Forecasting NBA Playoff Runs with Advanced Metrics

Stat 418 Project Proposal

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Current Proposal:

How can we look at historical team data to predict how far we expect a given team to go in the 2025 playoffs?

- **Model Specifics:** Logistic Regression model, 6 buckets (Championship, Finals, Conference Finals, Second Round, First Round, Playoffs Missed)
- **Metrics Used:** BPI, Net Rating, FG% difference, rebounds difference, etc…

Data Collection + Building a Model

Two different sources of data used:

Team stats by season: Looks at the difference in team - opponent performance in a variety of stats (if a team averages 100 ppg and allows 90 ppg, PPG_Dif = 10)

End of year result + BPI by season: looks at the advanced metric BPI for each team, in addition to how their season finished in a given year.

Using these two sources of data, the model selected was an ordinal logistic regression model, to predict the probabilities of where each team would finish their year.

Shiny App Implementation

1. **Drop down menu:**
   - Breakdown for each season/team, calculating the likelihood of advancing past each round
   - For historic data, would allow for a comparison & show over/under performers
2. **New value input:**
   - Default would be the probabilities of advancing past each round (46% miss playoffs, 27% lose in round 1, 13.5% lose in round 2, 6.75% make the finals, 3.375% winning the championship)
   - Inputting new values for each metric would show the increase/decrease in each of these odds.