SPRINT 3

Predicting Tennis Outcomes

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Can tennis outcomes be predicted?

Problem

- Debate and general uncertainty around who will win professional tennis matches

Solution

- Build a predictive model to see not only who will win, but what features are important

Impact

- Fans
- Analytics
- Betting

Preprocessing

Filtering dataset down

- 2000s onwards (modern tennis)
- Highest level professional tournaments
  - Grand Slams and Masters 1000s
- Rows where NAN values
- Raw: 73247 entries   Filtered: 25585 entries

Feature Engineering

- Surface win percentage for both winner and loser prior to match
  - Cumulative and chronological

EDA

checking for class imbalance in target variable and simple model

- 67% for higher ranked

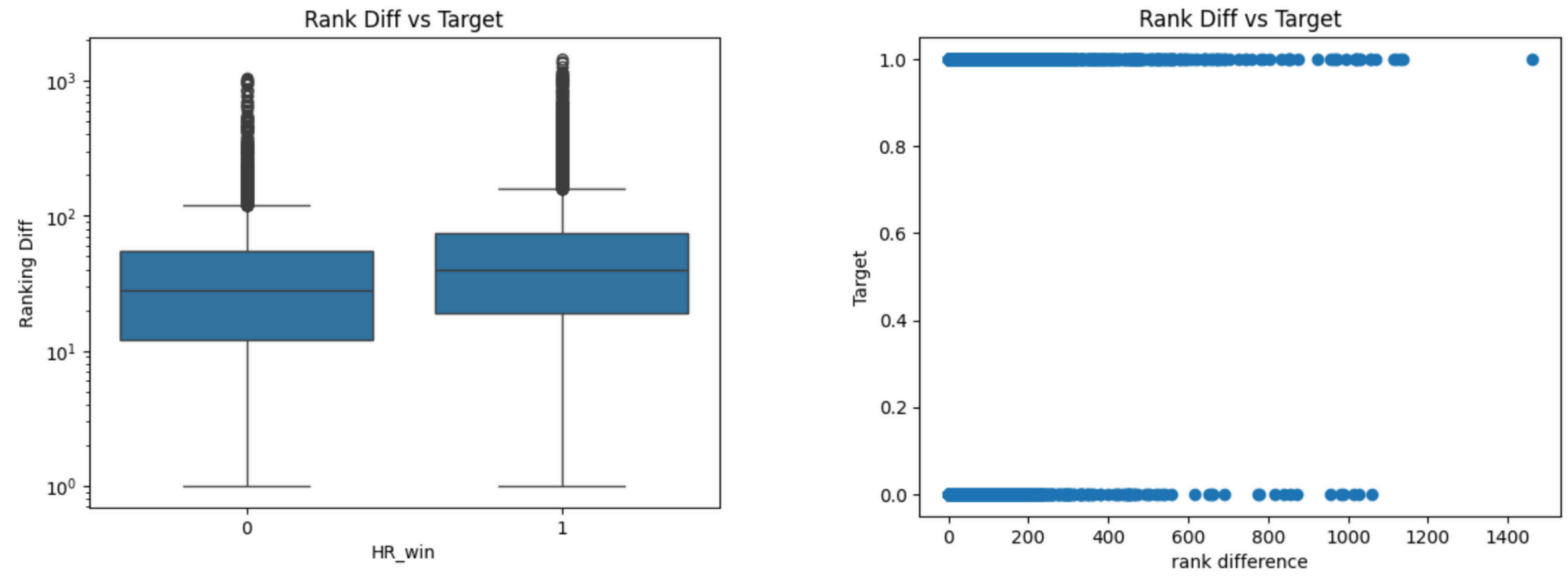
Non-linearity of some features and no real demarcation

- Age
- Height

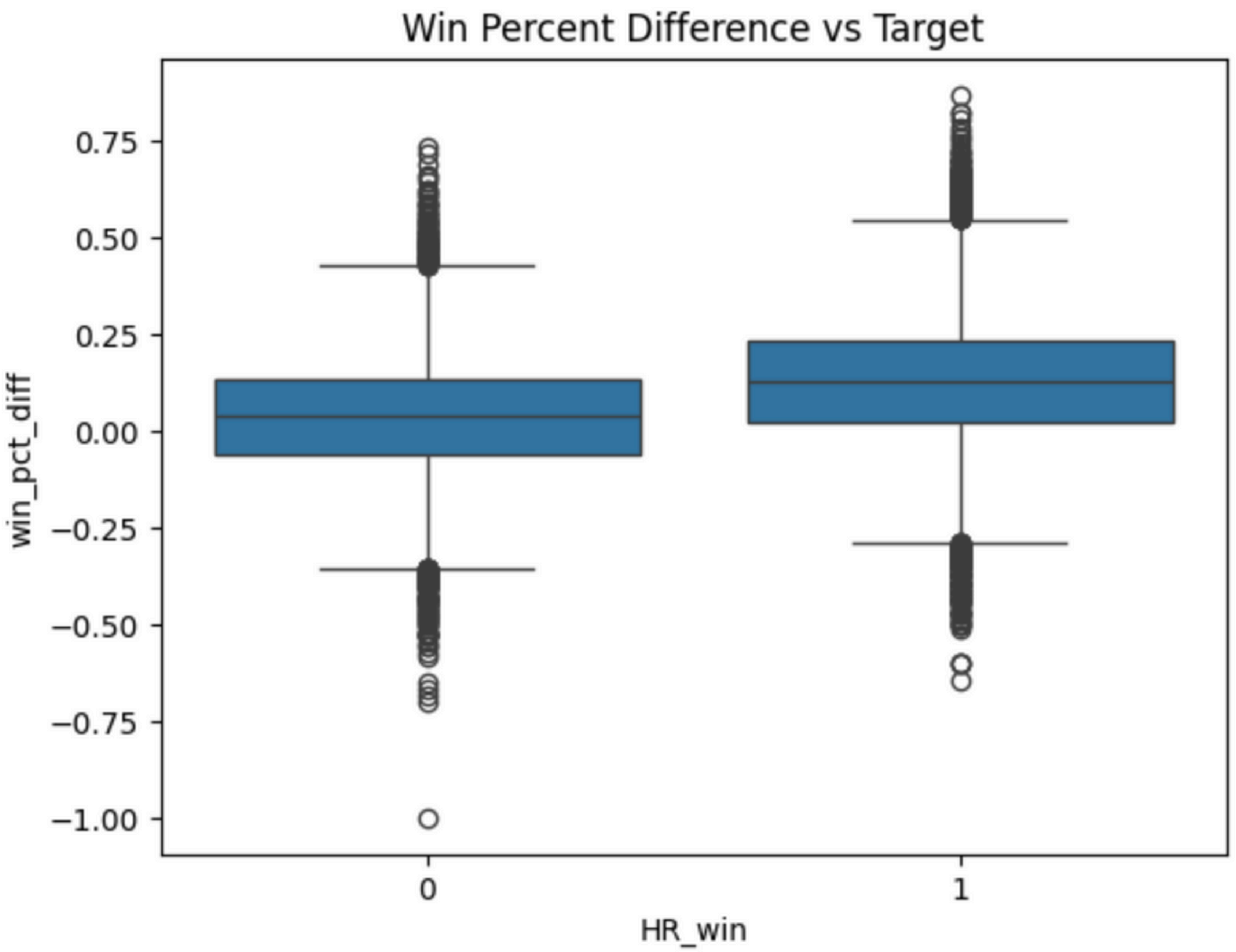
Two features show (marginal) promise!

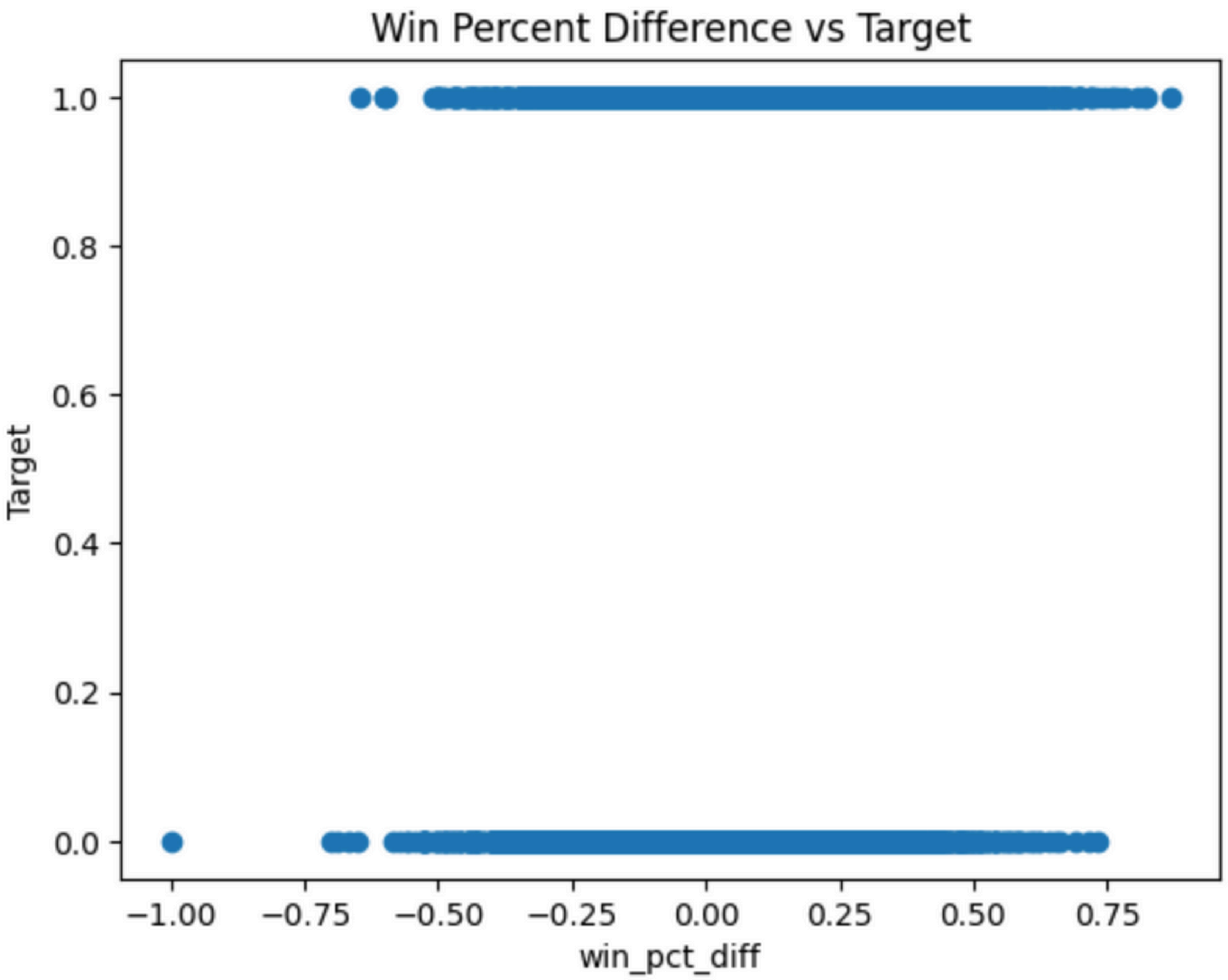
- Ranking difference
- Surface win percentage

Ranking Difference



Surface Win Percent Difference

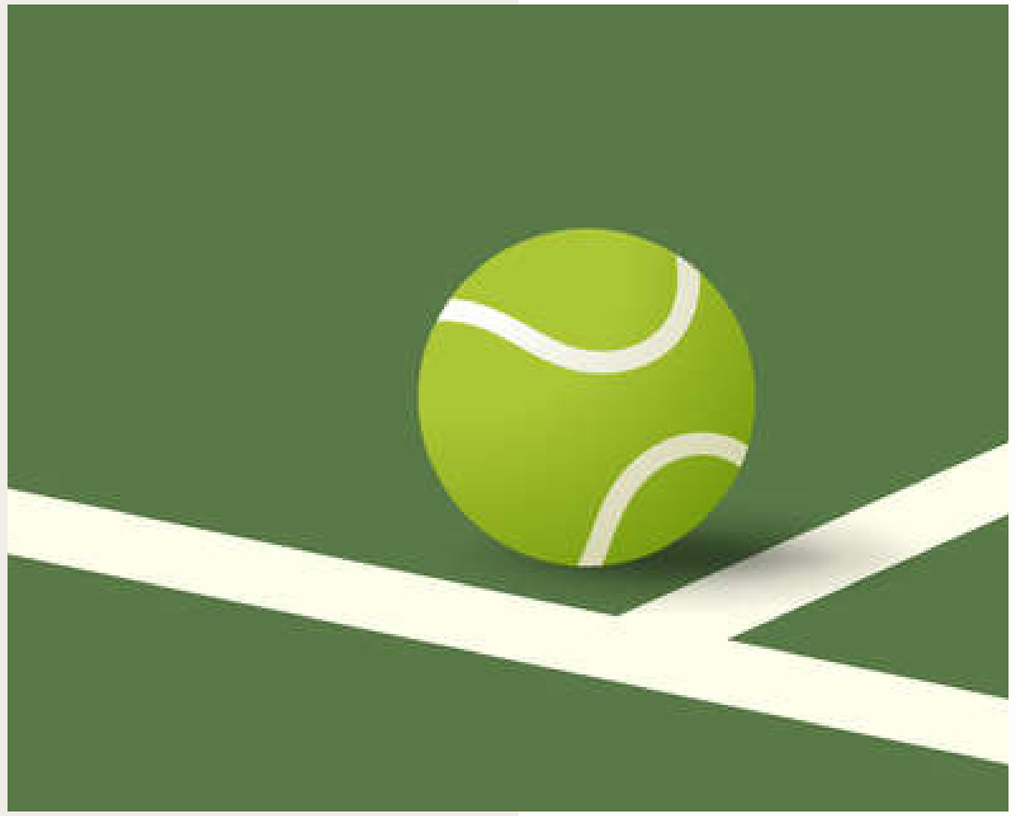




MODELING

Outcome of logistic regression and random forest models

- ~69% accuracy for train and test score
- 2% bump in accuracy
- Minimal overfitting (test score occasionally better)



MODELING RESULTS

Model Type	Train Score	Test Score
Baseline	67.3%	67.3%
Logistic Regression	68.4%	69.6%
Random Forest	69.4%	69.1%

NEXT STEPS & CONCLUSION

Areas for improvement

- Adding additional features
  - Recent form (win percentage for past 6 months)
- One hot encoding court surface
- Gradient Boosting model

Conclusion

- ATP ranking system is strong predictor!
  - point system works quite well
- Surface win percentage valuable analytical feature