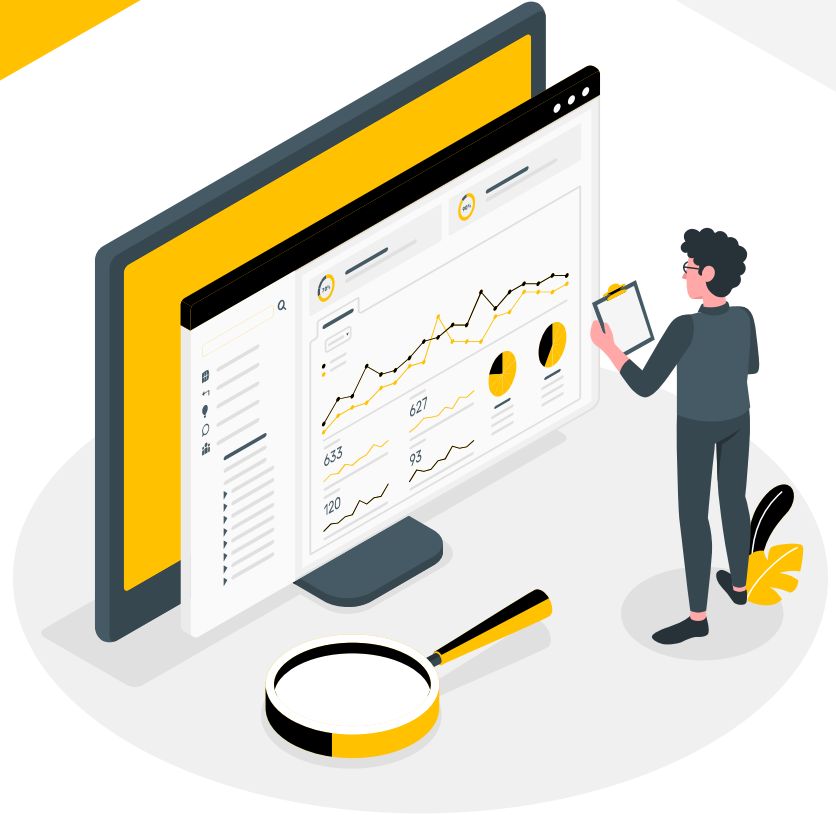# Customer Attrition Model

by Jean Liew

11 June 2021

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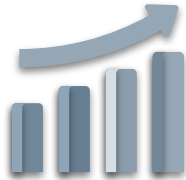CUSTOMER SEGMENTATION

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Key Metrics

01

Guiding Principle

Customer Lifetime Value (CLTV) = **Retention** x **Frequency** x **Monetary**

how much value customer can give business during the lifetime

how long will customer stay with us

how often is the renewal period

how much revenue do we get

Guiding Principle

Customer Lifetime Value (CLTV) = **Retention** x **Frequency** x **Monetary**

how much value customer can give business during the lifetime

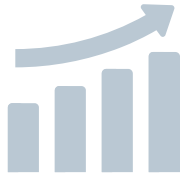how long will customer stay with us

how often is the renewal period

how much revenue do we make

Data Analysis

02

Metadata

Data: 7043 telco users

Active User	76%

Churn User	23%

Source: IBM fictional dataset
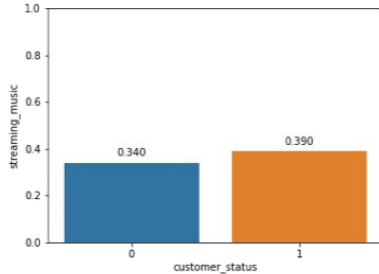
Other Information:

1. Dataset does not consist any time-series information
2. All data are Q3 customer based in California
3. Only churned customers has churn related features
4. All customer is postpaid users
5. Streaming services are optional to customers without charges

Subscription and Services

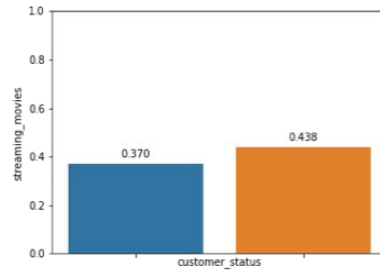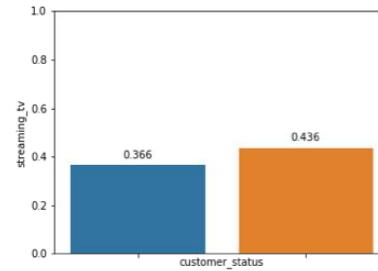**Basic Package Services** *- > Lower Retention Rate*

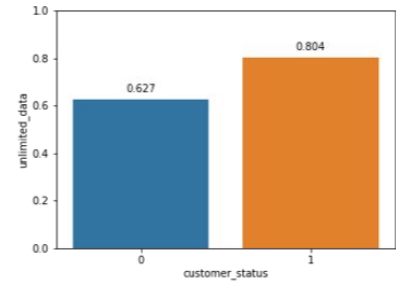| Streaming Music	Streaming Movies	Streaming TV	Unlimited Data
-5% in retention	**-6.8%** in retention	**-7%** in retention	**-17.7%** in retention

Subscription and Services
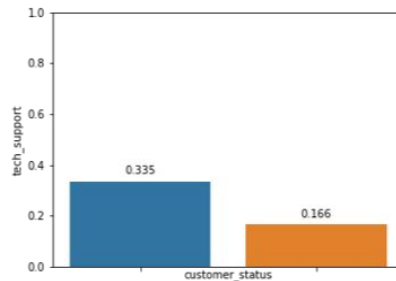
Value Added Services *-> Higher Retention Rate*
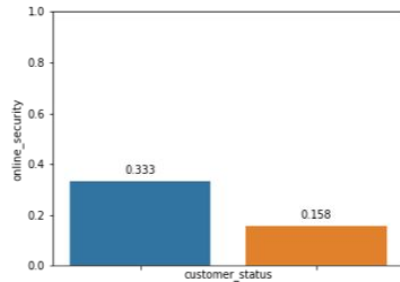
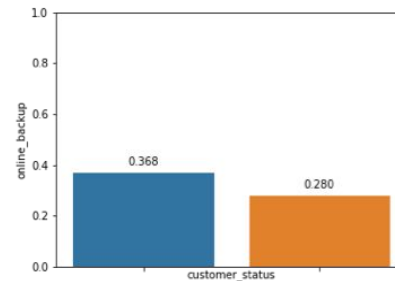| Online Security	Tech Support	Online Backup	Device Protection
+17.5% in retention	+16.9% in retention	+8.8% in retention	+7.1% in retention

Offers and Contracts
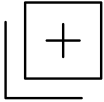

Offer and Contracts Correlation
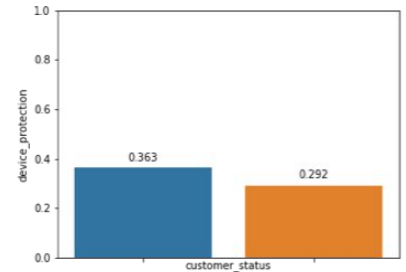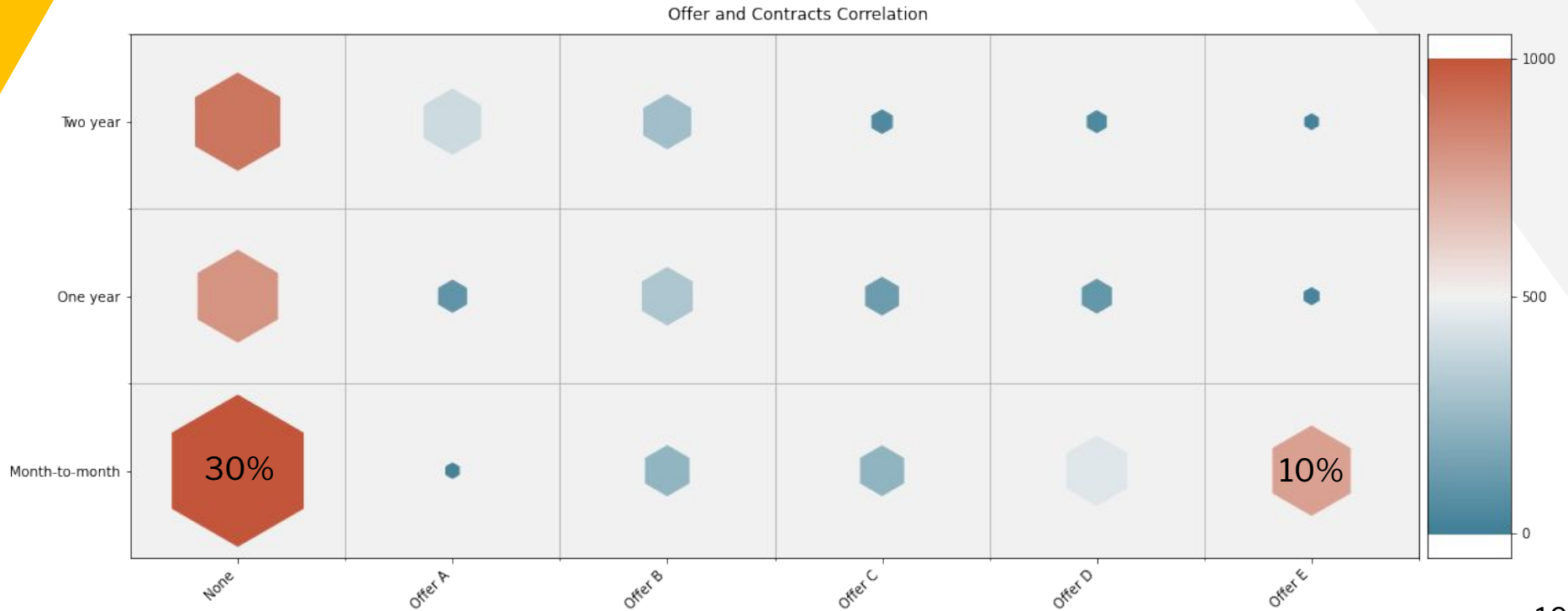
Churn Reasons
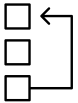
Attitude of Support Person 10% Main churn reasons by customers

Competitor offers more data 10% Ties to factors that involves data subscriptions and online services

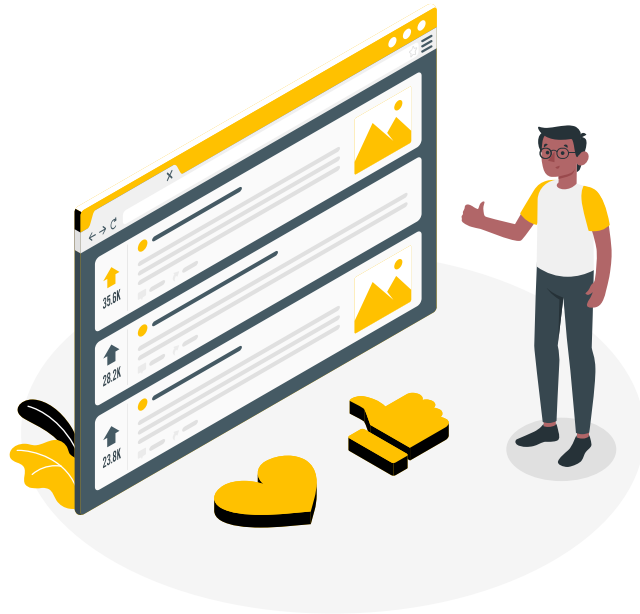**Competitor offers higher download speeds** 8% Ties to factors that involves streaming services
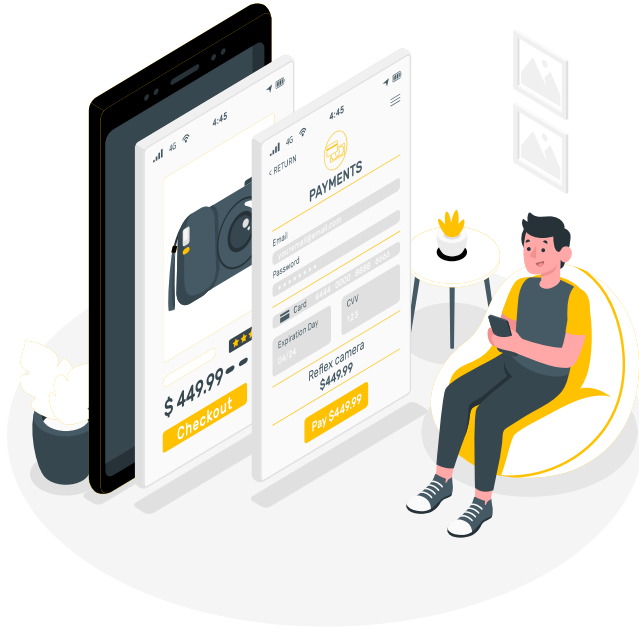
Goals and Strategy

03

Goals and Strategy

Predict **incoming customer churn** and identify **unique retention strategy**

1. Identify Customer Base
2. Prediction Model with past data
3. Verify model performance
4. Compare findings with survival analysis library

Customer
Segmentation

04

vanilla

22% tech savvy users with high data consumption and keen on online security.

heavyweight

27% loyalist with long tenure months and engaged with most of our products.

minimalist

22% low commitment users yet the easiest to satisfy with bare minimum subscription.

price-sensitive

29% price-conscious users and not confident enough to extend for longer tenure months.

Churn Model & Analysis

05

Model Selection

Imbalance Baseline Model + **SMOTE**
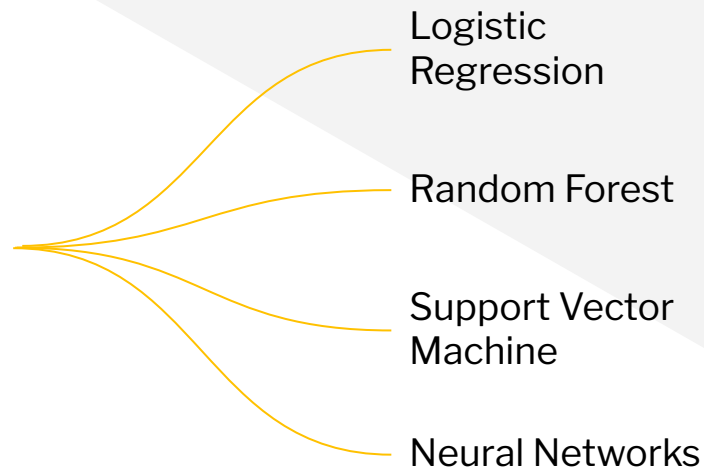
Active

Churn

Active

Churn

Logistic Regression

Random Forest

Support Vector Machine

Neural Networks

Imbalance Data:
76% Baseline Accuracy

Balanced Data:
50% Baseline Accuracy

Churn Classification Model

Random Forest + SMOTE Model

F1 Harmonic Score

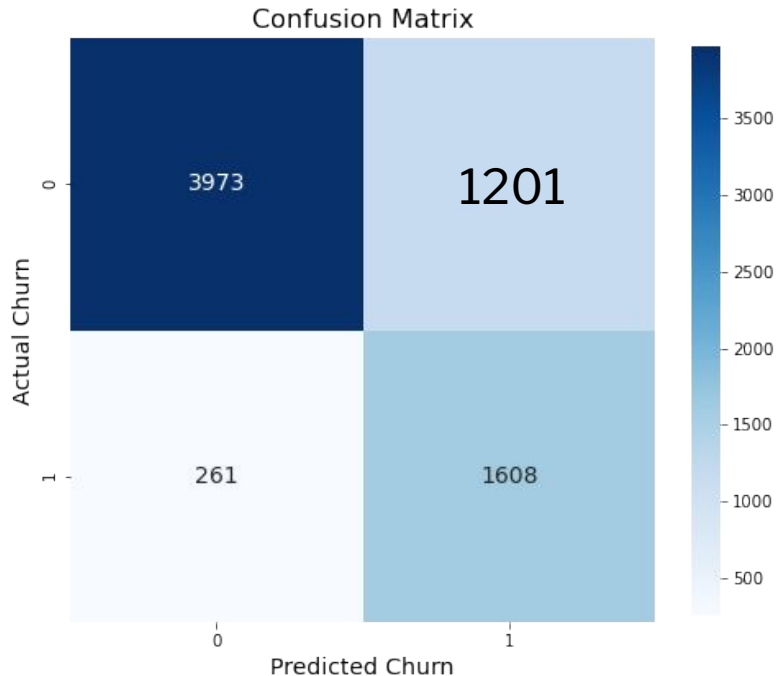Balance between the precision and the recall

69%

73%

AUC Score

Chance model will correctly distinguish customer class

Evaluation Matrix

Confusion Matrix

	Predicted Churn 0	Predicted Churn 1
Actual Churn 0	3973	1201
Actual Churn 1	261	1608

False Positive Prediction

1,201 predicted churn by model but is still an active customer at current time.
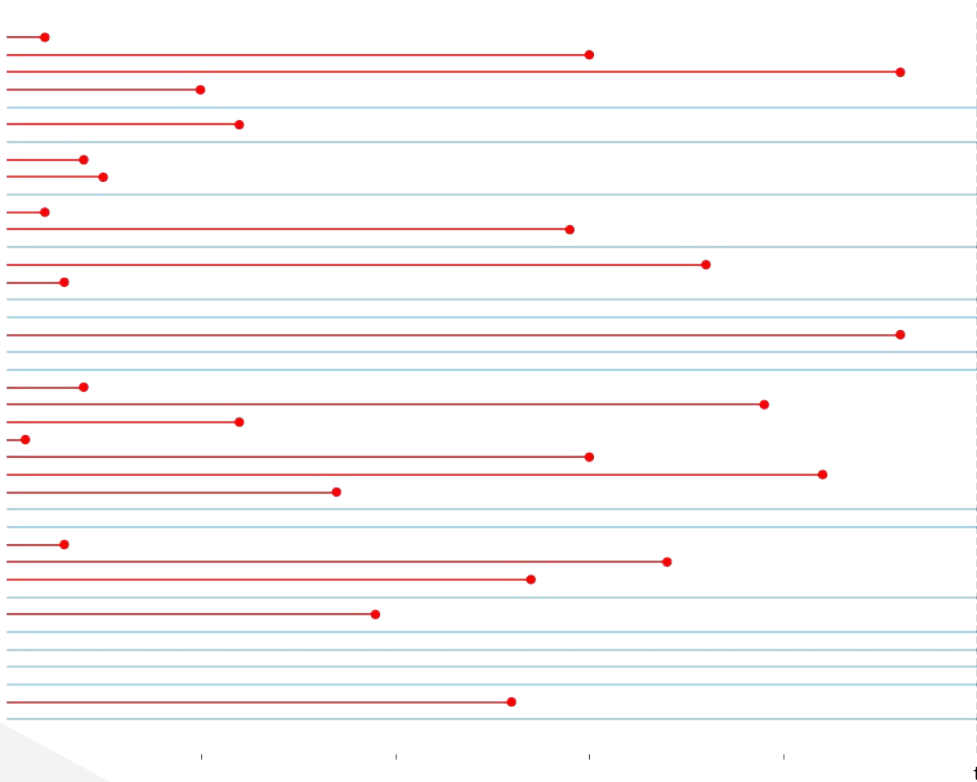
Are these customers expected to churn in the near future?
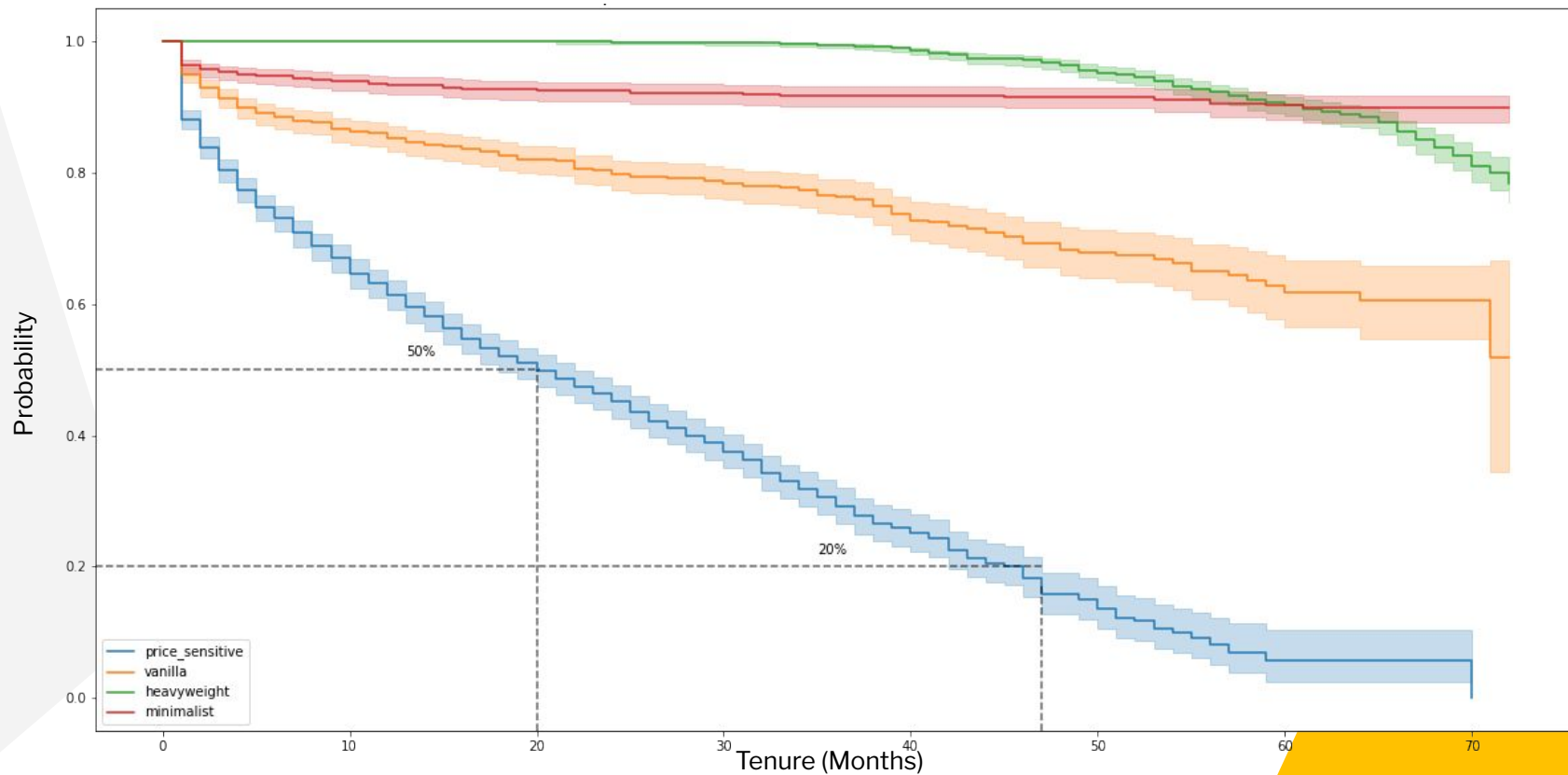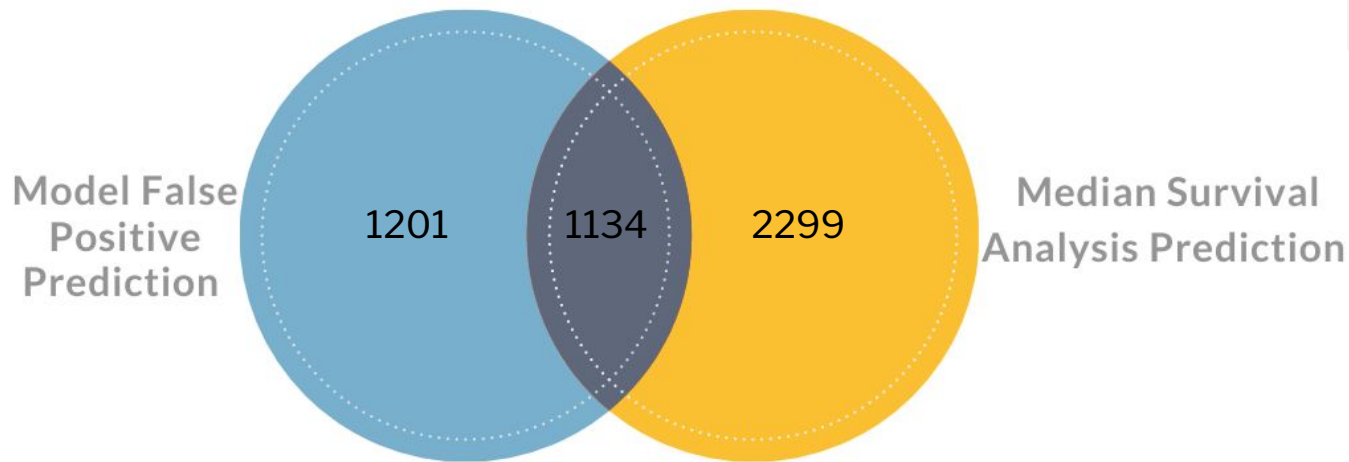
Survival Analysis

05

Censorship in Data

Survival Curve

Survival Analysis Prediction

Model False Positive Prediction — 1201 — 1134 — 2299 — Median Survival Analysis Prediction

49% overlap in customer churn prediction with survival analysis

94% false positive prediction is indeed indication of churn

Call to Action

06

Retention Strategy

| ACTIONABLE ITEMS	Affected Customer Base	Revenue Per User		Total Revenue
NO CONTRACT to ONE YEAR	30%	+	$ 817	$ 1, 726, 239
OFFER E to OFFER B	10%	+	$ 1, 440	$ 1, 014, 192
PAYMENT VIA ELECTRONIC CHECKS to BANK TRANSFER	33.5%	+	$ 291	$ 676, 339
STREAMING SERVICES to APPLY CHARGES	52%	+	$ 60	$ 219, 741

Customer Quadrant

Note on Model

MODEL IS ABLE TO:

1. Classify churned customers and their respective qualities.
2. Identify possible churn from the false positive prediction.

MODEL LIMITATION:

1. Verify the accuracy of the prediction, but it is able to advise its probability and pre-alert for proactive measures.
2. The model requires a verification against time-series dataset in order to customise for businesses.

Dashboard
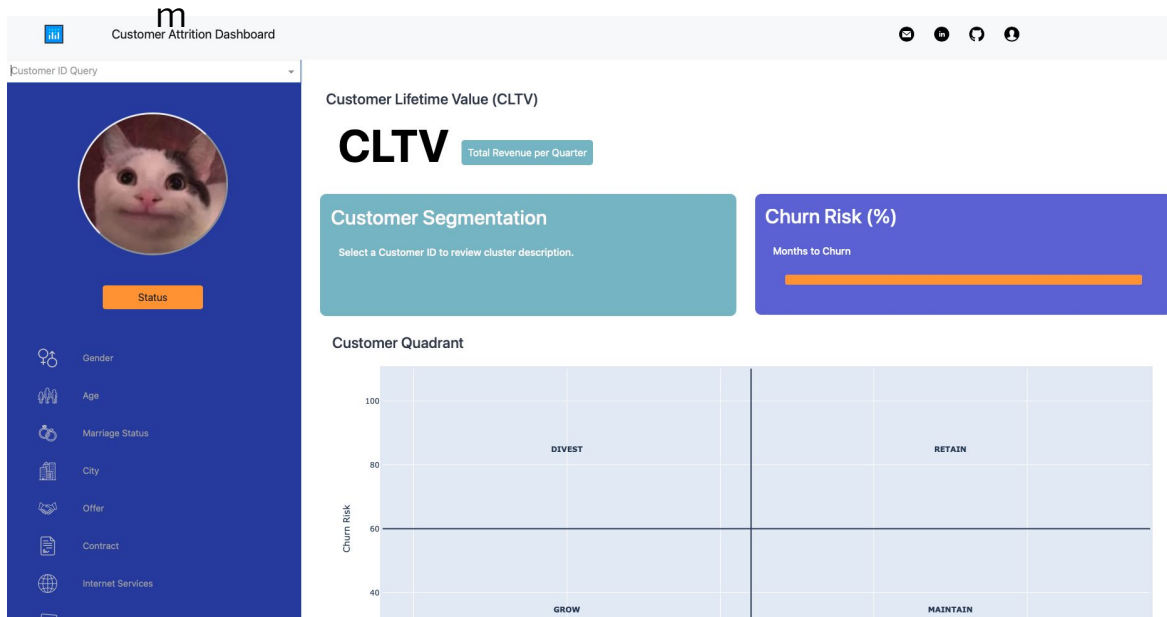
https://customer-attrition-dashboard.herokuapp.com

Thanks

Do you have
any questions?

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github/JeanLiew

Thanks

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