

Investigation of Advanced NBA Metrics  
Zach Fulker, Tyler Folta, Lucas Mentch  
Department of Statistics, University of Pittsburgh

Currently, a variety of popular quality metrics exist for NBA players such as Value Over Replacement Player (VORP), Player Efficiency Rating (PER), and Win Shares (WS). Despite their often relatively simple formulations, less is known regarding how traditional box score statistics may disproportionately affect player quality with respect to these different measures. Using traditional per-36 minute statistics along with more modern advanced metrics from the previous 15 seasons, we predict VORP, PER, and WS using a variety of approaches ranging from linear models to more advanced methods like random forests and tree-augmented regression. In addition to assessing fit, we pay particular attention to partial effects of individual statistics on each response, allowing us to investigate which types of players are favored by different measures. Finally, we test our models and conclusions by predicting VORP, PER, and WS for a sample of top NBA players from the 2016/2017 season.