**Module 17 Challenge Written Analysis**

Overview

The goal of this analysis is to test how different machine learning models are able to assess credit risk. The models I used were RandomOverSampler, SMOTE, ClusterCentroids, SMOTEENN, BalancedRandomForestClassifier, and EasyEnsembleClassifier.

Results

* *Random Oversampling*: A picture containing table

  Description automatically generated
  + Balanced Accuracy Score: 0.632183908045977
  + High-risk Performance: Low precision (0.01), decent recall (0.60)
  + Low-risk Performance: Perfect precision (1.0), slightly better recall (0.67)
* *SMOTE(oversampling*): Table

  Description automatically generated
  + Balanced Accuracy Score: 0.6348711378625445
  + High-risk Performance: low precision (0.01), decent recall (0.60)
  + Low-risk Performance: perfect precision (1.0), slightly improved recall (0.67)
* *Cluster Centroid*: A picture containing table

  Description automatically generated
  + Balanced Accuracy Score: 0.6348711378625445
  + High-risk performance: low precision (0.01), decent recall (0.61)
  + Low-risk Performance: perfect precision (1.0), worse recall (0.45)
* *Smoteen*: A picture containing table

  Description automatically generated
  + Balanced Accuracy Score: 0.5292150629907619
  + High-risk Performance: low precision (0.01), good recall (0.71)
  + Low-risk Performance: perfect precision (1.0), decent recall (0.60)
* *Balanced Random Forest Classifier*: A picture containing table

  Description automatically generated
  + Balanced Accuracy Score: 0.7877672625306695
  + High-risk Performance: low precision (0.04), decent recall (0.67)
  + Low-risk Performance: perfect precision (1.0), great recall (0.91)
* *Easy Ensemble Classifier*: Table

  Description automatically generated with low confidence
  + Balanced Accuracy Score: 0.925427358175101
  + High-risk Performance: low precision (0.07), great recall (0.91)
  + Low-risk Performance: perfect precision (1.0), great recall (0.94)

Summary

Considering the average/total F1 (precision and sensitivity) values or each model, the best performing model and most suited for assessing credit risk is the Easy Ensemble Classifier (0.97). According to the same measurement, the worst performing model is the Cluster Centroid (0.62).