“VISIT WITH US” PRESENTATION

CONTENTS

BUSINESS PROBLEM OVERVIEW AND SOLUTION APPROACH

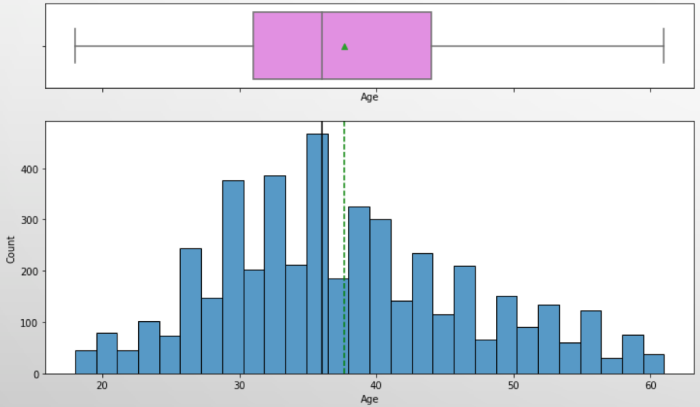
- ”VISIT WITH US” IS A TOURISM COMPANY THAT WANT TO ESTABLISH A VIABLE BUSINESS MODEL TO EXPAND THE CUSTOMER BASE BY LAUNCHING A NEW PRODUCT, WELLNESS TOURISM PACKAGE.
- THE COMPANY WOULD PROFIT FROM DECREASING THEIR MARKETING EXPENDITURE WITH A MORE TARGETED LIST AND INCREASING ITS SALES.
- THE PREVIOUS CAMPAIGN CONVERTED 18% OF THE CUSTOMERS WITHOUT USING AVAILABLE INFORMATION AND CUSTOMERS WERE CONTACTED AT RANDOM.
- WE WILL DEVELOP CLASSIFICATION MODELS (BAGGING CLASSIFIER, RANDOM FOREST AND DECISION TREE MODEL) BY ANALYZING DATA RELATED TO THE VARIOUS ATTRIBUTES OF A CUSTOMER (AGE, MONTHLY INCOME, OCCUPATION, ETC.) TO HELP THE MARKETING TEAM IDENTIFY THE POTENTIAL CUSTOMERS WHO WOULD BE INTERESTED IN PURCHASING A TRAVEL PACKAGE AND USE IT TO CREATE PROFITABLE STRATEGIES.

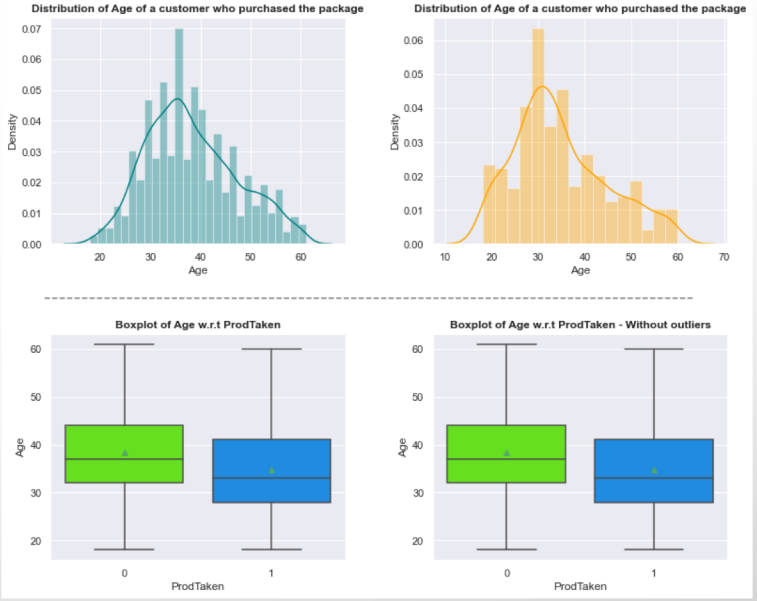
DATA OVERVIEW

- THE DATA CONTAINS INFORMATION FOR ABOUT 4900 CUSTOMERS.
- THE INFORMATION INCLUDE AGE, OCCUPATION, GENDER, MARITAL STATUS, MONTHLY INCOME, PREFERRED PROPERTY STAR RATING AND MORE.
- THERE ARE MISSING VALUES IN THE FOLLOWING COLUMNS: AGE, TYPEOFCONTACT, DURATIONOFPITCH, NUMBEROFFOLLOWUPS, PREFERREDPROPERTYSTAR, NUMBEROFTRIPS, NUMBEROFCHILDRENVISITING, AND MONTHLYINCOME. WE WILL TREAT THESE COLUMNS WITH MEAN VALUES FOR NUMERICAL COLUMNS AND MODE VALUES FOR CATEGORICAL COLUMNS.

EXPLORATORY DATA ANALYSIS

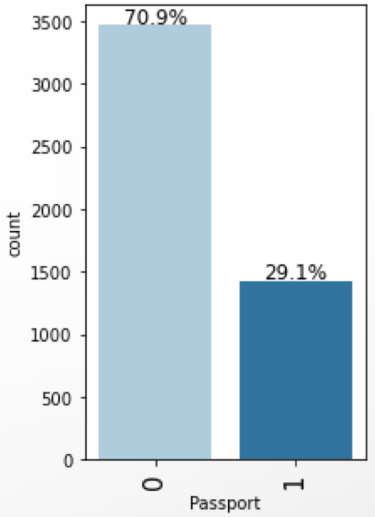
- THE AVERAGE AGE OF THE CUSTOMER PURCHASING THE PACKAGE IS ABOUT 38.

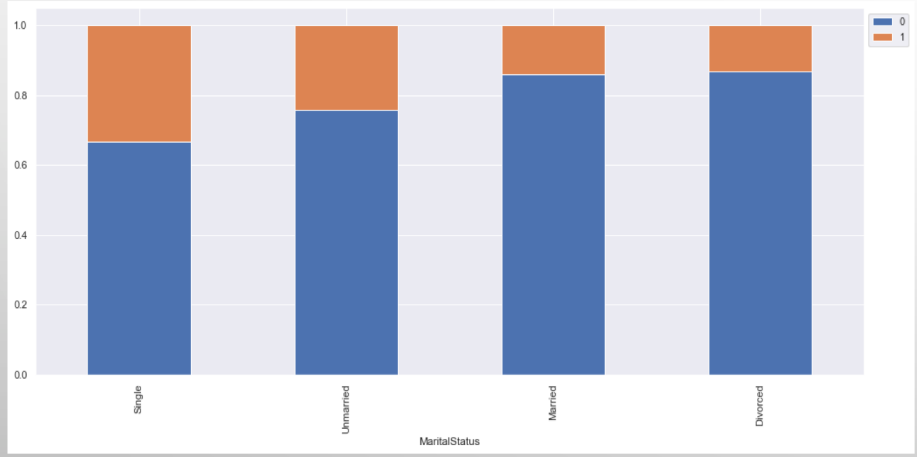


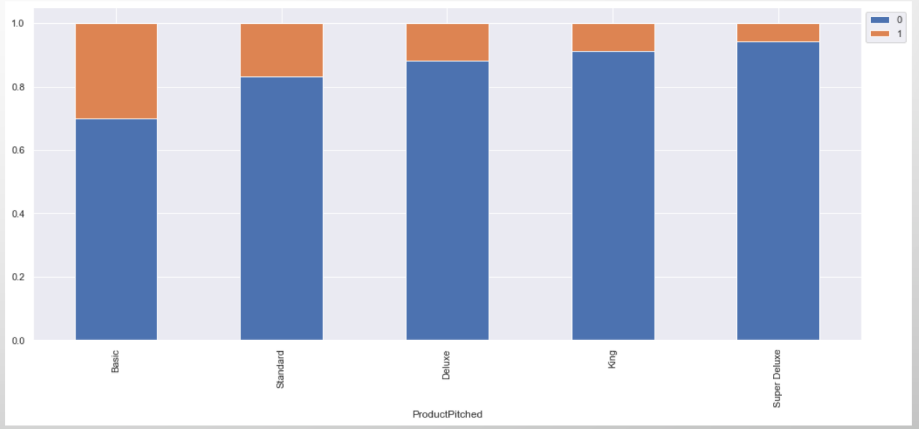


EXPLORATORY DATA ANALYSIS

- 29.1% OF CUSTOMERS HAVE A PASSPORT.
- SINGLE PERSONS WERE ALSO MORE LIKELY TO PURCHASE.
- PITCHING THE BASIC PACKAGE HAD THE HIGHEST RESULTS.

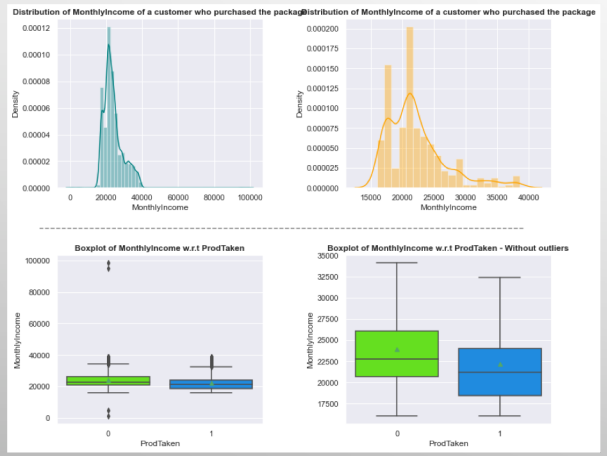






EXPLORATORY DATA ANALYSIS

- PRODUCTPITCHED, PASSPORT AND MARITIALSTATUS ARE THE TOP 3 FEATURES REPRESENTED BY THE BEST MODEL.



MODEL PERFORMANCE SUMMARY

- WE WANT TO PREDICT WHETHER A CUSTOMER WILL PURCHASE THE NEW TRAVEL PACKAGE OR NOT USING INFORMATION PROVIDED FROM THE COMPANY'S LAST CAMPAIGN.
- WE WILL USE RECALL AS THE PERFORMANCE METRIC FOR OUR MODEL.
- PREDICTING A CUSTOMER WILL PURCHASE THE TRAVEL PACKAGE AND THE CUSTOMER DOESN'T PURCHASE IT WILL RESULT IN LOSS OF OPPORTUNITY AND THE COMPANY WOULD WANT TO MINIMIZE THOSE FALSE NEGATIVES.
- WE LOOKED AT SEVERAL MODELS AND PICKED THE BEST MODEL USING RECALL AS THE LEADING METRIC.
- BOTH THE RANDOM FOREST WITH WEIGHTED AVERAGES AND XGBOOST WITH DEFAULT PARAMETERS GAVE US THE HIGHEST RECALL NUMBERS.

MODEL PERFORMANCE SUMMARY

Model	Train Accuracy	Test Accuracy	Train Recall	Test Recall	Train Precision	Test Precision
Bagging with default parameters	0.99	0.91	0.97	0.59	1.00	0.88
Tuned Bagging	1.00	0.92	1.00	0.63	1.00	0.93
Bagging with base estimator LR	0.84	0.83	0.19	0.17	0.81	0.76
Random Forest with default parameters	1.00	0.91	1.00	0.57	1.00	0.94
Tuned Random Forest	0.91	0.87	0.53	0.40	0.95	0.84
Random forest with class weights	0.88	0.86	0.84	0.74	0.65	0.61

MODEL PERFORMANCE SUMMARY

Model	Train Accuracy	Test Accuracy	Train Recall	Test Recall	Train Precision	Test Precision
AdaBoost with default parameters	0.85	0.85	0.31	0.32	0.70	0.75
AdaBoost Tuned	0.98	0.85	0.93	0.61	0.97	0.61
Gradient Boosting with default parameters	0.89	0.87	0.46	0.42	0.87	0.82
Gradient Boosting w init=AdaBoost	0.89	0.87	0.46	0.42	0.87	0.82
Gradient Boosting Tuned	0.92	0.88	0.62	0.49	0.94	0.81
XGBoost with default parameters	1.00	0.92	1.00	0.68	1.00	0.88

BUSINESS INSIGHTS AND RECOMMENDATIONS

- THE COMPANY SHOULD TARGET SINGLE, MALE, EXECUTIVES THAT ARE IN THEIR LATE 30, PREFERABLY AROUND 38 YEARS.
- THE COMPANY SHOULD SEND THEM COMPANY INVITATIONS TO PURCHASE THE TRAVEL PACKAGES VERSUS WAITING FOR THE CUSTOMER TO CALL.
- THE INCOME OF OUR TARGET MARKET IS 23,619 AND THEY HAVE PASSPORTS.
- THIS TARGETED MARKETING SHOULD REDUCE COST OF MARKETING AND INCREASE THE BOTTOM LINE THROUGH SAVINGS AND INCREASED SALES.