



VISIT WITH US

TRAVEL PURCHASE MODEL
by **JAKE EIDE**

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OVERVIEW & SOLUTION APPROACH

- Visit With Us aims to expand its customer base by launching a new product – the Wellness Tourism Package.
- In the past, marketing costs have been very high.
- The company would like to make the marketing expenditure more efficient.
- The solution to this problem is to leverage customer data to target those customers who are more likely to purchase a package.
- I will develop classification models using ensemble techniques (boosting and bagging) by analyzing data from Visit With Us customers. These models will help the marketing team by predicting the types of customers more likely to purchase the newly introduced travel package.

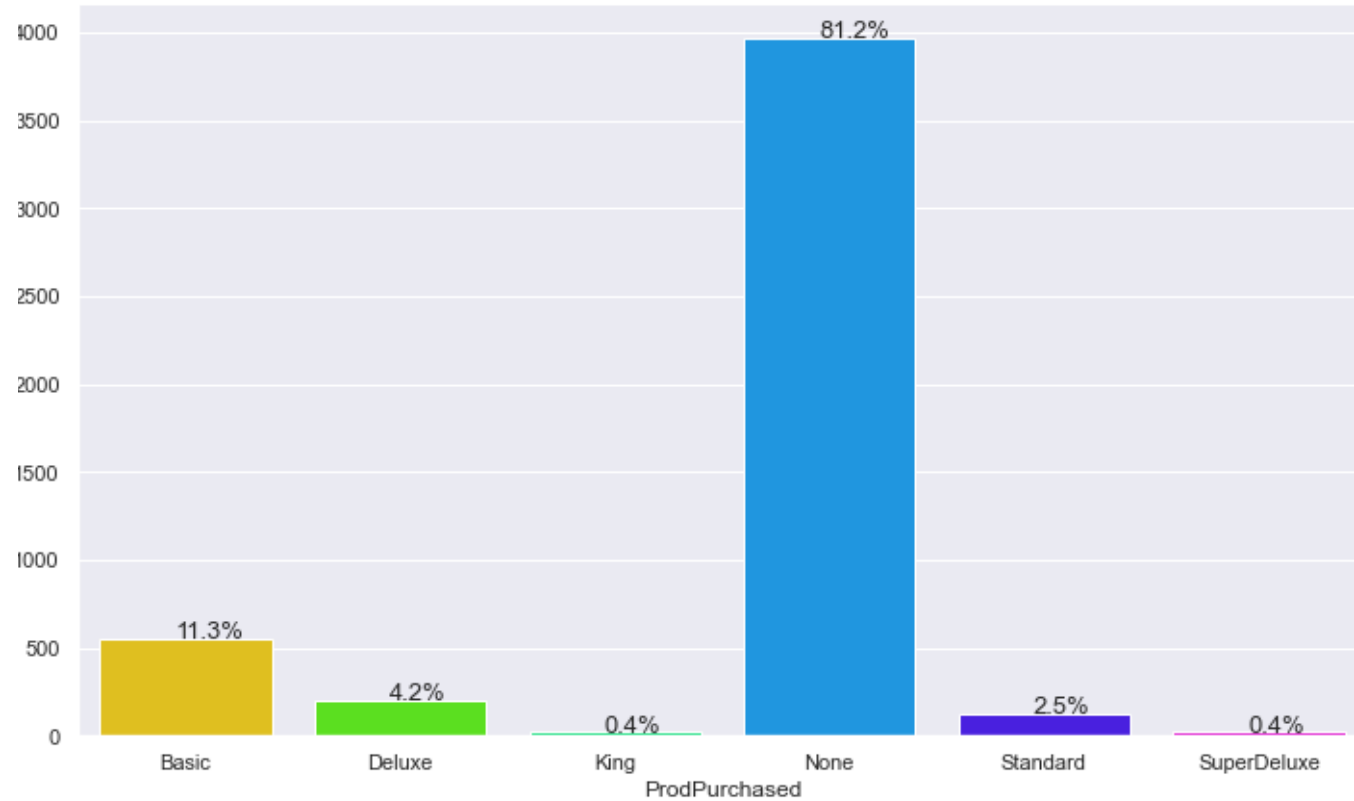
DATA OVERVIEW

- The data contains information about 4888 customers.
- The information includes customer details such as age, monthly income, gender, occupation
- There is also data about the company's interaction with the customer – the product pitched, the number of follow-ups, and the duration of the pitch.
- There were some missing values in the data, which were filled in with median values.

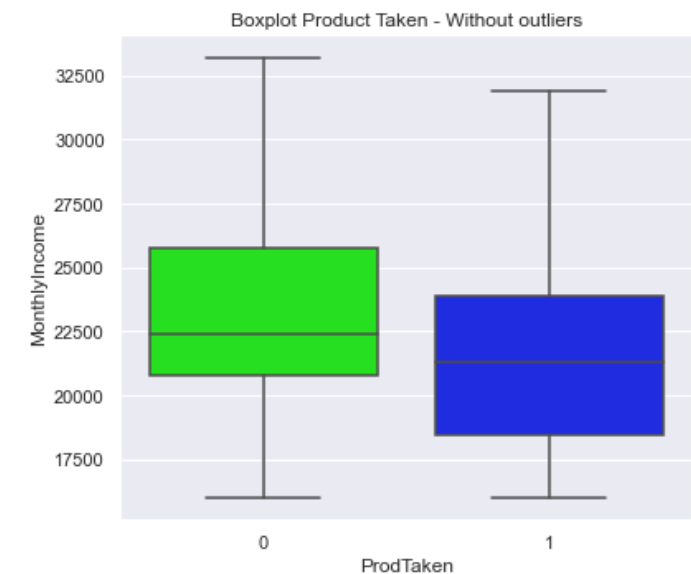
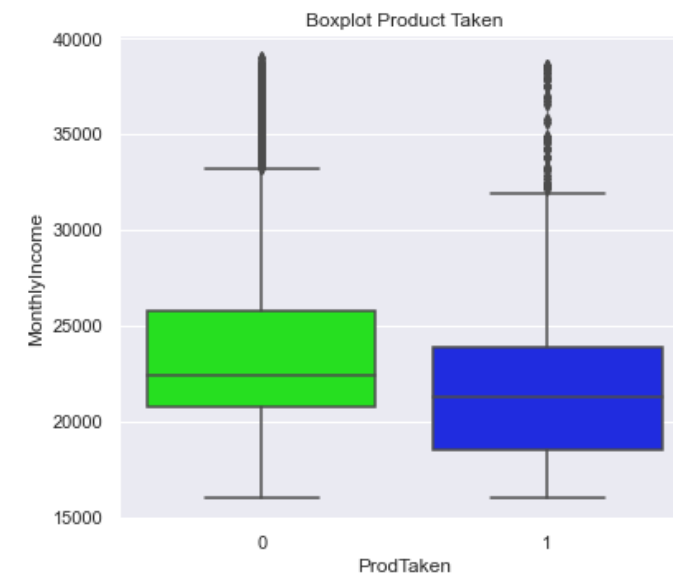
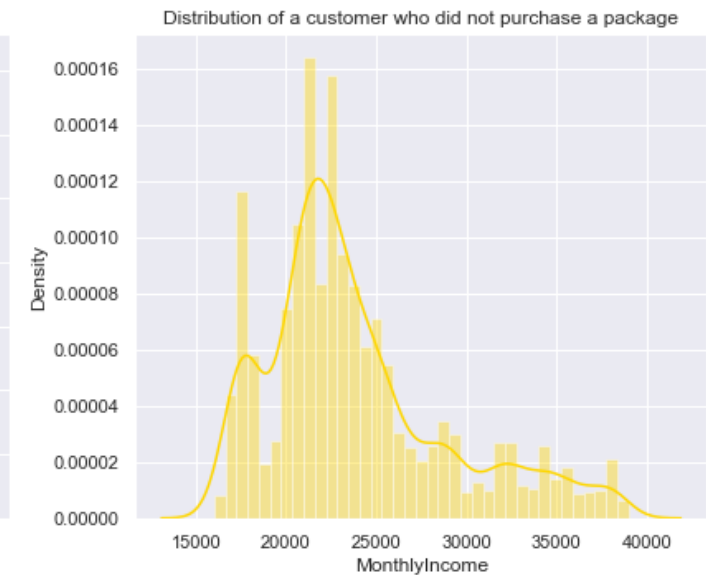
EXPLORATORY DATA ANALYSIS

- Customers with monthly incomes between 16,000 and 25,000 are the potential travel package buyers

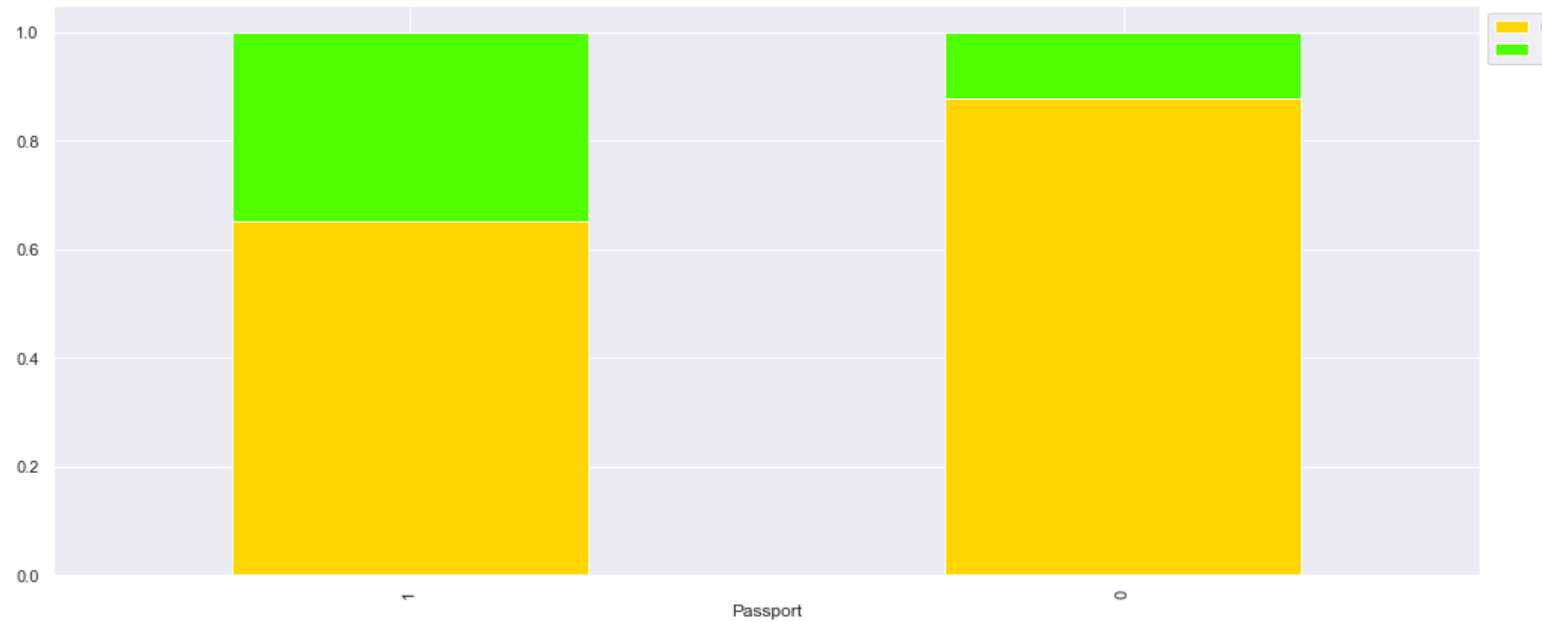
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- Of those customers who did purchase a travel product, the Basic package was the most popular.

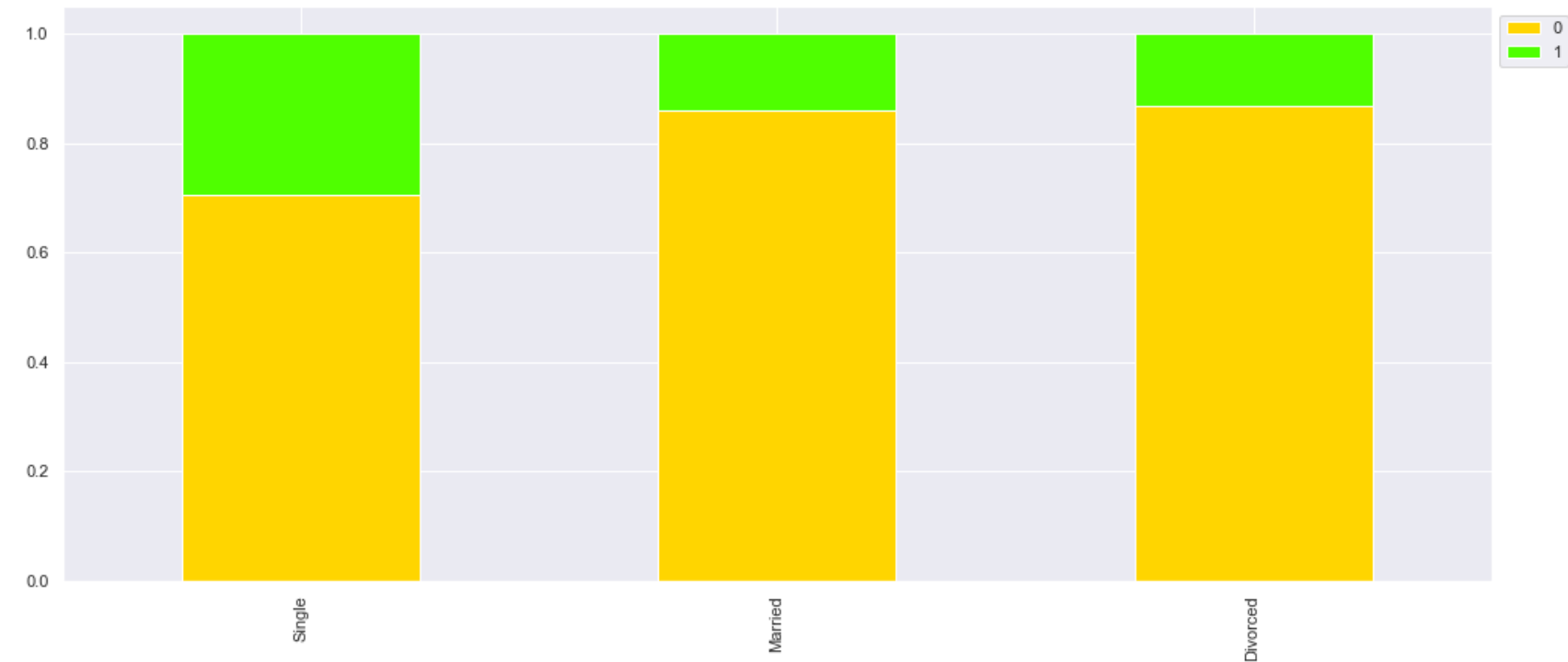


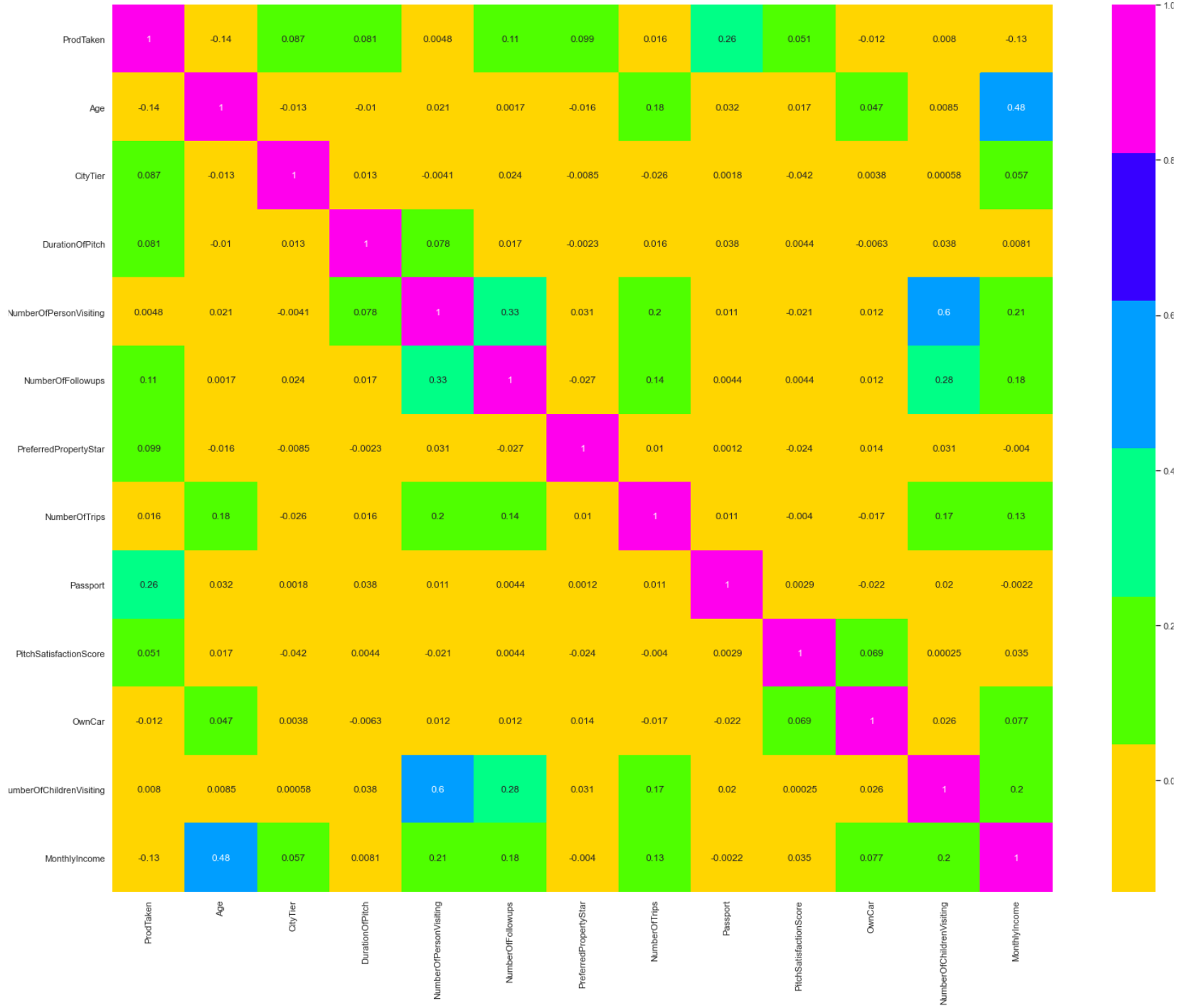
EXPLORATORY DATA ANALYSIS



- Customers who have a passport are more likely to purchase a travel package, and should be specifically marketed to.

- Single customers – those who are neither married nor divorced – should be targeted as potential travel package customers.





EXPLORATORY DATA ANALYSIS: BIVARIATE CORRELATION

- Overall, the correlation between the columns is not very high
- The largest correlation (.06) is between NumberOfChildrenVisiting and NumberOfPersons Visiting. This makes sense, as the NumberOfPersons visiting probably includes children.
- MonthlyIncome and Age have a correlation of 0.48. This is still a moderate correlation.

MODEL PERFORMANCE SUMMARY

- The objective is to predict which customer is most likely to purchase the newly introduce travel package.
- A F1-score will be the performance metric used to evaluate our model.
- This metric was chosen to be able to balance loss of marketing resources and loss of potential business. The goal is to minimize both false negatives and false positives.
- Insights from our model:
 - Passport is the most important feature used to predict which customer is more likely to purchase a travel package
 - MaritalStatus_Single is the second most important feature
 - OwnCar, NumberOfChildrenVisiting, Occupation, and Gender were not important predictors

MODEL PERFORMANCE SUMMARY

Model	Train_Accuracy	Test_Accuracy	Train_Recall	Test_Recall	Train_Precision	Test_Precision	Train_F1-Score	Test_F1-Score
Tuned XGBoost Classifier	1.000000	0.926380	1.000000	0.757246	1.000000	0.836000	1.000000	0.794677
XGBoost Classifier	0.999708	0.931834	0.998447	0.692029	1.000000	0.927184	0.999223	0.792531
Bagging Classifier Tuned	1.000000	0.932515	1.000000	0.681159	1.000000	0.944724	1.000000	0.791579
Stacking Classifier	0.989769	0.916155	1.000000	0.807971	0.948454	0.761092	0.973545	0.783831
Random Forest	1.000000	0.925017	1.000000	0.634058	1.000000	0.951087	1.000000	0.760870
Tuned AdaBoost Classifier	1.000000	0.920245	1.000000	0.659420	1.000000	0.887805	1.000000	0.756757
Bagging Classifier	0.995323	0.913429	0.976708	0.615942	0.998413	0.890052	0.987441	0.728051
Decision Tree	1.000000	0.892979	1.000000	0.728261	1.000000	0.710247	1.000000	0.719141
Tuned Gradient Boosting Classifier	0.987138	0.901159	0.931677	0.608696	1.000000	0.819512	0.964630	0.698545
Tuned Random Forest	0.978077	0.902522	0.883540	0.528986	1.000000	0.918239	0.938170	0.671264
Gradient Boosting Classifier	0.887460	0.867757	0.467391	0.384058	0.877551	0.815385	0.609929	0.522167
AdaBoost Classifier	0.843613	0.848671	0.312112	0.340580	0.686007	0.701493	0.429029	0.458537
Tuned Decision Tree	0.852382	0.845262	0.226708	0.202899	0.954248	0.888889	0.366374	0.330383

BUSINESS INSIGHTS AND RECOMMENDATIONS

To maximize profits and make the most of the company's marketing budget, I recommend the following:

- We should target customers with a passport.
- The Wellness Tourism Package should be marketed to single customers.
- We should target customers under 42 years old, with emphasis given to reaching customers between 25 and 38 years old.
- We should target customers with a monthly income between 16,000 and 25,000.
- More marketing resources should be devoted to reaching customers who take 7 or 8 trips per year.
- The marketing should also attempt to reach customers with the designation of executive.
- There is a large increase in percentage of sales between 5 and 6 follow-ups, so the company should encourage the sales team to meet a 6 follow-up threshold.



THANK YOU

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