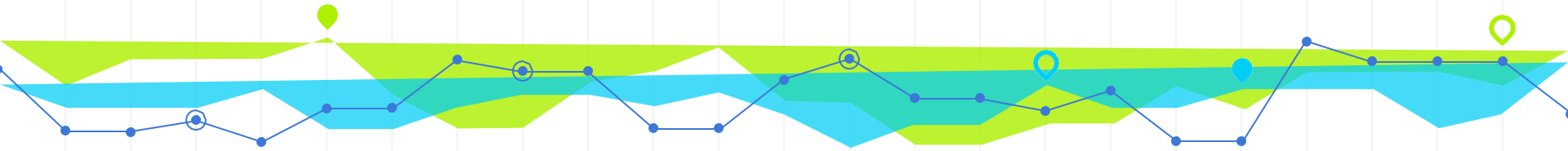
Accuracy of ELO and Betting Odds in Tennis



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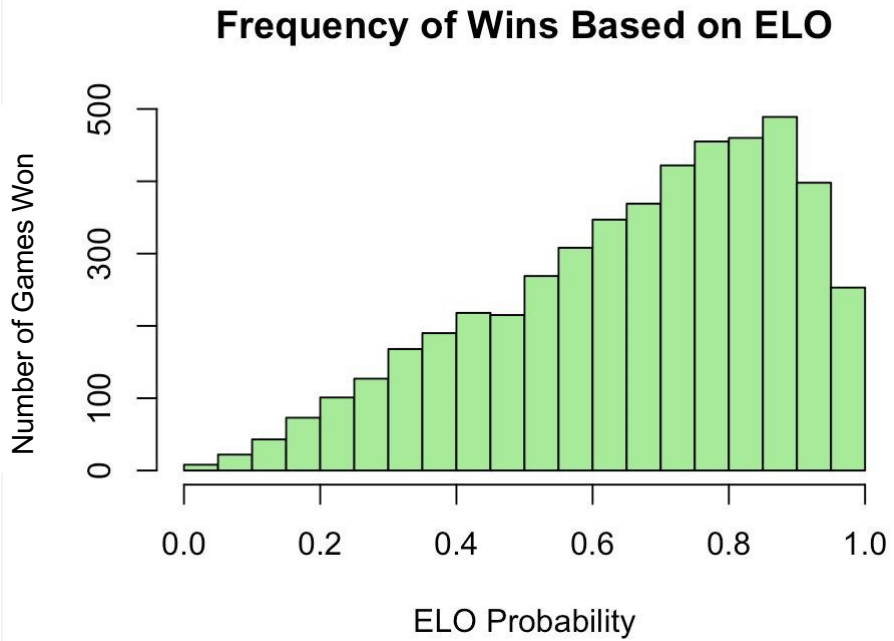
Problem

To see whether or not ELO scores or Betting Odds are accurate in determining the outcomes of matches

Methodology

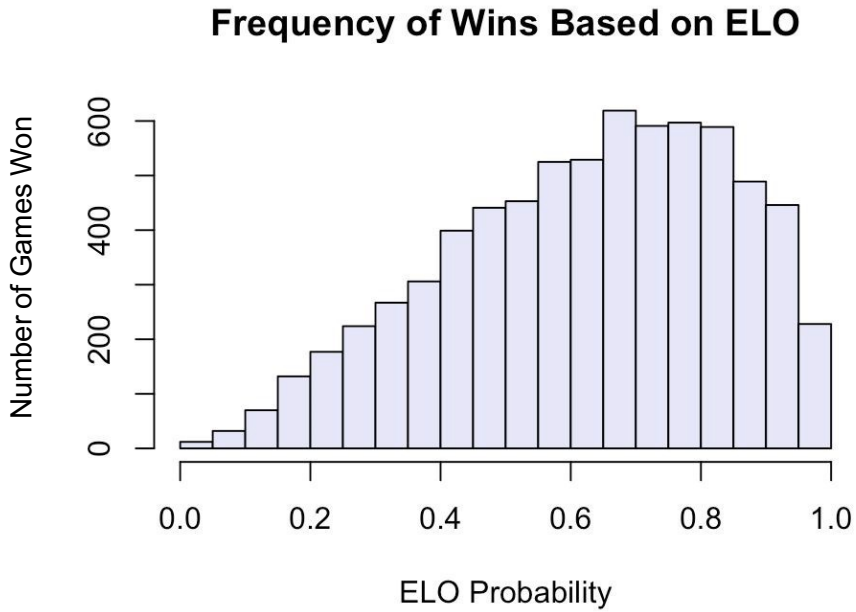
- Collected Data from all Grand Slams dating from 2007 to 2016
- Compared match results with implied probability predictions
- Calculated mean square error and misclassification rate
- Created a Histogram to see frequency
- Created a scatterplot to compare Betting Odd probability to ELO score probability

Results: Men's ELO



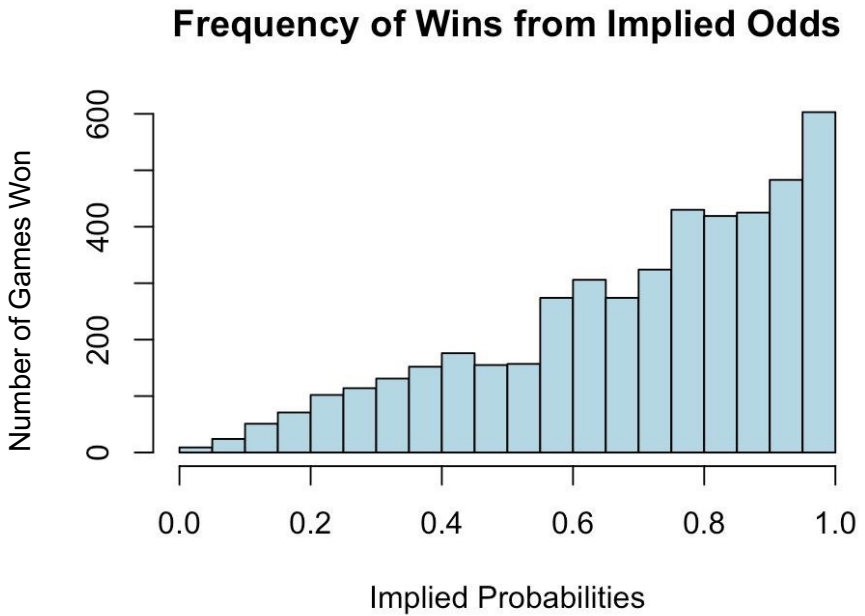
- Misclassification: 0.236
- Mean Squared Error: 0.162
- Analysis: ELO score predictions show that 76.4% of games were predicted correctly

Results: Women's ELO



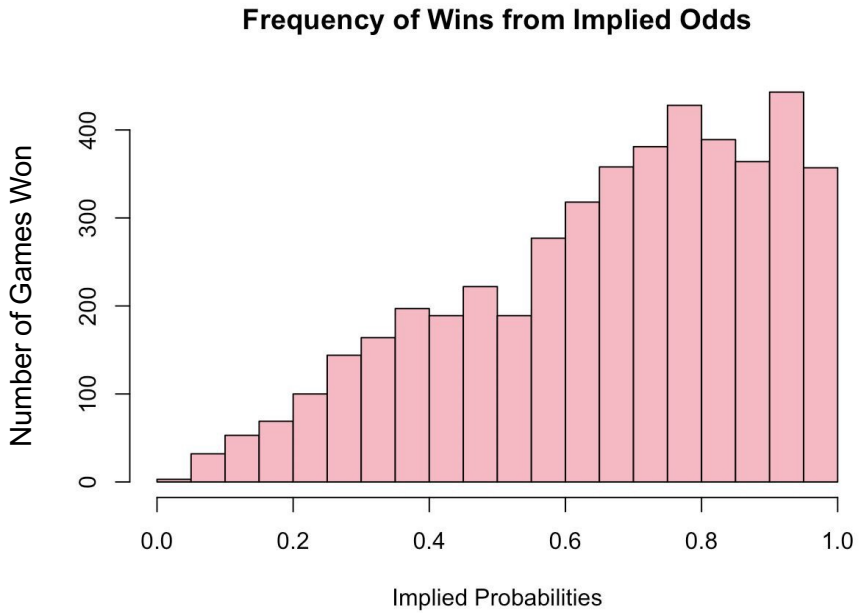
- Misclassification: 0.28
- Mean Squared Error: 0.188
- Analysis: ELO score predictions shows that 71.1% of games were predicted correctly

Results: Men's Betting Odds



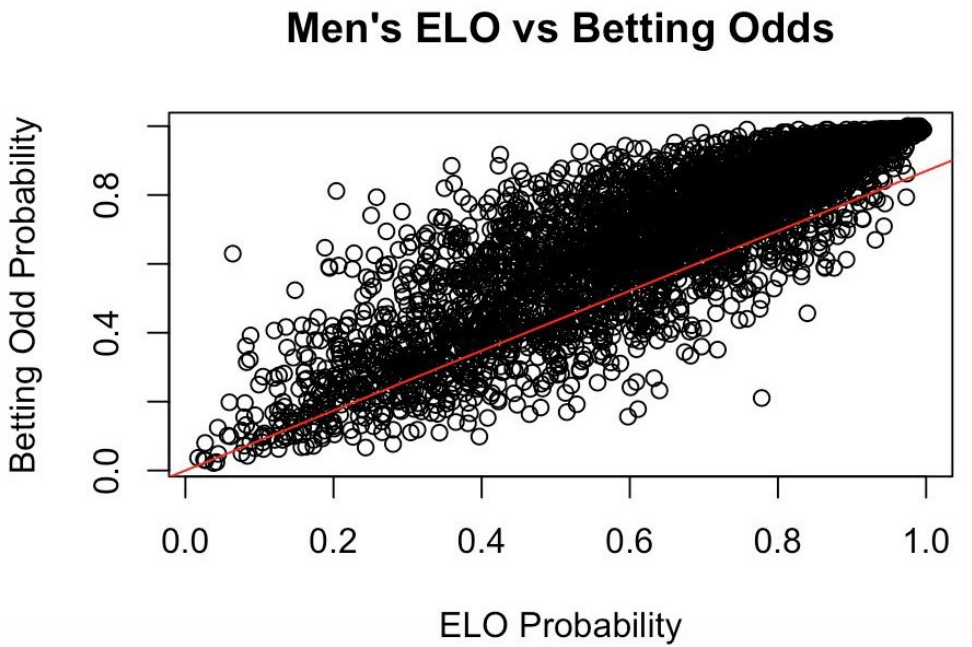
- Misclassification Rate: 0.250
- Mean Squared Error: 0.146
- Analysis: Shows that about 75% of the time the favorite wins going off Bookie odds.

Results: Women's Betting Odds



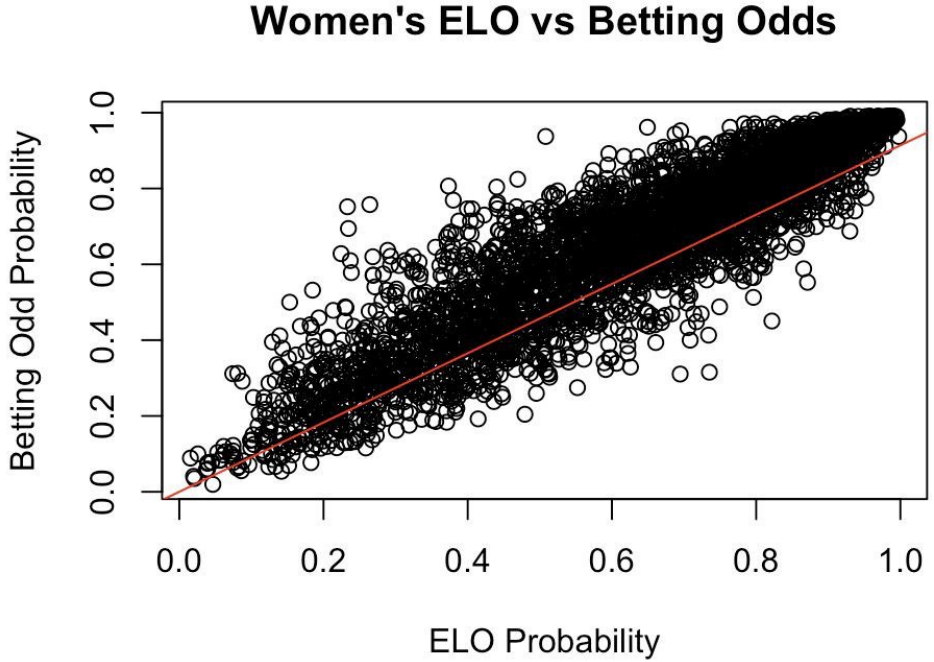
- Misclassification: 0.274
- Mean Square Error: 0.165
- Analysis: The favorite is shown to win about 72.6% based off Bookie odds

Results: Men's Both



- R–Value: 0.8697
- R^2 Value: 0.7564
- Strong Positive Correlation

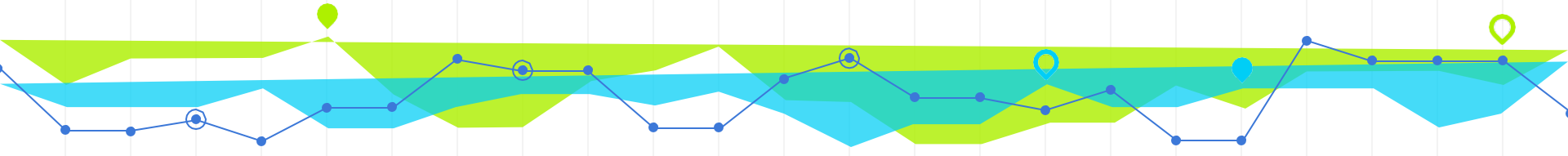
Results: Women's Both



- R–value: 0.9139
- R^2 Value: 0.8353
- Strong Positive Correlation

Conclusion

- Most accurate system is the Men's Betting odds (Accurately predicted 75% matches)
- Comparing both ELO systems the Men's ELO system was accurate with misclassification: 0.236 MSE: 0.162
- When comparing both Betting Odds and ELO for men and women we found strong positive correlation
- But when comparing systems, the Women's ELO vs Betting Odds had a much stronger correlation and higher correlation coefficient than than comparing the Men's Systems against each other.



Faults

- Hard to filter out through the excess amounts of unnecessary data
- Limited betting odds
- Limited variety of tennis stats
- No complete data before 2007