Hackathon OCRUG 2019

Data Chargers
Dimple Singhania
Manoj Pyla
Sushrat Shendre
Vishnu Madan
Sepehr Eftekharian
Howard
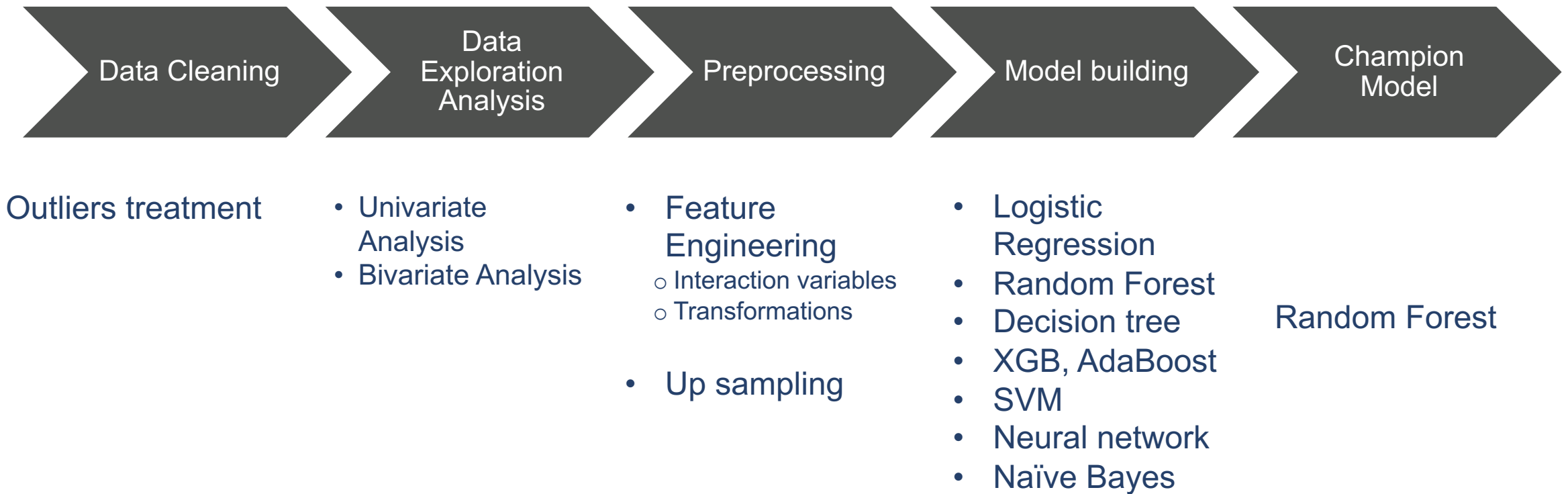
Contents

- Problem Objective
- Data Insights
- Campaign Effectiveness
  - Approach
  - Results
- Customer Profiling
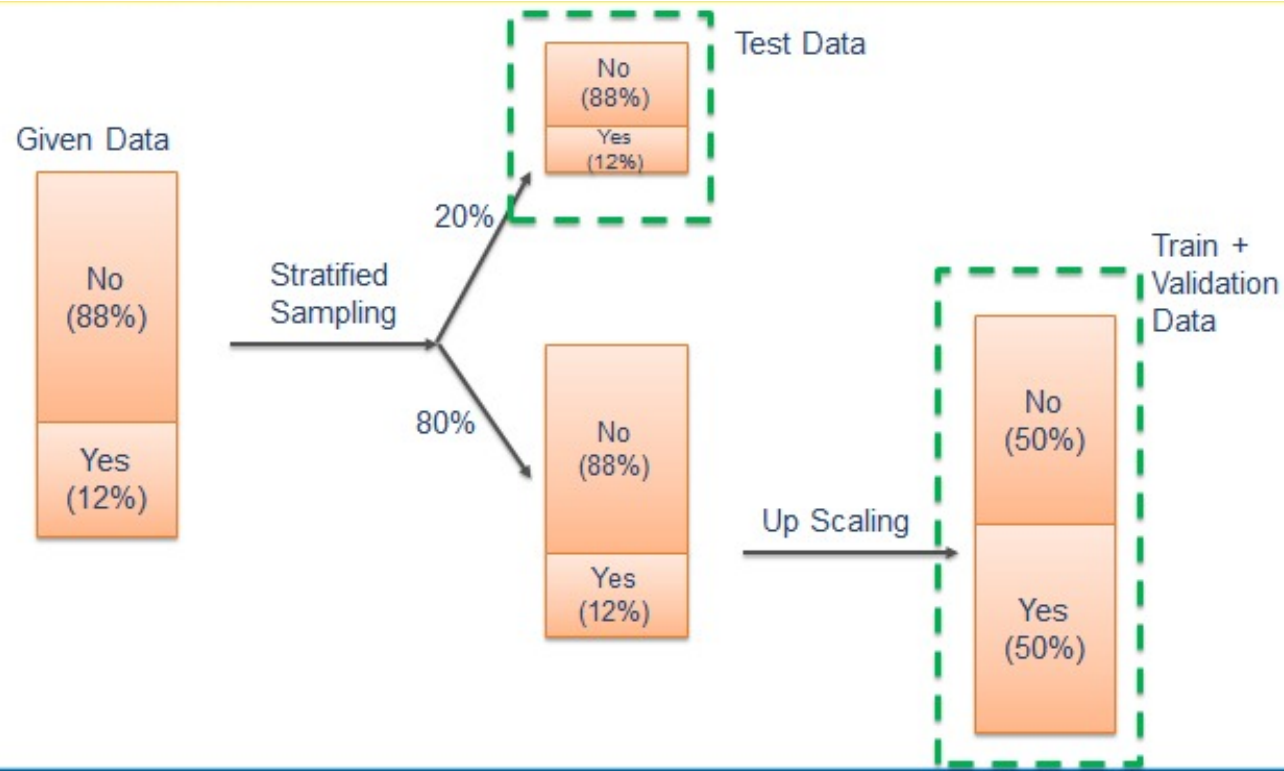- Recommendations
- Appendix

Problem Objective

- **Campaign Effectiveness:** Predicting the marketing campaign at customer level to identify the factors affecting the success criteria of campaign.

- **Customer Profiling:** Finding the target customers who have not acquired the product but were very similar to the customers who acquired the product.
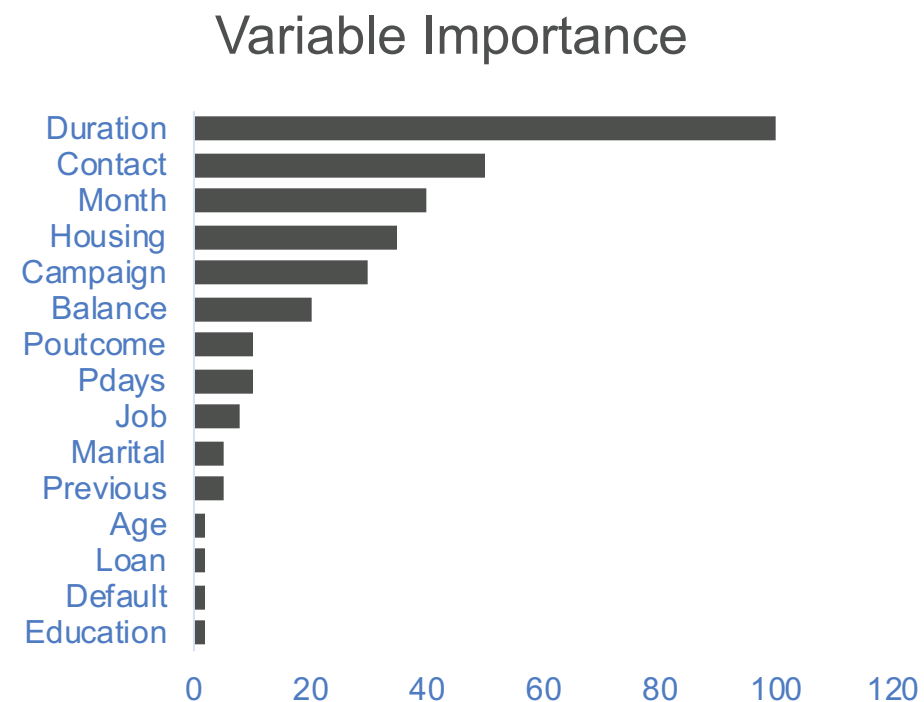
Campaign Effectiveness- Approach

Data Cleaning	Data Exploration Analysis	Preprocessing	Model building	Champion Model

Outliers treatment

- Univariate Analysis
- Bivariate Analysis

- Feature Engineering
  o Interaction variables
  o Transformations

- Up sampling

- Logistic Regression
- Random Forest
- Decision tree
- XGB, AdaBoost
- SVM
- Neural network
- Naïve Bayes

Random Forest

Up Sampling

Campaign Effectiveness Results

Models	Accuracy	Precision	AUC
Random Forrest	**87.30%**	**47.10%**	**0.75**
Decision Tree	82.40%	32.90%	0.68
Naïve Bayes	81.70%	35.40%	0.76
Logistic Regression	76.30%	32.10%	0.83
Neural Nets	75.10%	31.40%	0.84
SVM	74.30%	30.80%	0.84
Gradient Boosting	71.90%	28.90%	0.82

Variable Importance

Campaign Effectiveness Results
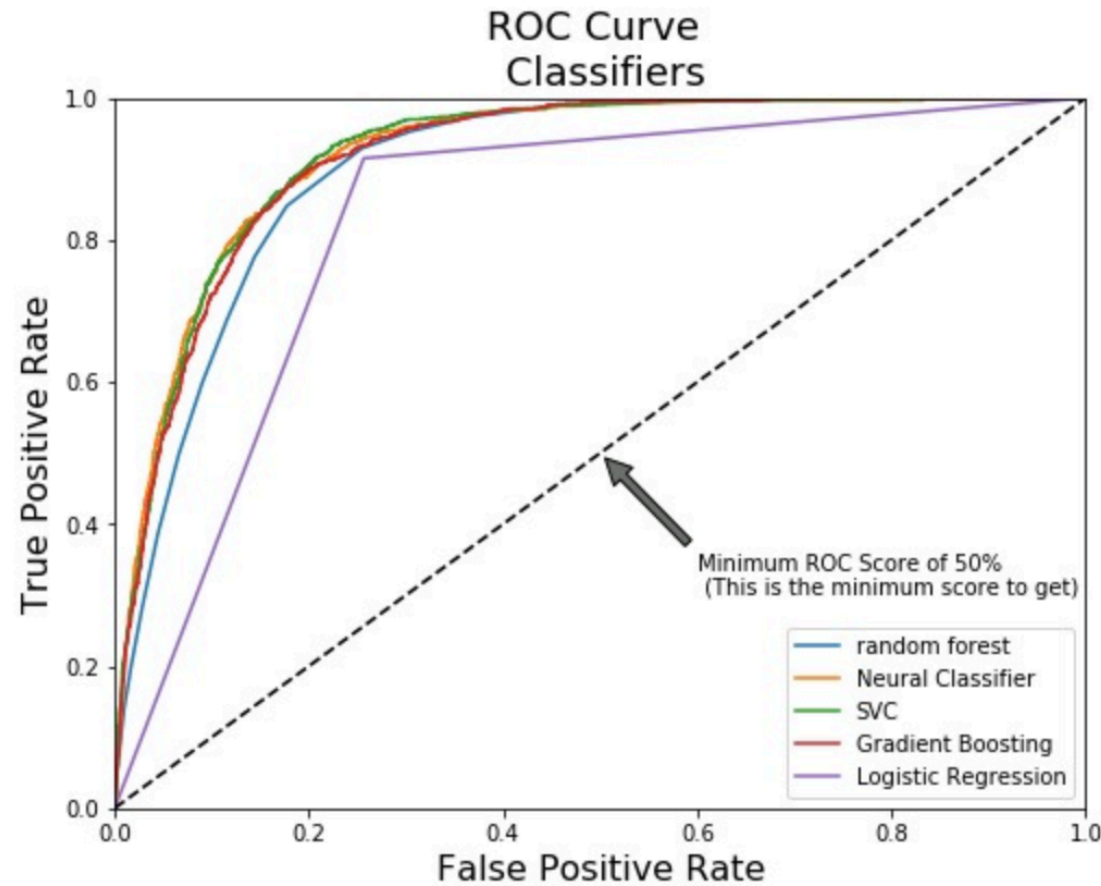
Customer Profiling

| CHAID Decision tree | Retarget Customer Segment |

- Retarget customer segments
  - Duration (279,368) - Poutcome (Success) **59**
  - Duration (368,547) - Poutcome (Success) **50**
  - Duration (>547) - Contact(Cellular, Telephone) – Poutcome(Success) **35**
  - Duration (222,279) - Poutcome (Success) - Pdays (<=185) **32**
  - Duration (368,547) - Poutcome (Success) **5**

Poutcome

Contact

Month

Target

Duration

Pdays

Recommendations

- Durations of the call should be higher :
  - Engage the customers more over the call which helps improve the conversion rate
- Running campaign during March and December:
  - Most conversion rate were in March and December, so similar campaign in future should run around same time of the year
- Calling should be optimized:
  - More calling reduced the conversion rate and increase the overall cost
- Re target the customer falling in the nodes with higher conversion rate and priotize them over other customers.
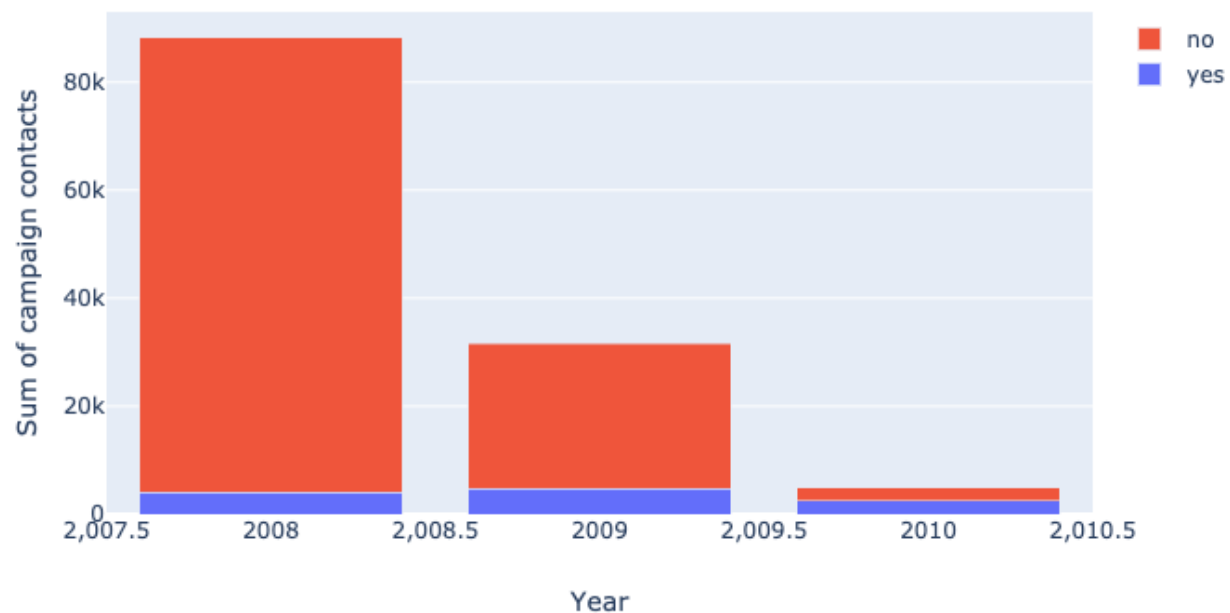
Appendix

Customer Profiling - CHAID
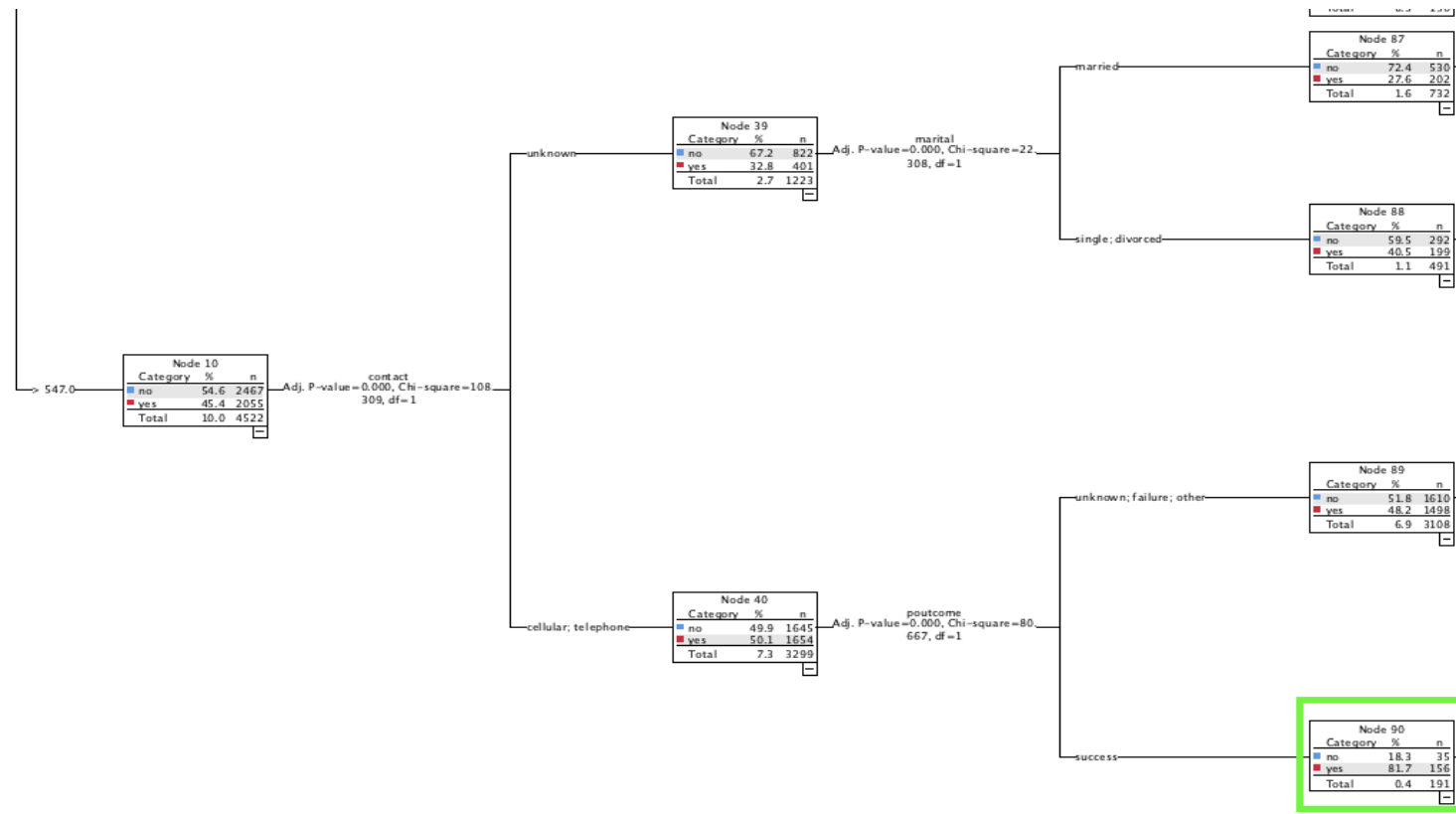
Data Exploration

Total number of contacts in current campiagn by year

Every year number of contacts have decreased. But the conversion percentage has shown significant increase.

It implies targeted campaigning over the years.

Data Exploration

The Impact of Loans to Married/Educational Clusters

People with higher median balance don't have previous loan history.

Single people with tertiary education have highest median balance followed by married people with tertiary education.
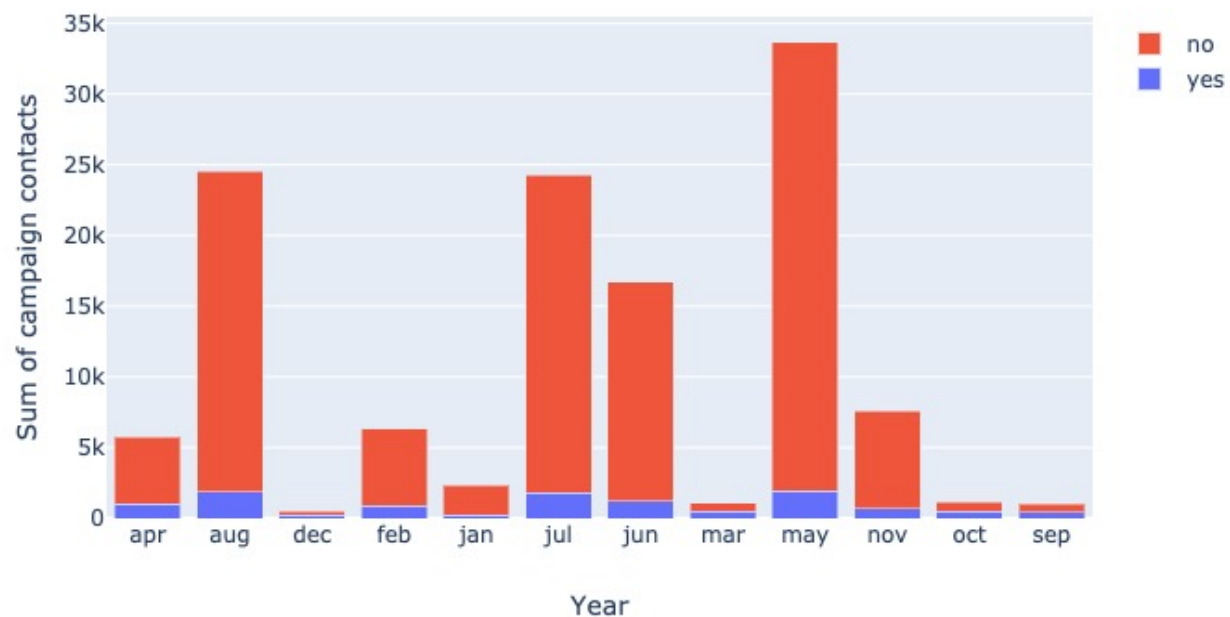
Data Exploration

The Impact of Duration in Opening a Term Deposit
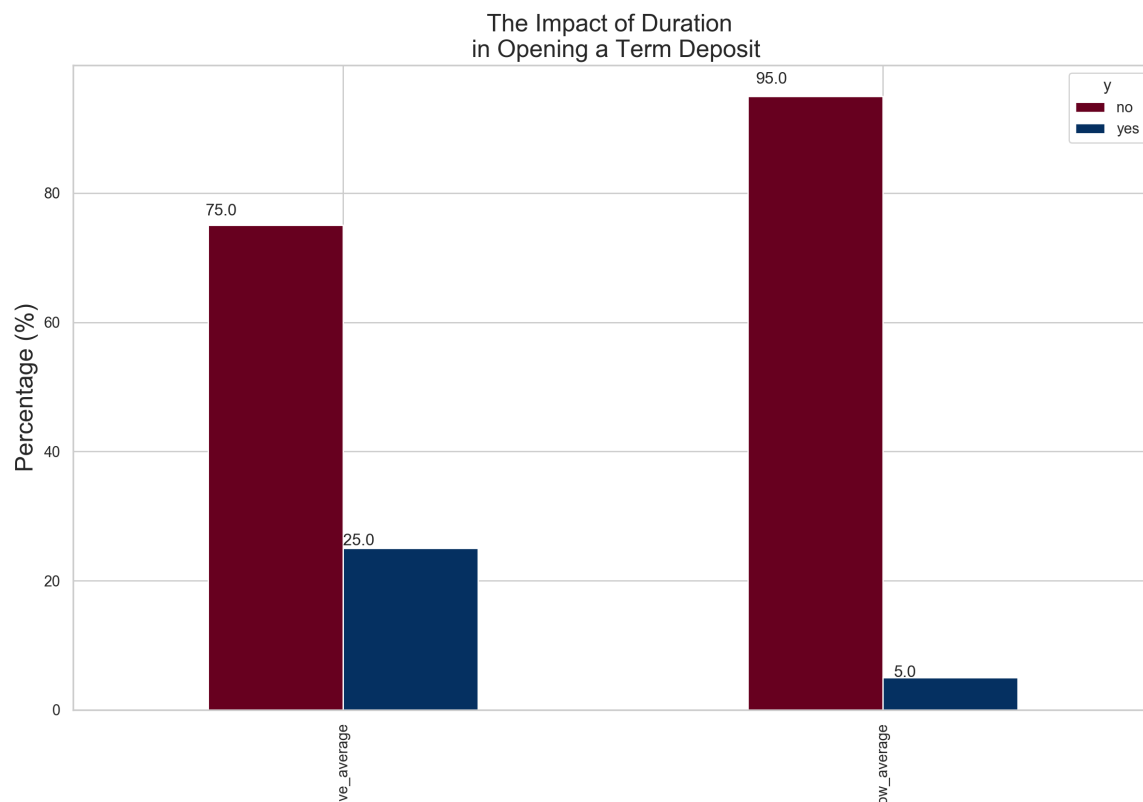
People with above average call duration are more aligned to say yes to take a term deposit.

Correlation Matrix

Correlation Matrix
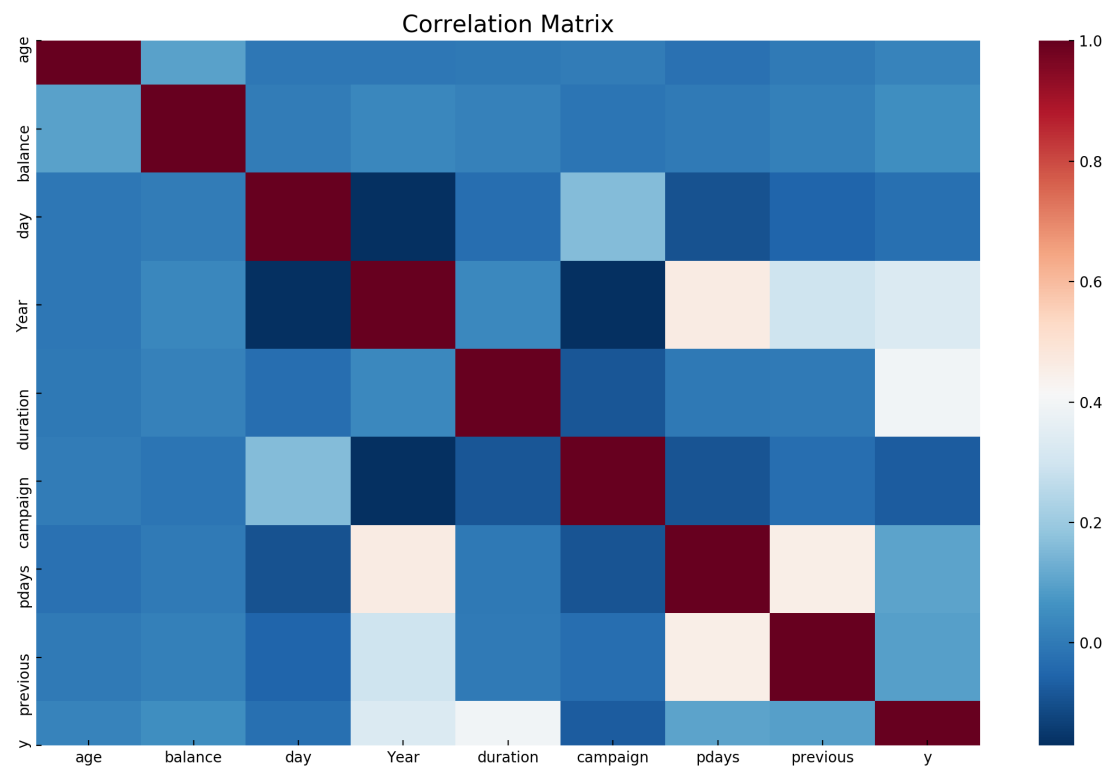
Customer Response by Month

Total number of contacts in current campiagn by year

Conversion rate is observed to be highest in the month of March and December.