SYRIATEL CUSTOMER CHURN PREDICTION

Syriatel Official Page

سيريتل الصفحة الرسمية

Syriatel has been leading the Syrian mobile telecommunication market since 2000. The company has successfully established its reputation by focusing on customer satisfaction and social responsibility.

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PROBLEM STATEMENT

.Understanding customer behavior is top of mind for every business today. Gaining insights into why and how customers buy can help grow revenue. But losing customers (also called customer churn) is always a risk, and insights into why customers leave can be just as important for maintaining revenues and profits.

MAIN OBJECTIVE

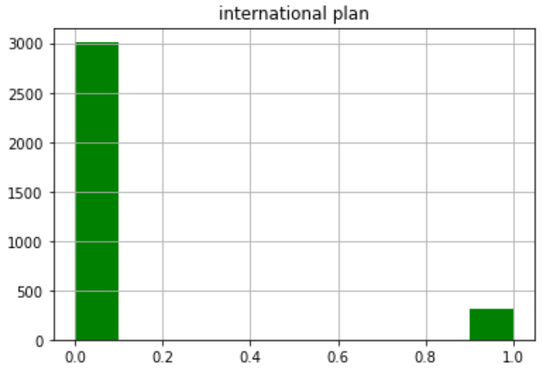
To build a model that predicts whether a customer will churn or not.

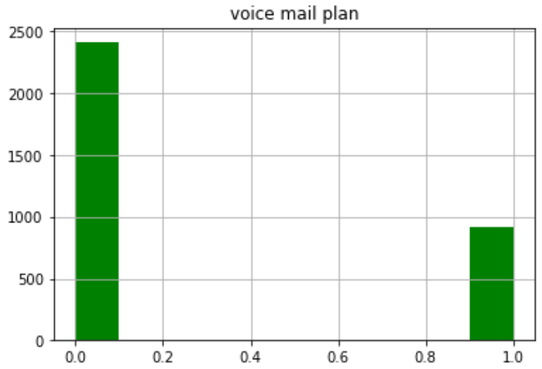
SPECIFIC OBJECTIVES

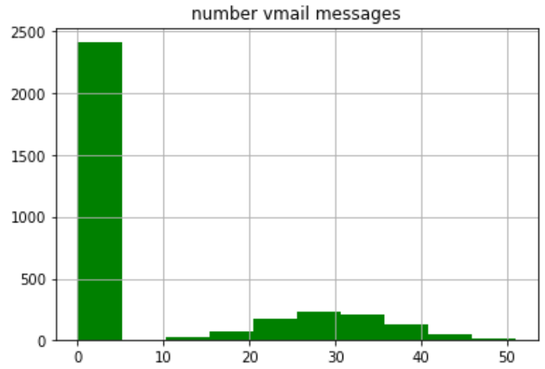
- To determine the relationships between customer churn and various predictor variables.
- To determine the top features affecting customer churn.
- Advice the client on best strategy

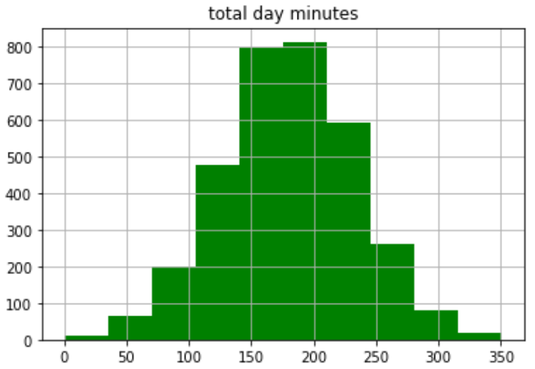
Exploratory Data Analysis

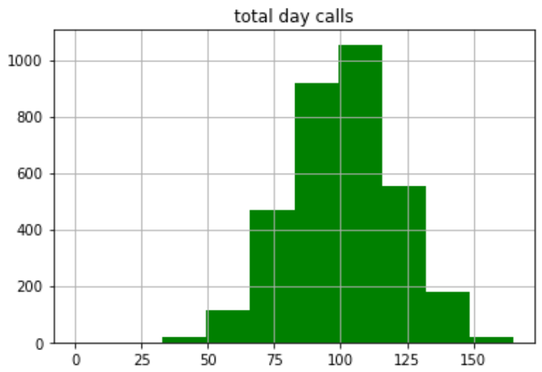
Plot of features

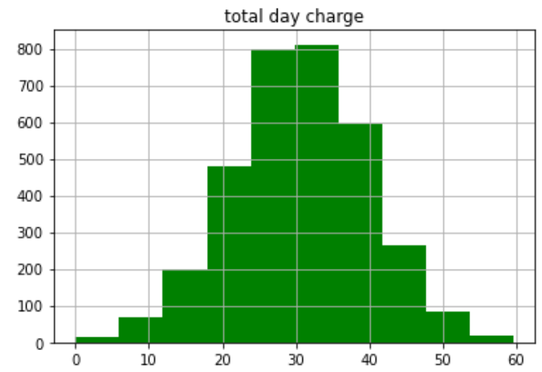


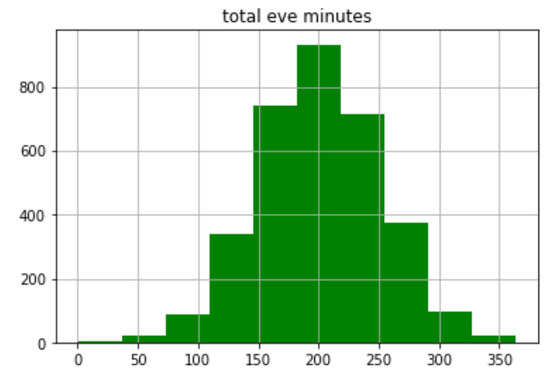


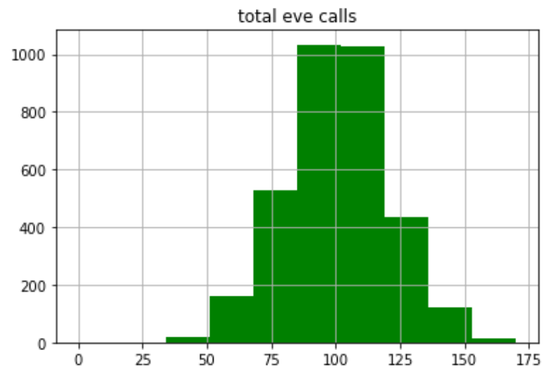


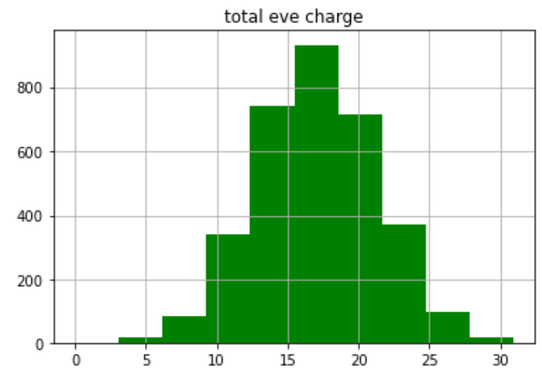


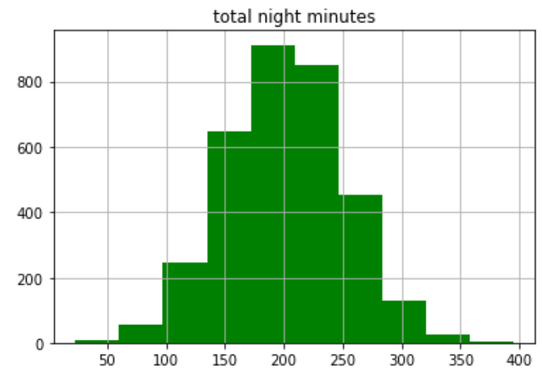


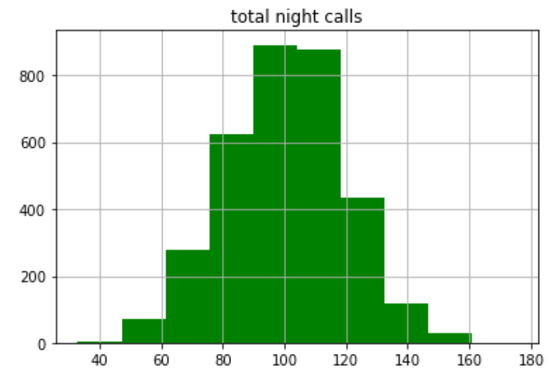


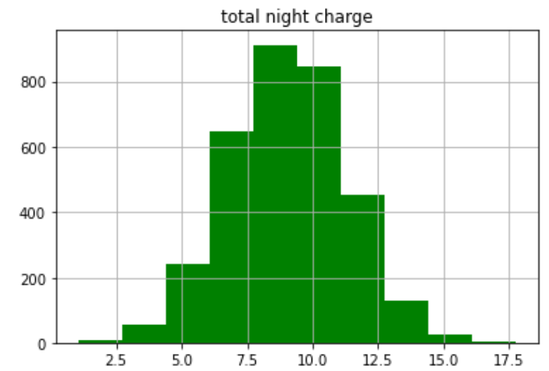




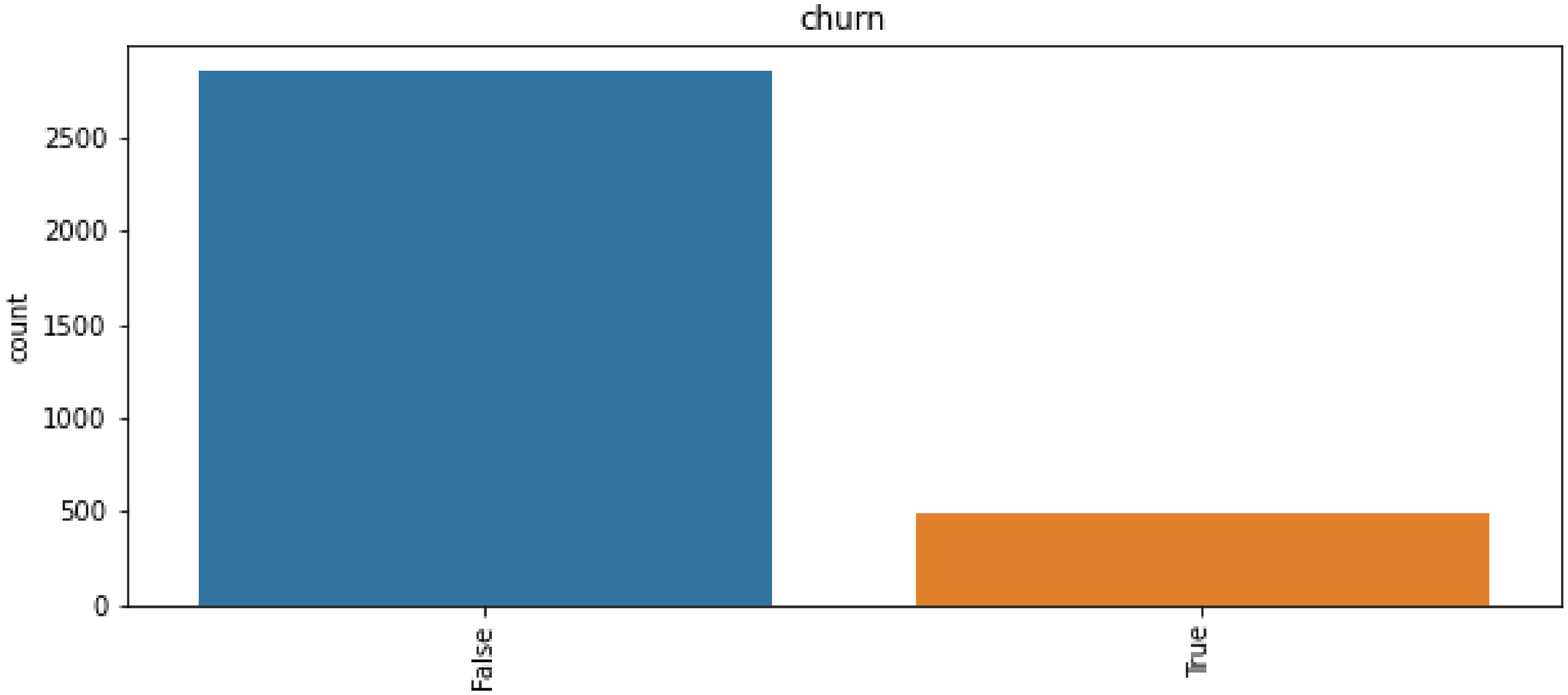




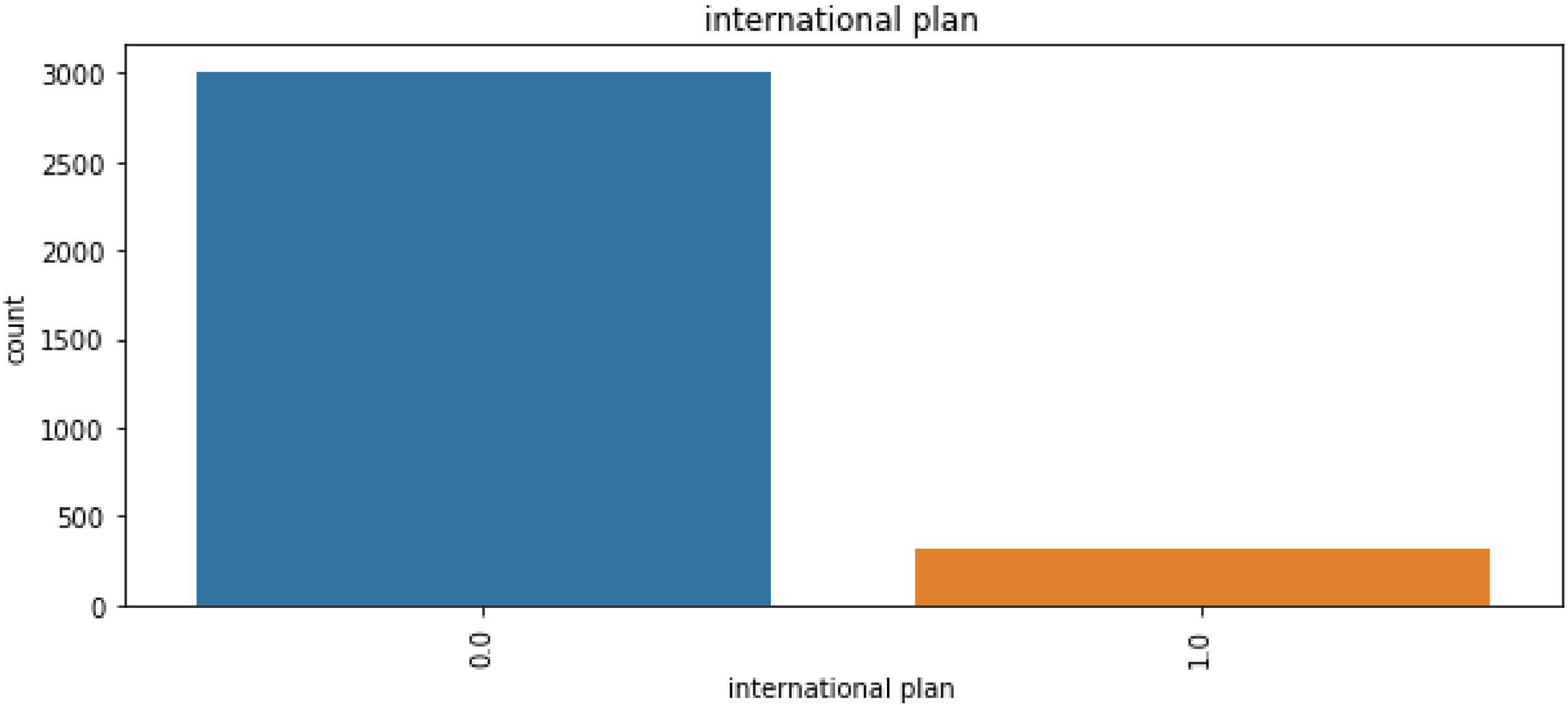




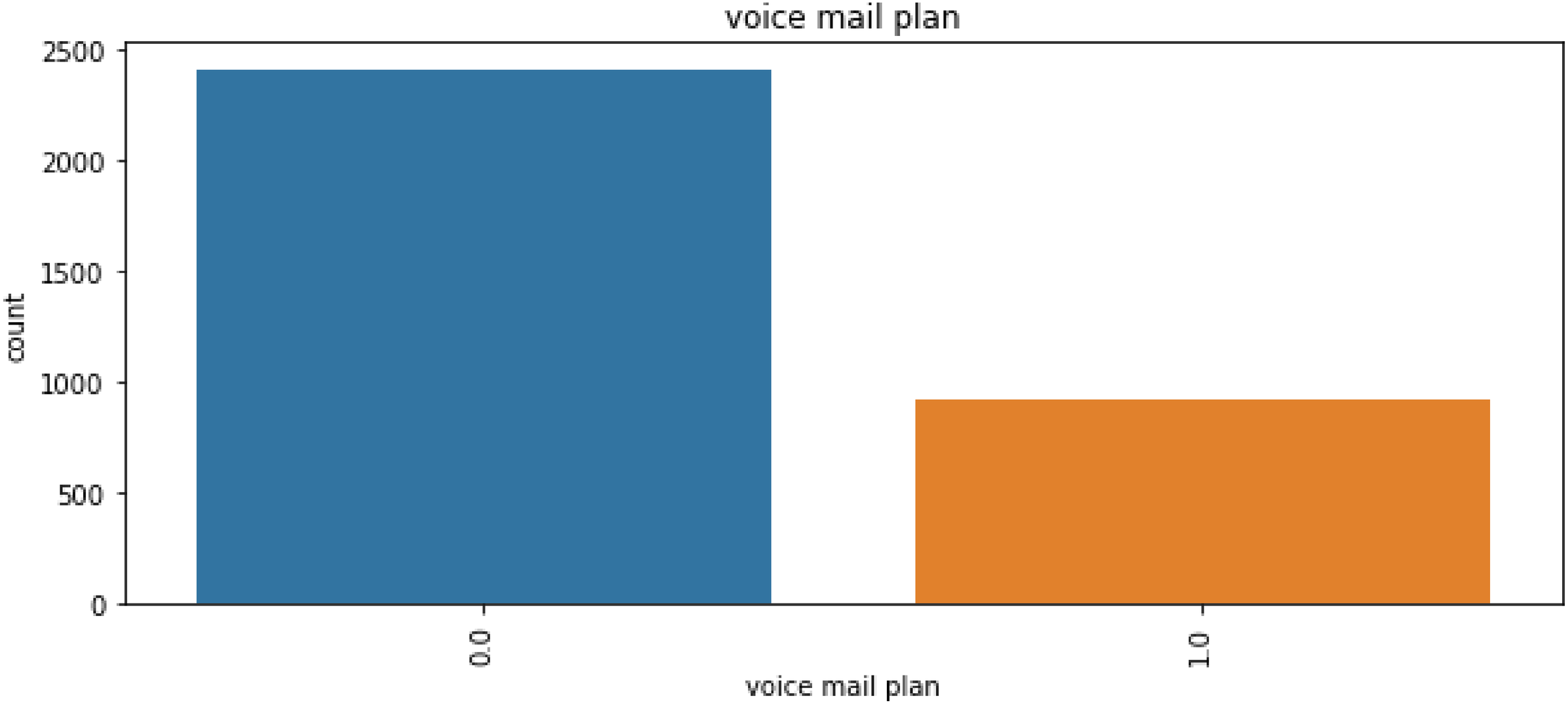
Countplot of Churn



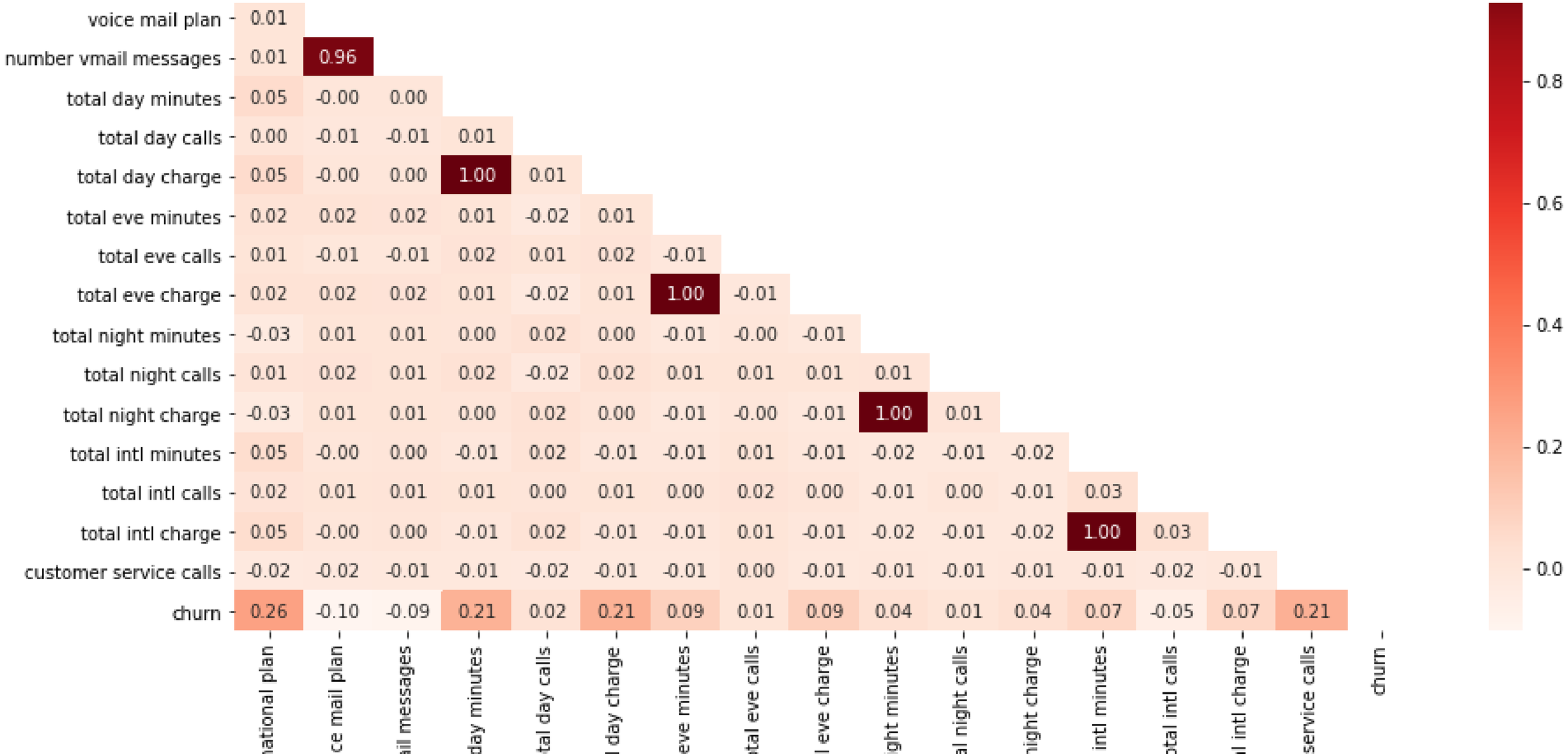
Countplot of international plan

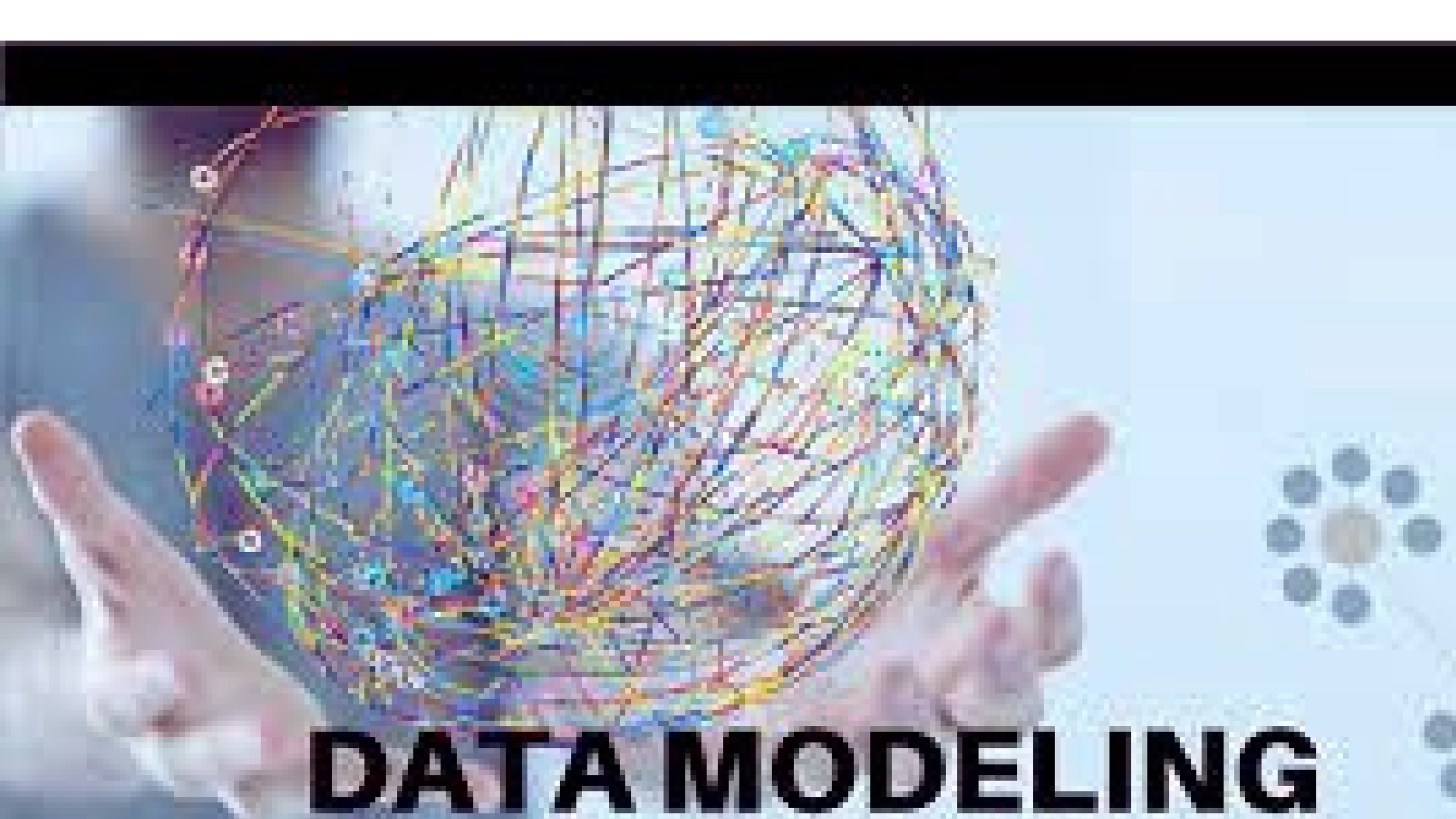


Countplot of Voice mail plan



Correlation of the Features




DATA MODELING

Accuracy and Precision score of different models

Random Forests has the highest precision and Accuracy score

Accuracy score

	Models	ACC
0	LR	0.757895
1	SVC	0.914912
2	KNN	0.914035
3	DT	0.908772
4	RF	0.955263
5	GBC	0.922807

Precision score

	Models	PRE
0	LR	0.751351
1	SVC	0.927239
2	KNN	0.866774
3	DT	0.900533
4	RF	0.966667
5	GBC	0.955166

Implementation using Random Forests

I tuned the hyperparameters to improve the models' accuracy. Below is the classification report.

Using random search, I will carry out several iterations to get the best conditions for random forest and run them.

The best parameters were:{'n_estimators': 400, 'max_features': 'auto', 'max_depth': None}

The classification report was as follows:

```
=== Confusion Matrix ===
[[570  15]
 [ 38 517]]


=== Classification Report ===
              precision    recall  f1-score   support

           0       0.94      0.97      0.96       585
           1       0.97      0.93      0.95       555

    accuracy                           0.95      1140
   macro avg       0.95      0.95      0.95      1140
weighted avg       0.95      0.95      0.95      1140



=== All AUC Scores ===
[0.97674361 0.98383503 0.99509388 0.9952293  0.99713143 0.99377039
 0.99508156 0.99356725 0.99127116 0.99112342]


=== Mean AUC Score ===
Mean AUC Score - Random Forest:  0.9912847029855341
```

CONCLUSION

- The model has a precision of 97%, recall of 93% and f1-score of 95% which shows that the model performs well.
- The top 10 important features are voice mail plan,total night charge, total night minutes, total international calls,number of voice mail messages,total intl minutes, total intl charge,total day calls, total night calls and total eve calls

RECOMMENDATIONS

- SyriaTel should improve the customer service.
- Syriatel should reduce charges for international calls in order to retain customers with international plan.