STAT 410: Project Proposal

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Understanding the relationship between player salary and performance plays a vital role in player recruitment. Because of extremely high salary of basketball players and my years of enjoying watching NBA games, I am curious about whether or not a player is “worth” his/her contract. Thus, the objective of this project aims to develop statistical methods to analyze the relationship between player salary and various player performance metrics and non-performance statistics such as player ages, and positions, team dynamics, and win shares or usage percentages to answer the research question: Is a player worth his/her contract?

The website, basketball-reference.com, records all the necessary data for this project. Without loss of generality, I will consider ten years of data from 2010 to 2019 only. (If time permits, more years of data will be included and studied.) To ensure the completeness of data and equity of each player, I will establish a lower bound to filter out those players who played for a 10-day contract or were released before the season ends. Thus, the model focuses on established players whose salary reflects their play throughout an entire season. I will also filter out those players who could not complete a season because of suspension or due to injuries.

The statistical methods for this project are: (1) Test residuals to establish the normality of response variable, although a heavy tail would be suspected, as big salaries would skew the distribution to the right, (2) Model the association between player salary and performance/non-performance metrics using multiple linear regression, (3) Choose non-crucial predictor metrics so as to use hypothesis tests for finding the best way to simplify the model, and (4) use the resulting linear model to analyze current younger players without a contract outside their rookie contracts to determine what contract their performance could entail. This model would answer the above research question on which players either outplay or underperform their salaries.