

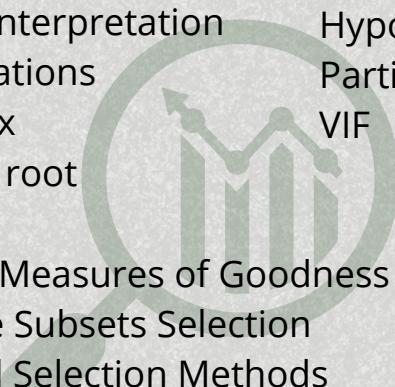
# BASKETBALL

TO WHAT EXTENT DO KEY PERFORMANCE CRITERIA AND PLAYING TIME METRICS INFLUENCE AN NBA PLAYER'S POINTS PER GAME?

## Methods of Analysis

- Graphical Interpretation
- Transformations
  - Box-Cox
  - Square root
- Numerical Measures of Goodness
- All Possible Subsets Selection
- Automated Selection Methods

Hypothesis Testing  
Partial F-Test  
VIF



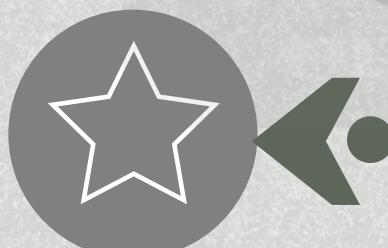
## IMPORTANCE

- Optimizing player's performance
- Strategic team planning
- Talent evaluation and recruitment
- Broader understanding of the game

Higher caliber points scorers have higher Field Goal Percentage and Assists

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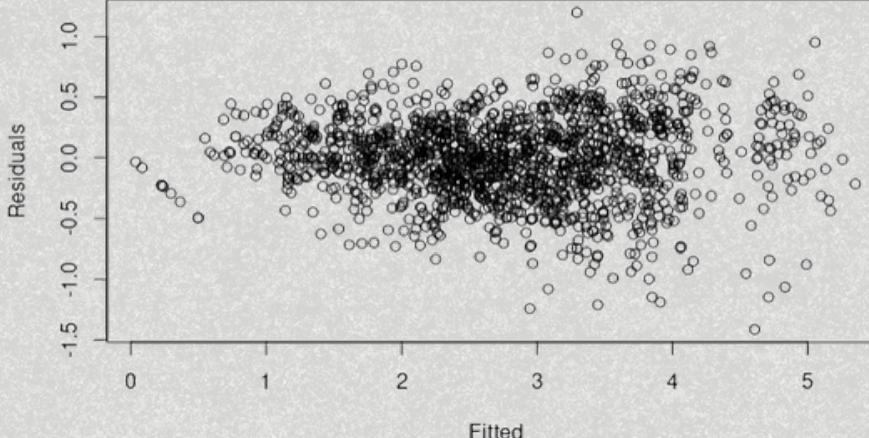
★ PREDICTORS ★  
1408 NBA PLAYERS



## LIMITATIONS

- Multicollinearity
- Outliers - showcases both exceptional and below average players

Residual vs Fitted

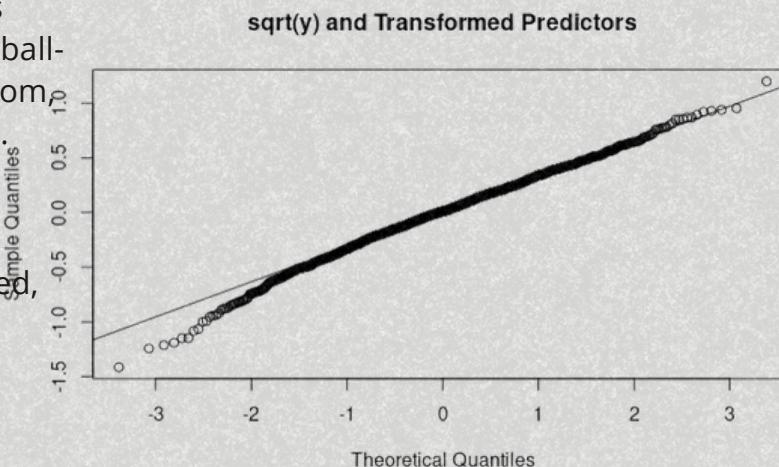


```
Call:  
lm(formula = sqrtPPG ~ GS_transformed + MP_transformed + FG.  
+ AST + Play, data = new)  
  
Residuals:  
Min 1Q Median 3Q Max  
-1.42375 -0.20994 0.01721 0.22384 1.24257  
  
Coefficients:  
Estimate Std. Error t value Pr(>|t|)  
(Intercept) 0.160620 0.064391 2.494 0.0127 *  
GS_transformed -0.437688 0.063275 -6.917 6.99e-12 ***  
MP_transformed 0.200321 0.004359 45.957 < 2e-16 ***  
FG. 1.377101 0.104180 13.218 < 2e-16 ***  
AST 0.040410 0.007278 5.552 3.37e-08 ***  
PlayYes 0.647590 0.046198 14.018 < 2e-16 ***  
---  
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
  
Residual standard error: 0.3446 on 1398 degrees of freedom  
(4 observations deleted due to missingness)  
Multiple R-squared: 0.8857, Adjusted R-squared: 0.8853  
F-statistic: 2167 on 5 and 1398 DF, p-value: < 2.2e-16
```

## RESULTS

The dataset of 1,408 NBA players was sourced from Kaggle, basketball-reference.com, and hoopshype.com, ensuring reliable player statistics.

Key variables—Games Played, Minutes Played, Field Goal Percentage, Assists, Games Started, and All-Star Status—are directly relevant to predicting Points Per Game (PTS).



### Playing Time

- MP, G, and GS show non-linear effects on PTS, emphasizing the importance of time on the court and starting status.

### Efficiency & Skills

- Higher FG% and AST boost PTS, underlining the role of shooting accuracy and playmaking.