Assignment #7 CART by Joshua Troup

**Results in terms of rules:**

If (open price < 3.64) and (close price > 3.65) then OpenPrice < 0.62 then class=1

If (open price < 3.64) and (close price > 3.65) then class=1.

If OpenPrice > 2.45 then class = 0

If OpenPrice < 2.45 and ClosePrice < 2.24 then class=0

If OpenPrice <2.45 and ClosePrice > 2.24 then class=1

If OpenPrice > 3.64 and SellerRating < 604 and ClosePrice < 15.25 then class=0

If OpenPrice >3.64 and SellerRating < 604 and ClosePrice > 15.25 then class=1

If OpenPrice > 3.64 and SellerRating > 604 and ClosePrice < 10.06 and OpenPrice < 4.93 then class=0

If OpenPrice > 3.64 and SellerRating > 604 and ClosePrice < 10.06 and OpenPrice > 4.93 and ClosePrice < 6.52 then class=0

If OpenPrice > 3.64 and SellerRating > 604 and ClosePrice < 10.06 and OpenPrice > 4.93 and ClosePrice > 6.52 and OpenPrice < 6.64 then class=1

If OpenPrice > 3.64 and SellerRating > 604 and ClosePrice < 10.06 and OpenPrice > 4.93 and ClosePrice > 6.52 and OpenPrice > 6.64 then class=0

If OpenPrice > 3.64 and SellerRating >604 and ClosePrice > 10.06 and OpenPrice < 10.50 and currency\_EUR < .50 then class=1

If OpenPrice > 3.64 and SellerRating >604 and ClosePrice > 10.06 and OpenPrice < 10.50 and currency\_EUR > .50 then class=0

If OpenPrice > 3.64 and SellerRating >604 and ClosePrice > 10.06 and OpenPrice > 10.50 then class=0

**3. If you had to slightly reduce the number of predictors due to software limitations, or for clarity of presentation, which would be a good variable to choose?**

Currency would be a good variable to remove to reduce the number of predicators as this variable does not influence much.

**4. Is this model practical for predicting the outcome of a new auction? (your response should consider closing price as an attribute in your tree prediction)**

This model is not practical for predicting the outcome of a new auction because the closing price is unknown at the beginning of the auction.

**5. Describe the interesting and uninteresting information that these rules provide. (Share your insights based on the best-pruned tree based rules)**

The expected single bid is more than likely to produce a lower closing price which is not competitive with no one else bidding on the item. Interesting to find the sellers with little feedback or seller rating number tend to have more competitive auctions.

**6. Examine the Confusion matrix / summary report for Training (full tree) and Validation classification tree (best-pruned tree). What can you say about the predictive performance of this model? (your response must focus on the % error and overall accuracy)**

There were 148 cases misclassified in the Training Data, resulting in a 12.51% error. There were 131 cases misclassified in the Validation Data, resulting in a 16.60% error.

100-12.51=87.49%

100-16.60=83.40%

The overall accuracies is high

**7. Looking at the Training and Validation classification summary report, does the error % go up for competitive Auctions (=1) than non -competitive?**

The % error is higher for competitive auctions and lower in noncompetitive auctions in both cases. Training 1=18.19% 0=5.48% Validation 1=22.08% 0=10.61%

**8. To get a competitive auction, what is the most important factor controlled by the seller? (Look at your best-pruned tree to answer this question)**

Opening price is the most important factor to obtain a competitive auction. Typically the lower the price, the more bidders are attracted. Setting the lowest amount allowed by eBAY is highly recommended as it will bring in the most traffic.