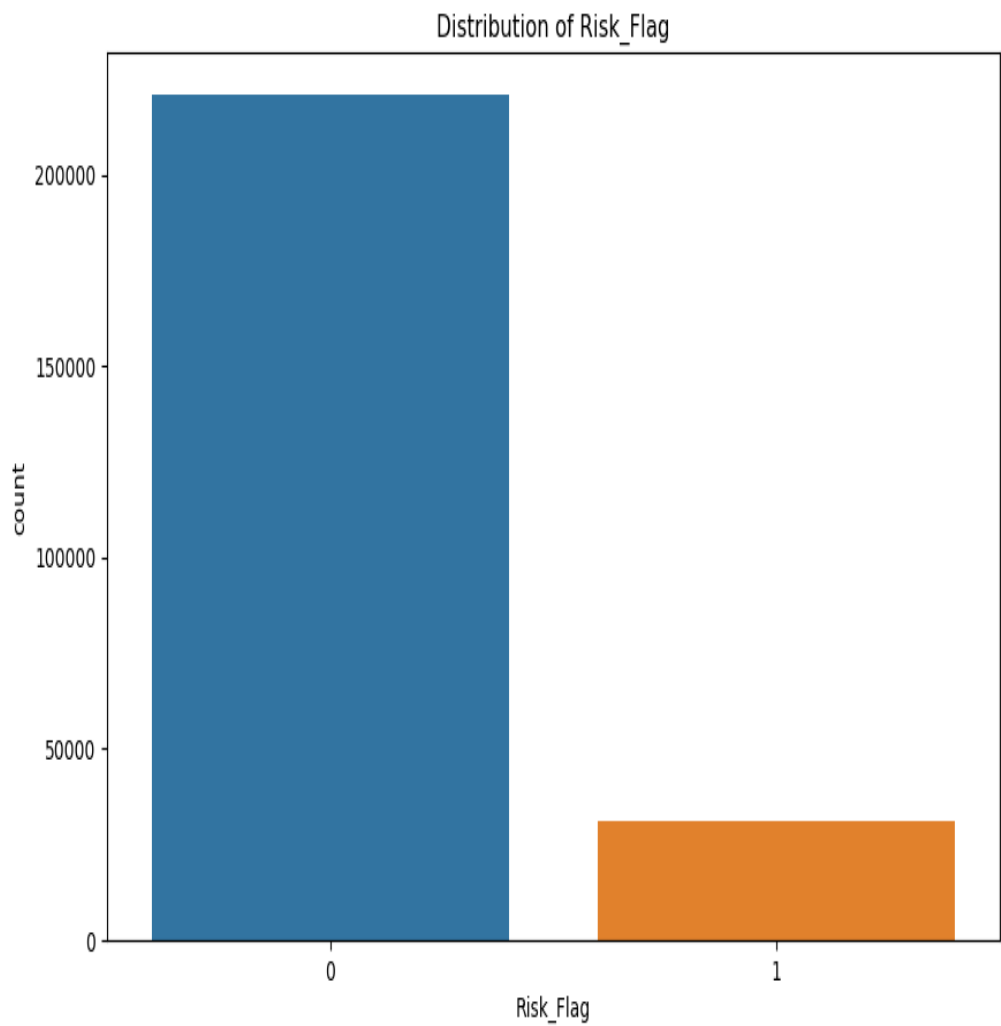
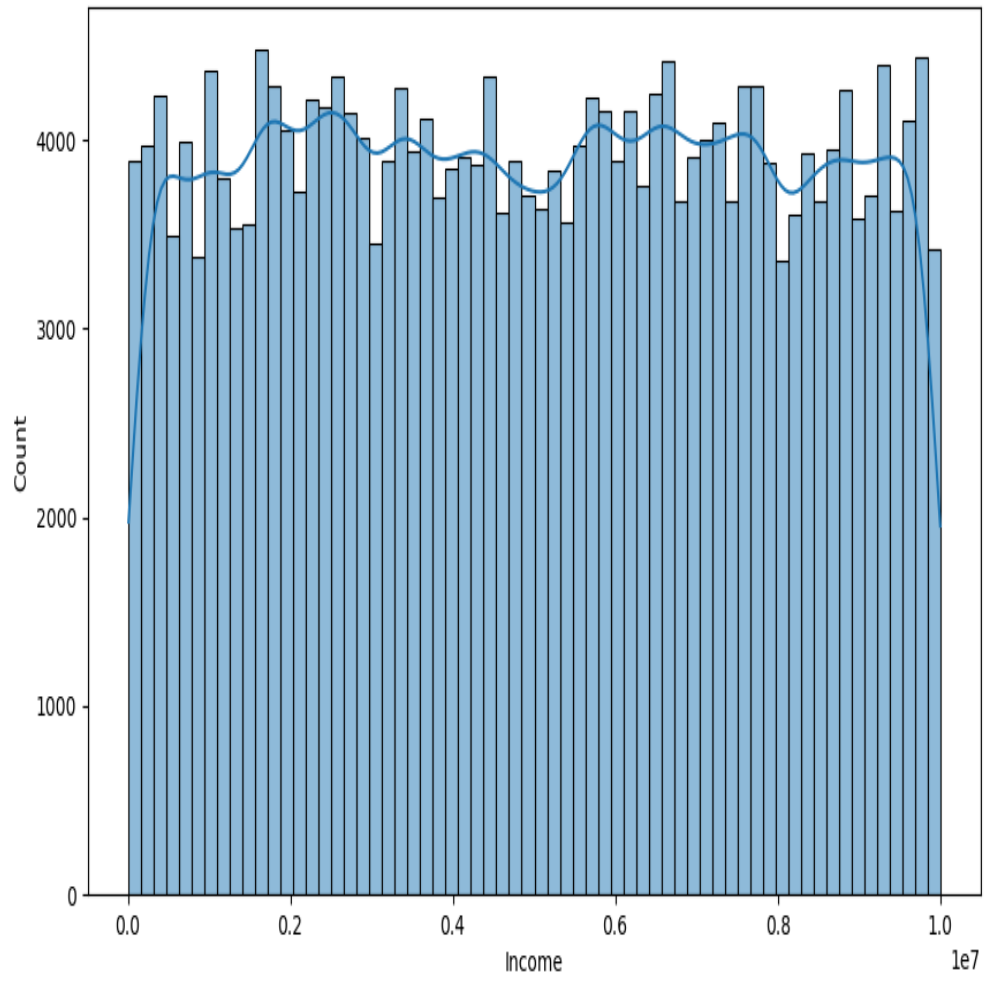


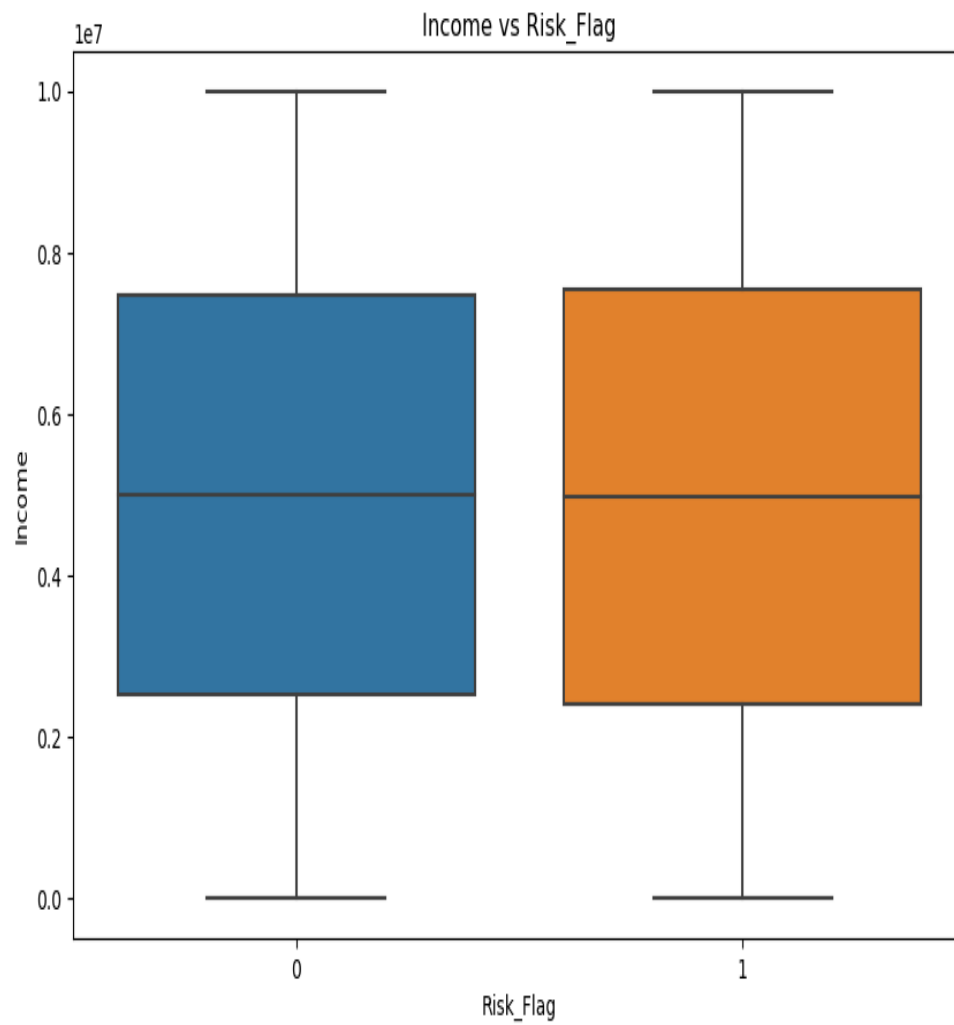
# Loan Approval Data Analysis Report

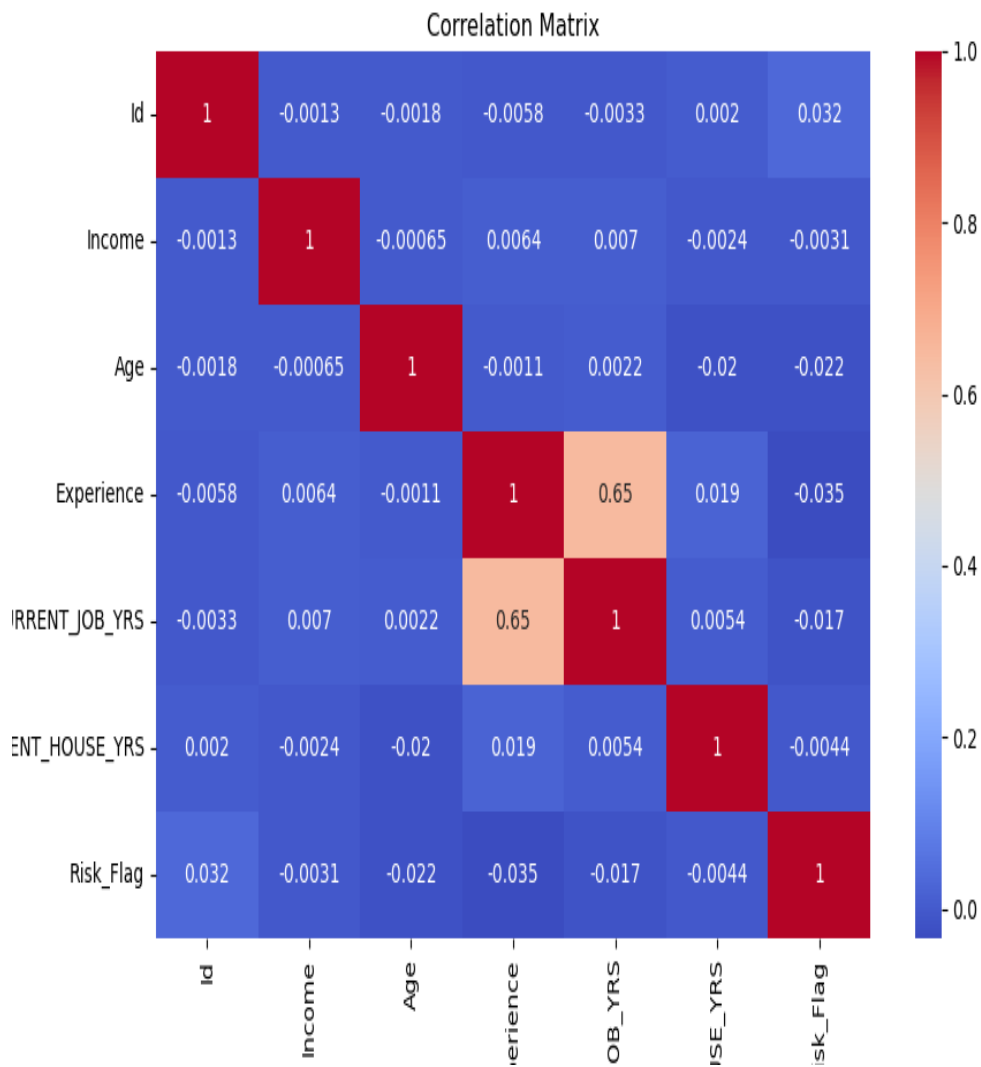
## Data Visualizations

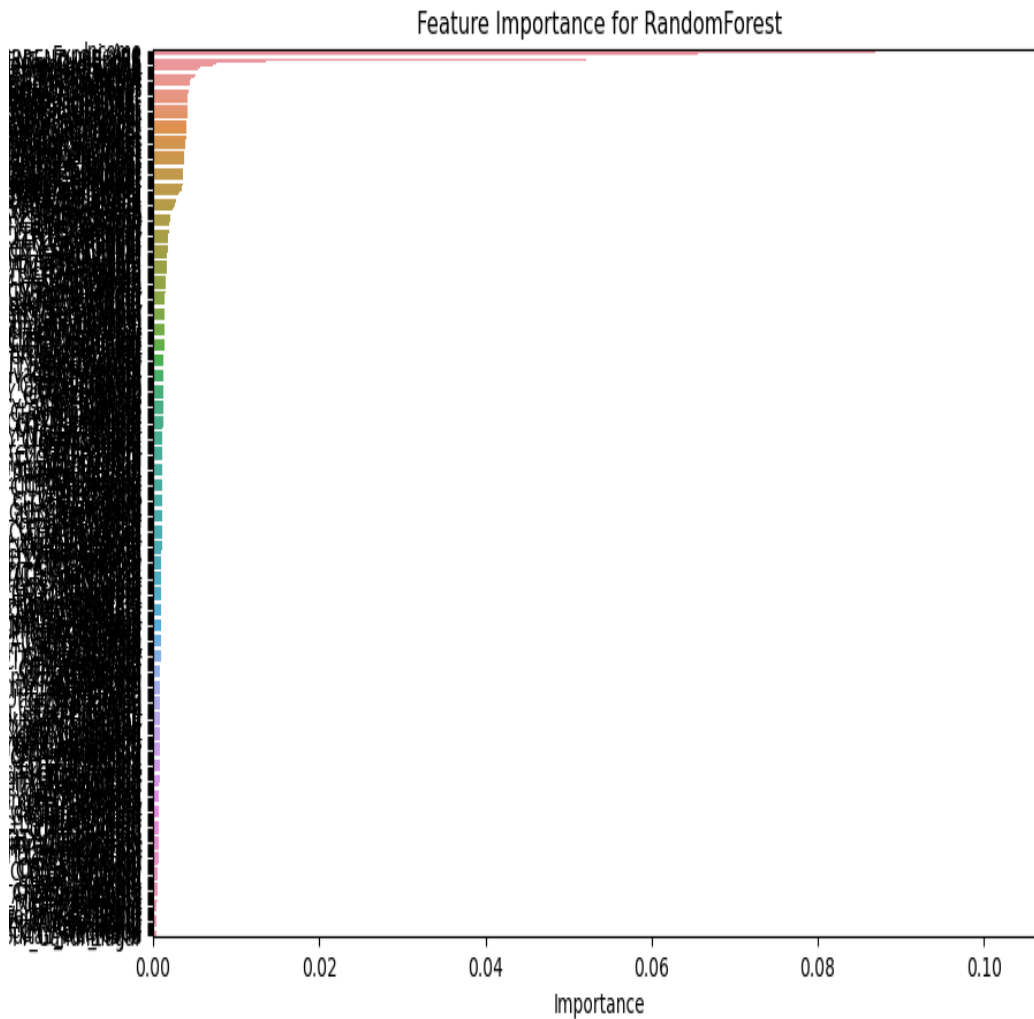


Income Distribution









## Data Exploration Insights

None

Id Income Age Experience \ count 252000.000000 2.520000e+05 252000.000000 252000.000000  
mean 126000.500000 4.997117e+06 49.954071 10.084437 std 72746.278255 2.878311e+06  
17.063855 6.002590 min 1.000000 1.031000e+04 21.000000 0.000000 25% 63000.750000  
2.503015e+06 35.000000 5.000000 50% 126000.500000 5.000694e+06 50.000000 10.000000 75%  
189000.250000 7.477502e+06 65.000000 15.000000 max 252000.000000 9.999938e+06 79.000000  
20.000000 CURRENT\_JOB\_YRS CURRENT\_HOUSE\_YRS Risk\_Flag count 252000.000000  
252000.000000 252000.000000 mean 6.333877 11.997794 0.123000 std 3.647053 1.399037  
0.328438 min 0.000000 10.000000 0.000000 25% 3.000000 11.000000 0.000000 50% 6.000000  
12.000000 0.000000 75% 9.000000 13.000000 0.000000 max 14.000000 14.000000 1.000000

## Model Performance

### ***Model: RandomForest***

ROC-AUC Score: 0.94

Classification Report:

```
{ "0": { "precision": 0.9357951879900811, "recall": 0.9476934910974865, "f1-score": 0.9417067577896677, "support": 44201.0 }, "1": { "precision": 0.5898527585595175, "recall": 0.5363768349733828, "f1-score": 0.561845217979047, "support": 6199.0 }, "accuracy": 0.8971031746031746, "macro avg": { "precision": 0.7628239732747992, "recall": 0.7420351630354347, "f1-score": 0.7517759878843573, "support": 50400.0 }, "weighted avg": { "precision": 0.8932456419575403, "recall": 0.8971031746031746, "f1-score": 0.8949852957800242, "support": 50400.0 } }
```

### ***Model: GradientBoosting***

ROC-AUC Score: 0.64

Classification Report:

```
{ "0": { "precision": 0.8770686986546017, "recall": 0.9999547521549286, "f1-score": 0.9344891379036947, "support": 44201.0 }, "1": { "precision": 0.6666666666666666, "recall": 0.0006452653653815131, "f1-score": 0.00128928283642224, "support": 6199.0 }, "accuracy": 0.8770436507936508, "macro avg": { "precision": 0.7718676826606341, "recall": 0.500300008760155, "f1-score": 0.4678892103700585, "support": 50400.0 }, "weighted avg": { "precision": 0.851190083648784, "recall": 0.8770436507936508, "f1-score": 0.8197092589044481, "support": 50400.0 } }
```

### ***Model: LogisticRegression***

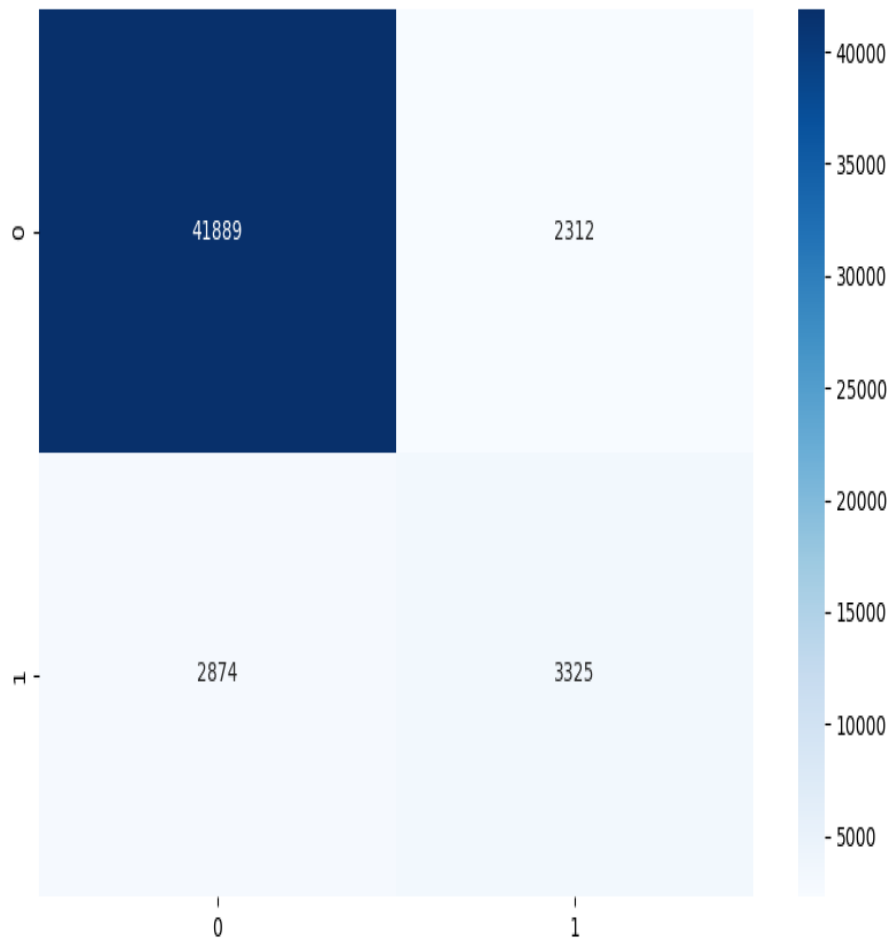
ROC-AUC Score: 0.62

Classification Report:

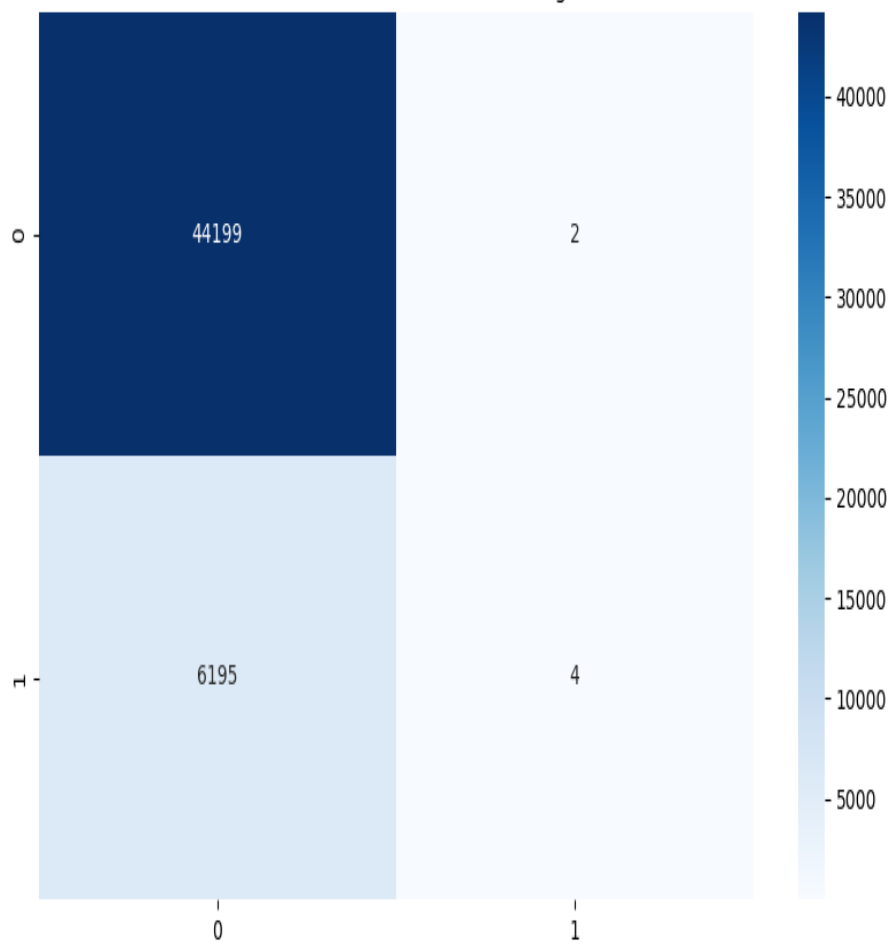
```
{ "0": { "precision": 0.8770039682539682, "recall": 1.0, "f1-score": 0.9344721514571727, "support": 44201.0 }, "1": { "precision": 1.0, "recall": 0.0, "f1-score": 0.0, "support": 6199.0 }, "accuracy": 0.8770039682539682, "macro avg": { "precision": 0.9385019841269842, "recall": 0.5, "f1-score": 0.46723607572858633, "support": 50400.0 }, "weighted avg": { "precision": 0.8921319920792391, "recall": 0.8770039682539682, "f1-score": 0.8195357850507636, "support": 50400.0 } }
```

## Confusion Matrices

Confusion Matrix: RandomForest



Confusion Matrix: GradientBoosting





Confusion Matrix: LogisticRegression

