Which Factors Are Most Determinant of Playoff Berths? An Analysis of Men's NCAA Basketball and the NBA

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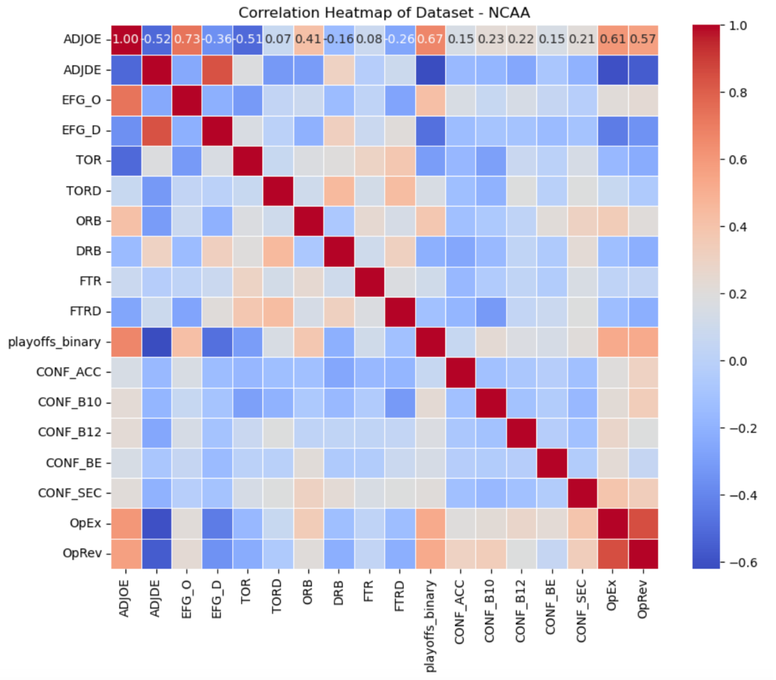
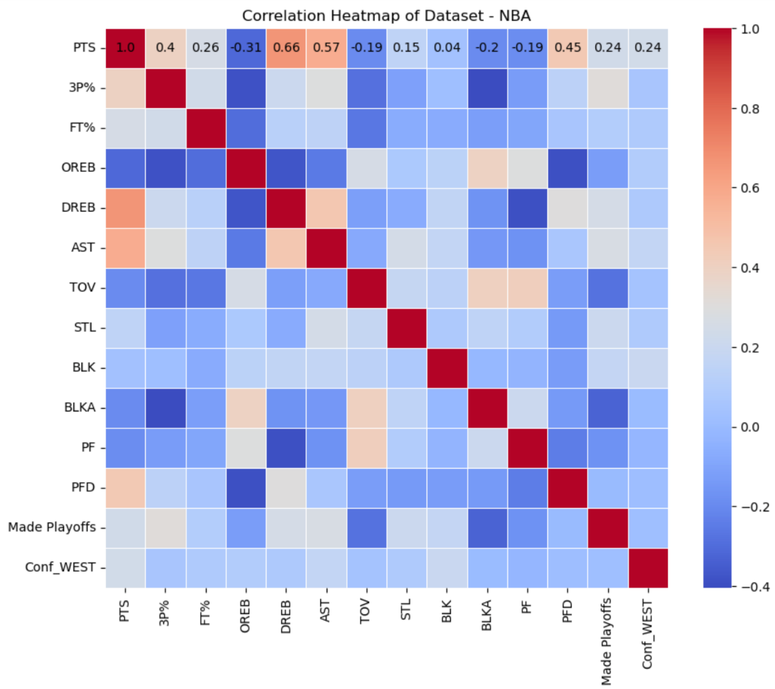


- Serves as a sanity check
- Do the correlations make sense? Are there problems with the data?
- Operating Expenses and Revenues are related to Adjusted Offensive and Defensive Efficiency

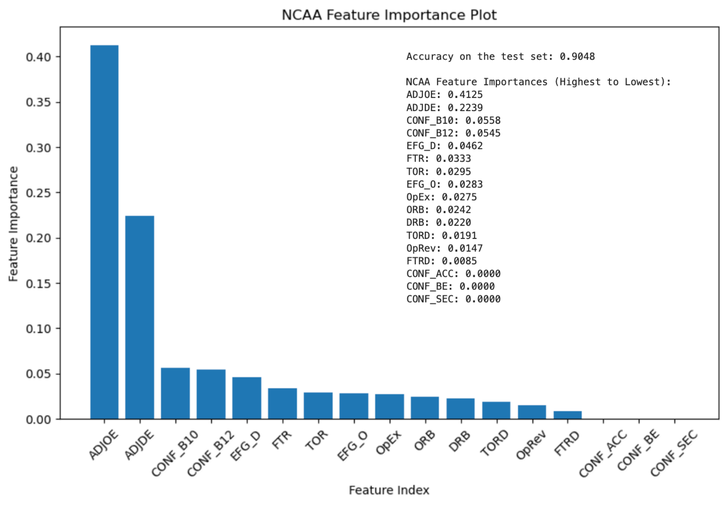


- Illuminates potential sources of multicollinearity
- Defensive Rebounds and Assists are positively correlated with Points
- Strong negative correlations between Offensive Rebounds and Defensive Rebounds with Personal Fouls Drawn and Personal Fouls, respectively

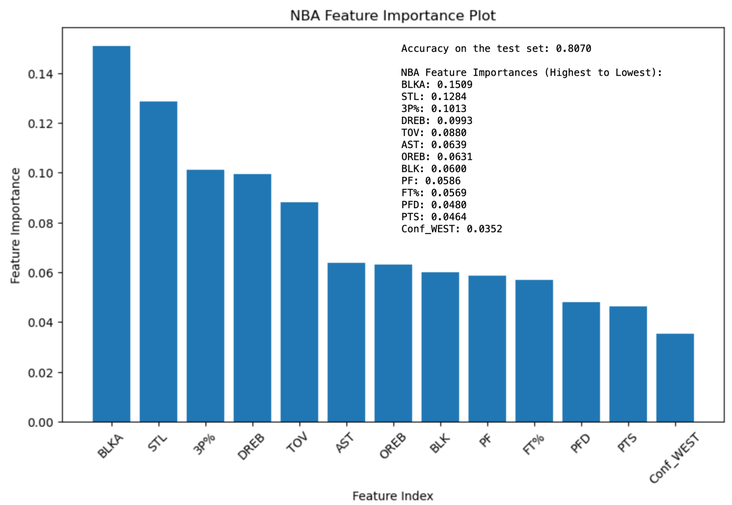
Implications

- NCAA Coaches and Players can use this data to excel in their sport
- Coaches can better understand how to model their play style and build their team to reach success in the form of making playoffs
- Coaches may focus on recruiting players that will improve their adjusted offensive efficiency over a player who excels in other aspects of the game such as ball security
- Insights from this data may help coaches develop and scout talent for their basketball programs
- Understanding the factors that play a role in playoff berths could lead to more march madness appearances which generates the money for the College/University

- NBA Coaches, Players, GMs and fans can find this information useful
- Coaches can understand what tactics they should use when attempting to make a playoff push
- Players can understand what spots they should excel at to make the greatest impact for their team and make the most money
- GMs can know what to look for in players when signing or trading for them
- Fans appreciate gaining insights into what their teams need to focus on to make the playoffs
- Successful NBA teams can lead to more investment in the surrounding area and has a large economic impact on the city and suburbs around it



- ADJOE and ADJDE are the most determinant factors
- Big 10 and Big 12 Conferences are determinant, other 3 of the top 5 conferences have no impact on the model
- Operating Expenses are almost twice as impactful as Operating Revenues



- Blocks Against and Steals per game are the two most determinant factors
- Which conference a team belongs to is a factor in playoff prediction
- Defensive Rebounds are more determinant than Offensive Rebounds
- Points is the second least determinant variable in the model

Results

- NCAA model predicts just under 10% more accurately than the NBA model (90.5% and 80.7%, respectively)
- NBA feature importances are more evenly distributed compared to the NCAA
- Many statistics may be captured by umbrella statistics ADJOE and ADJDE (only available for NCAA)
- NBA playoff prediction may be more difficult because there is less of a gap in skill compared to NCAA as there are over 350 NCAA Men's Basketball teams compared to the 32 NBA teams

Data and Methods

- The NBA data was found on Kaggle.com and was scraped from nba.stats.com
- The NCAA in-game data was found on Kaggle.com and was scraped from bartorvik.com
- The NCAA financial data was scraped from Sportico.com
- Binary variables for making the playoffs (1 for made playoffs, 0 for missed playoffs) were added to each dataset
- Conference binary variables were added to both datasets
- Ran and fit XGBoost Decision Tree Models on both datasets to evaluate prediction performance of variables and draw comparisons