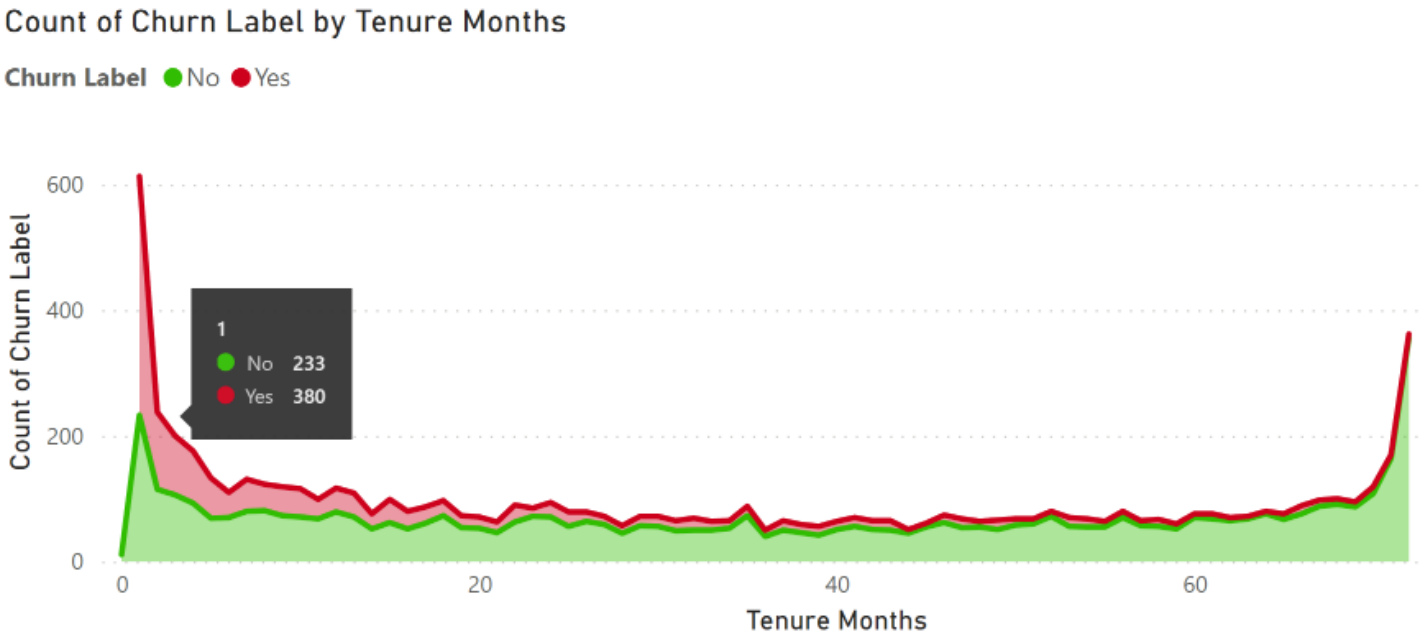


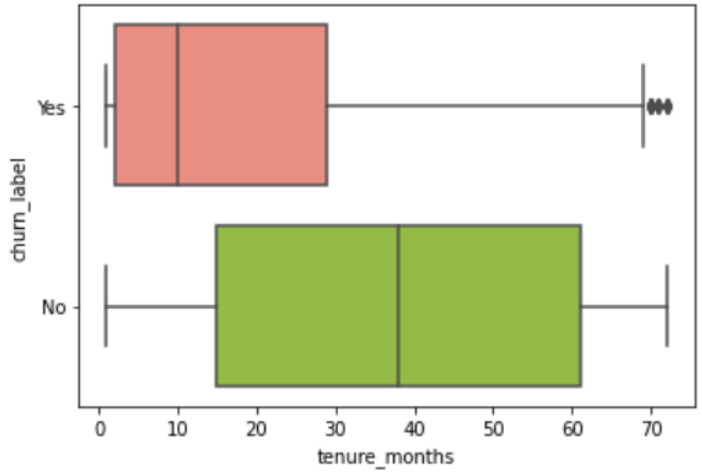
NEW USERS

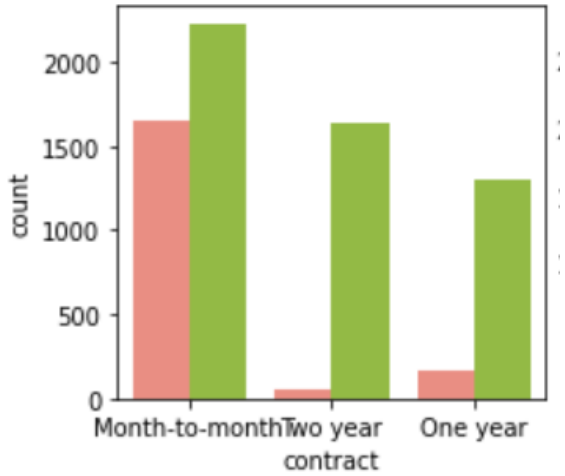
- Breakdown of tenure shows high churners at the beginning few months, especially the first month.
- 50% of churners occurred within the first 10 months, while 75% does not last beyond 30 months.
- Majority of the churns were not tied down with contract. Users are free to switch providers when better offers and services are available.

Possible Action:

- Offer beneficial deals to tie down customer with contract.
- Target new customers to satisfy their expectations.





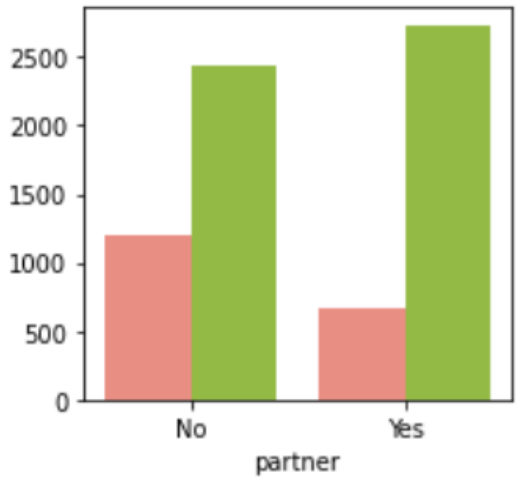


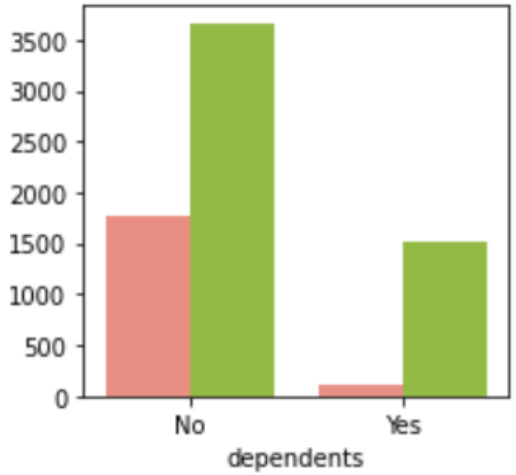
TARGET SINGLE

- Customers with no partner or dependents have higher tendency to churn.

Possible Action:

- Customise offers for customers without partner or dependents



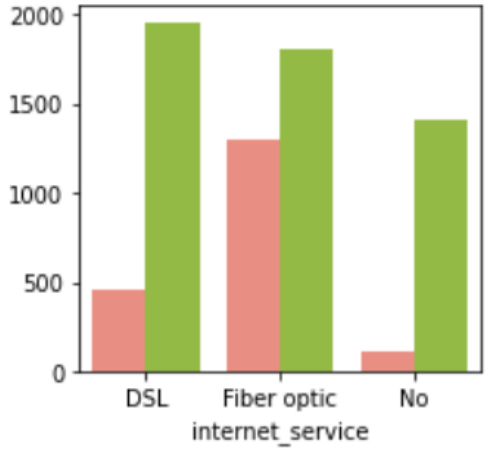


FIBER OPTIC

- Fiber optic is the future for internet, yet churn for fiber optic is extremely high.
- Customers would expect high speed and reliability of service.

Possible Action:

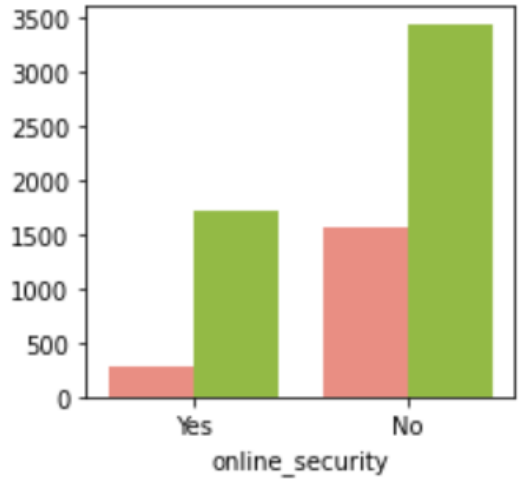
- Find out if fiber optic performance is on to par with industry.
- Formulate pricing strategy that is inline with competitor.

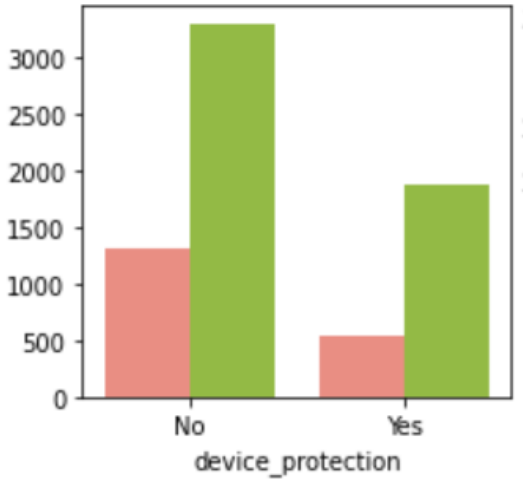


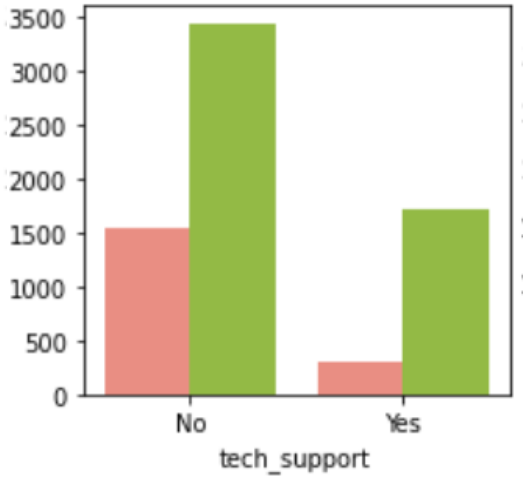
SERVICE MISSING

- Higher churns when these services are not engaged.
- Is customer price sensitive?
- Inversely customer may feel insecure without these services.

Possible Action:
- Find the root cause of the churn.



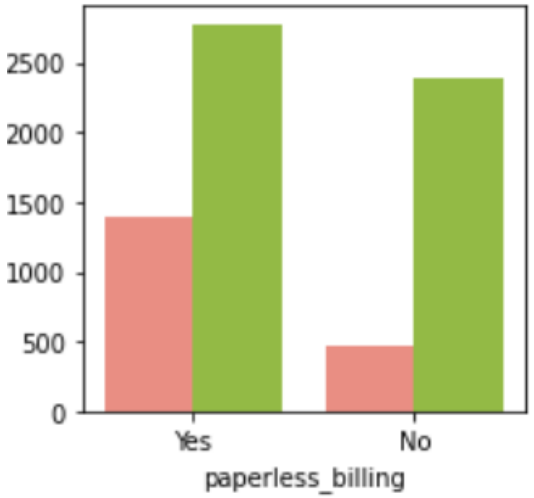


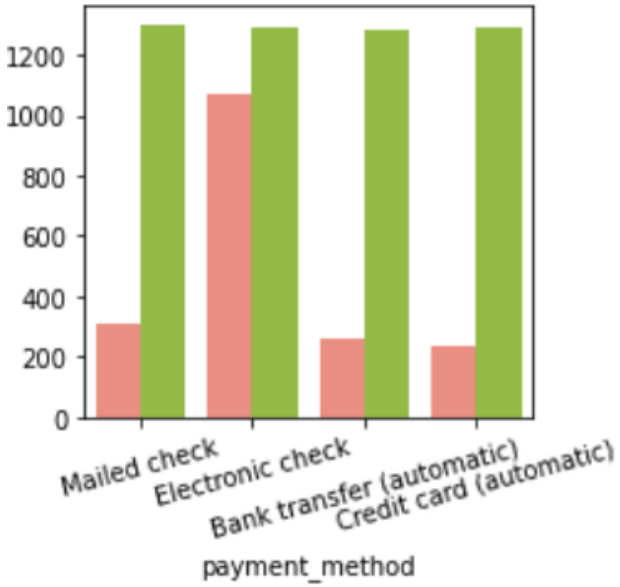


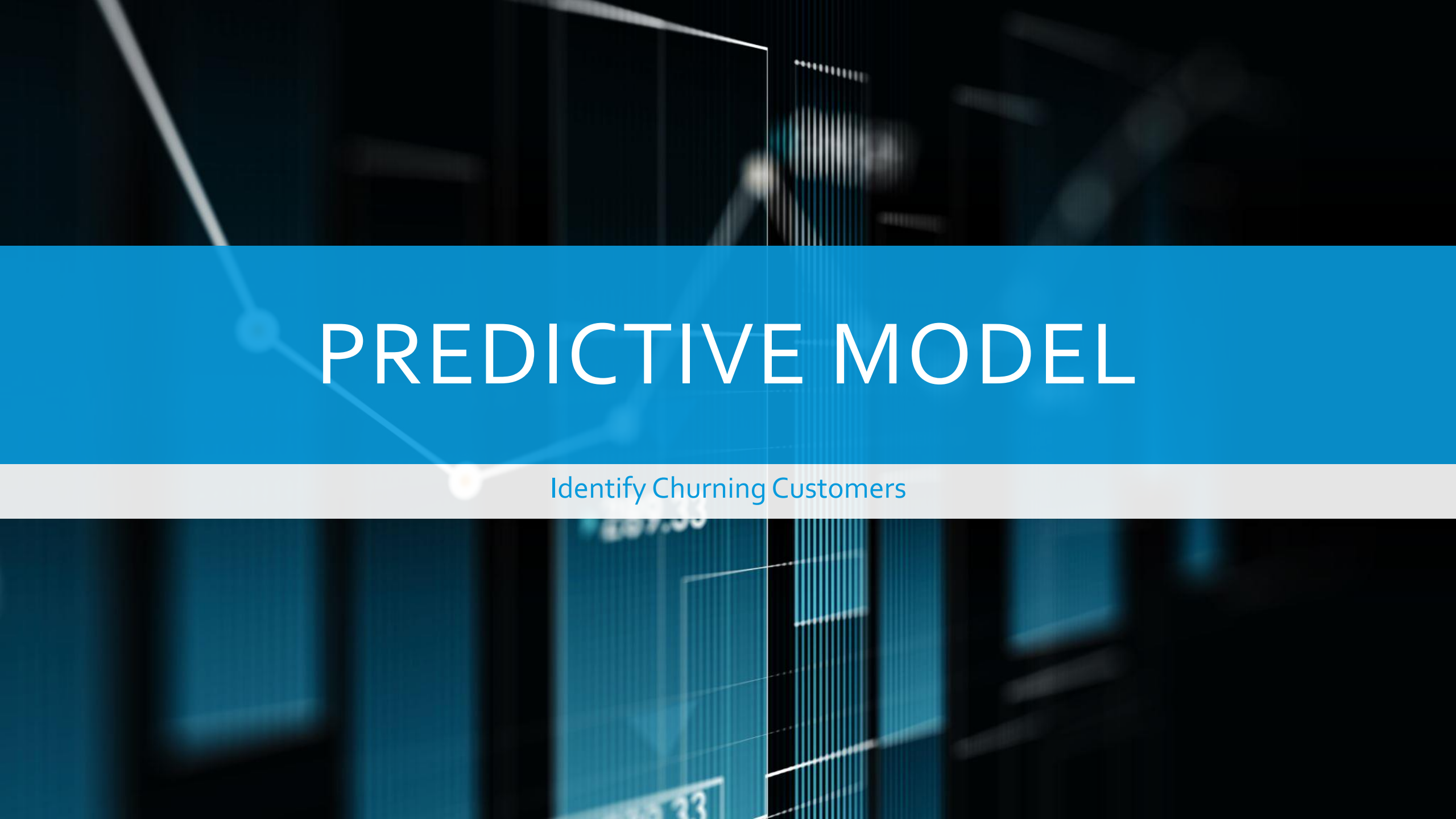
E-PAPER

- Customers using paperless billing and electronic check are likely to churn.
- Users are likely to be tech savvy and have higher expectation on provider to deliver better services.

Possible Action:
- Understand these consumers behavior and expectation to deliver according to their want.







PREDICTIVE MODEL

Identify Churning Customers

CHURN MODELS

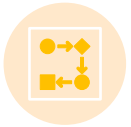
Churn Model is data driven model that uses past data of customers to predict the possibility of similar patterns to occur.

Using the model will help us to identify the customers with higher tendency to churn.

Being able to identify specific groups of churners, allow us to pre-empt with strategic campaigns, offers, promotions, etc, in attempt to prevent customers from churning.

Our objective is to build quick MPV model that will deliver results fast.

Once the model is able to achieve acceptable level of prediction, it can be deployed. Minimally 6o% and above.



It is vital that improvements to the model is continuous via iterative upgrades, modifications and updates.

MODEL FOCUS

LOGISTIC REGRESSION

It is a statistical analysis method to predict a binary outcome, such as yes or no, based on prior observations of a data set.

- ✓ Easy to implement and interpret
- ✗ Don't perform well for complex or non-linear problems

RANDOM FOREST

The random forest is a classification algorithm consisting of many decisions trees. It is a versatile model that can sieve out hidden relationship in complex data.

- ✓ Versatile and robust
- ✗ Complex and longer training period

ARTIFICIAL NEURAL NETWORKS

An artificial neural network is an attempt to simulate the network of neurons that make up a human brain so that the computer will be able to learn things and make decisions in a humanlike manner.

- ✓ Applicable with very complex problem
- ✗ Resource intensive and hard to interpret

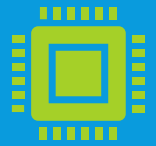
CHURN MODELS

Recall : *The ratio of correct positive predictions to the total predicted positives.*
Precision : *The ratio of true positives to the total of the true positives and false positives.*
F1-Score : *Combines the precision and recall of a classifier into a single metric by taking their harmonic mean*

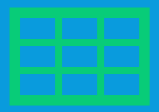
- **Logistic Regression outperformed Random Forest and Artificial Neural Networks.**
- **First pass model using baseline configuration, Logistic Regression has achieved F1-Score of 62%.**
- **Recall is suitable for measuring model performance for churning customers. However, due to imbalanced data, F1-Score maybe more suitable.**

Confusion Matrix	Logistic Regression	Random Forest	Artificial Neural Networks
Accuracy	**82%**	80%	79%
Precision	**71%**	69%	65%
Recall	**56%**	47%	51%
F1-Score	**62%**	56%	57%

FUTURE WORK



Feature engineering to reduce or create features that will enhance the model performance.



Finetuning of model hyperparameters will improve the model prediction.

Extraction of model features to understand customer characteristics and company services that affect churn results.

Re-balance the dataset using method such as over/under-sampling or SMOTE.

Iteratively add new data to train the model to increase the robustness.