**Pre-cleanup data**

**Seaborn**

Calendar

Description automatically generated with medium confidence

**Histogram**

Chart, box and whisker chart

Description automatically generated

**Heatmap**

Chart

Description automatically generated

**Model Matrix**

Logistic Regression: accuracy on train is: 0.7309868007542426

Logistic Regression: accuracy on test is: 0.7164835164835165

Logistic Regression: precision\_score train is: 0.3969594594594595

Logistic Regression: precision\_score on test is: 0.39587242026266417

Logistic Regression: Recall\_score on train is: 0.7679738562091504

Logistic Regression: Recall\_score on test is: 0.7644927536231884

Logistic Regression: f1\_score on train is: 0.5233853006681515

Logistic Regression: f1\_score on test is: 0.5216316440049444

Decision Tree: accuracy on train is: 0.8447517284726587

Decision Tree: accuracy on test is: 0.8168498168498168

Decision Tree: precision\_score train is: 0.7757009345794392

Decision Tree: precision\_score on test is: 0.6477272727272727

Decision Tree: Recall\_score on train is: 0.27124183006535946

Decision Tree: Recall\_score on test is: 0.20652173913043478

Decision Tree: f1\_score on train is: 0.4019370460048426

Decision Tree: f1\_score on test is: 0.3131868131868132

Random forest: accuracy on train is: 1.0

Random forest: accuracy on test is: 0.8615384615384616

Random forest: precision\_score train is: 1.0

Random forest: precision\_score on test is: 0.7301587301587301

Random forest: Recall\_score on train is: 1.0

Random forest: Recall\_score on test is: 0.5

Random forest: f1\_score on train is: 1.0

Random forest: f1\_score on test is: 0.5935483870967742

Naive Bayes: accuracy on train is: 0.7313010685103708

Naive Bayes: accuracy on test is: 0.7238095238095238

Naive Bayes: precision\_score train is: 0.3819241982507289

Naive Bayes: precision\_score on test is: 0.39092872570194387

Naive Bayes: Recall\_score on train is: 0.6421568627450981

Naive Bayes: Recall\_score on test is: 0.6557971014492754

Naive Bayes: f1\_score on train is: 0.4789762340036564

Naive Bayes: f1\_score on test is: 0.48985115020297704

Gradient Boosting: accuracy on train is: 0.8896920175989943

Gradient Boosting: accuracy on test is: 0.8300366300366301

Gradient Boosting: precision\_score train is: 0.8320610687022901

Gradient Boosting: precision\_score on test is: 0.6341463414634146

Gradient Boosting: Recall\_score on train is: 0.5343137254901961

Gradient Boosting: Recall\_score on test is: 0.37681159420289856

Gradient Boosting: f1\_score on train is: 0.6507462686567165

Gradient Boosting: f1\_score on test is: 0.4727272727272728

**Baseline AUC Analysais**

LogisticRegression Train: 0.7450764222679993

LogisticRegression Valid: 0.7344043198786281

Decision Tree Train: 0.6262823936319014

Decision Tree Valid: 0.5890276280592487

Naive Bayes Train: 0.6973430228122377

Naive Bayes Valid: 0.6984219667025992

RandomForest Train: 1.0

RandomForest Valid: 0.7265840220385674

GradientBoostedTree Train: 0.7543163958190279

GradientBoostedTree Valid: 0.660857587735058

**Decision Tree**

Diagram

Description automatically generated

**Feature Importance (Gradient Boosting)**

**Chart

Description automatically generated**

**ROC Curve Analysis**

**Chart, line chart

Description automatically generated**