

Jason Kim

# Predicting NBA Usage Rate



# Player Value on an NBA Team

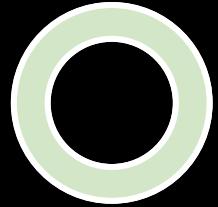
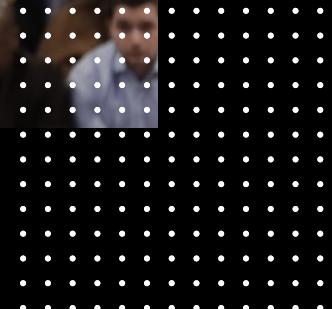
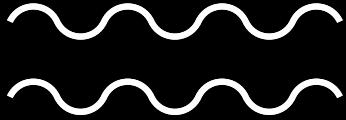
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In the NBA, teams seek out players who can make a tangible impact on performance.

Teams utilize players in their offensive and defensive systems based on past statistics and tendencies of the players.

# Metrics

- One of the metrics utilized to measure player involvement is Usage Rate:
  - Usg% is an estimate of the percentage of team plays that a player is involved in
- Predicting this metric would provide NBA teams a better idea of how much they can integrate a player into their gameplan.



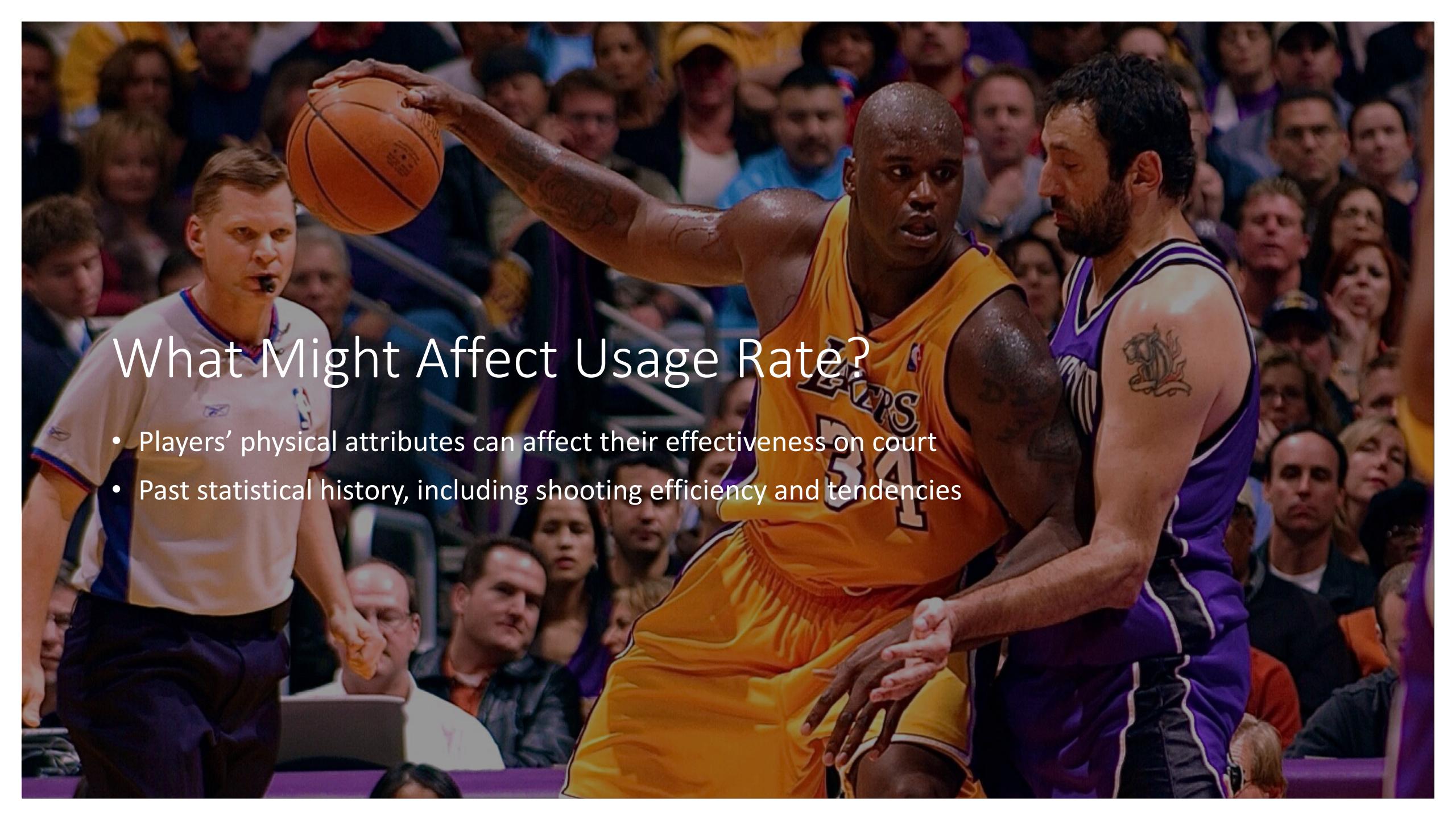
# Methodology

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- Cross Validation with 5 K-Folds
- Ridge Regression
- Data obtained from Basketball-Reference.com

Primary Data Source



A dynamic basketball scene in mid-game. A player in a yellow Los Angeles Lakers jersey with the number 34 is dribbling the ball. He is being closely guarded from behind by a player in a purple Sacramento Kings jersey with a lion tattoo on his right shoulder. In the background, a referee in a white shirt and blue pants吹哨。The crowd in the arena is visible in the background.

# What Might Affect Usage Rate?

- Players' physical attributes can affect their effectiveness on court
- Past statistical history, including shooting efficiency and tendencies



# Feature Engineering

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Over the last few seasons, NBA teams have sought after taller players who can score:

- Height \* PPM
- Height \* FG%
- PPM \* FG%

# Results

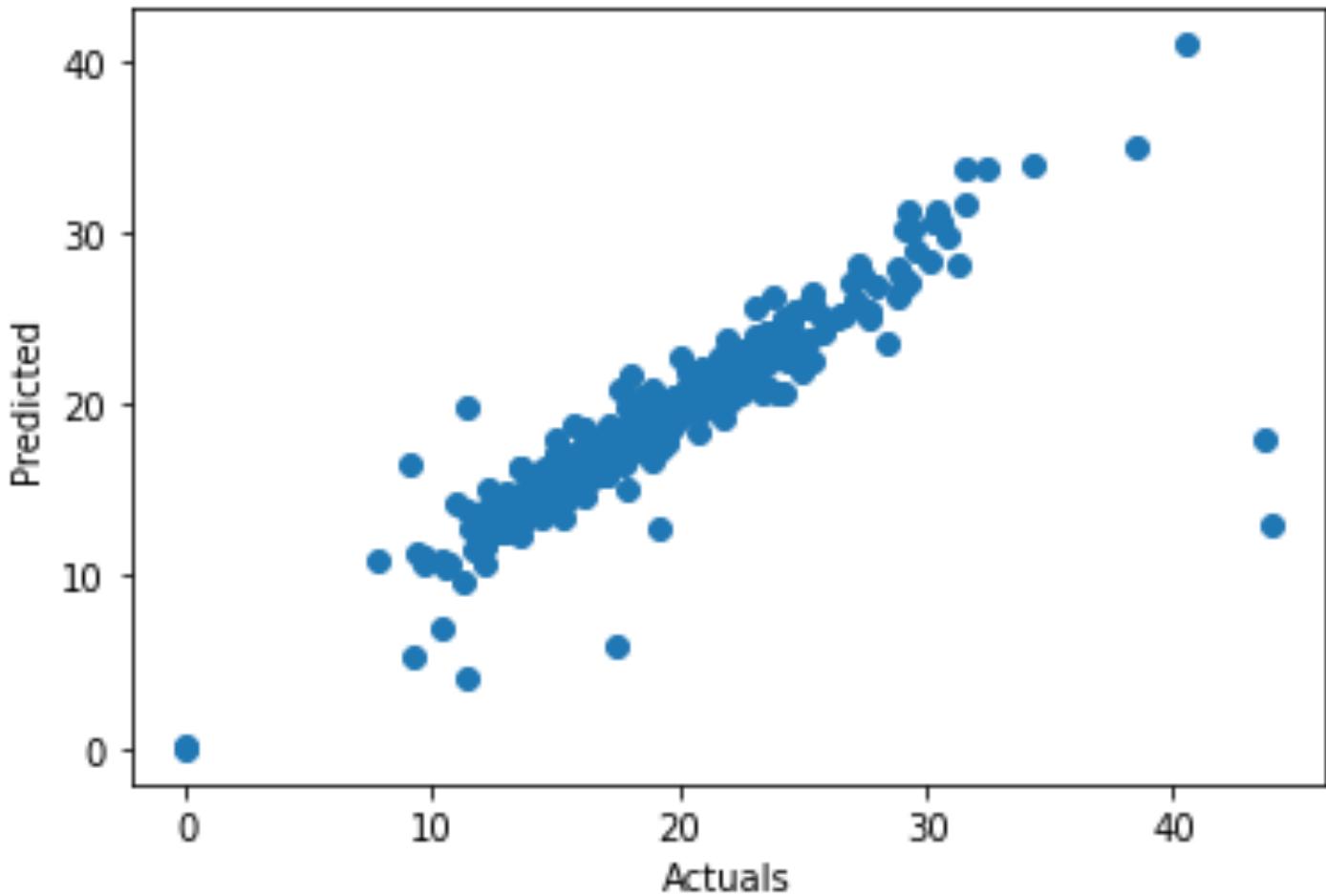
Baseline mean  $R^2$ : 0.783

Training Data mean  $R^2$ : 0.819

Test Data mean  $R^2$ : 0.773

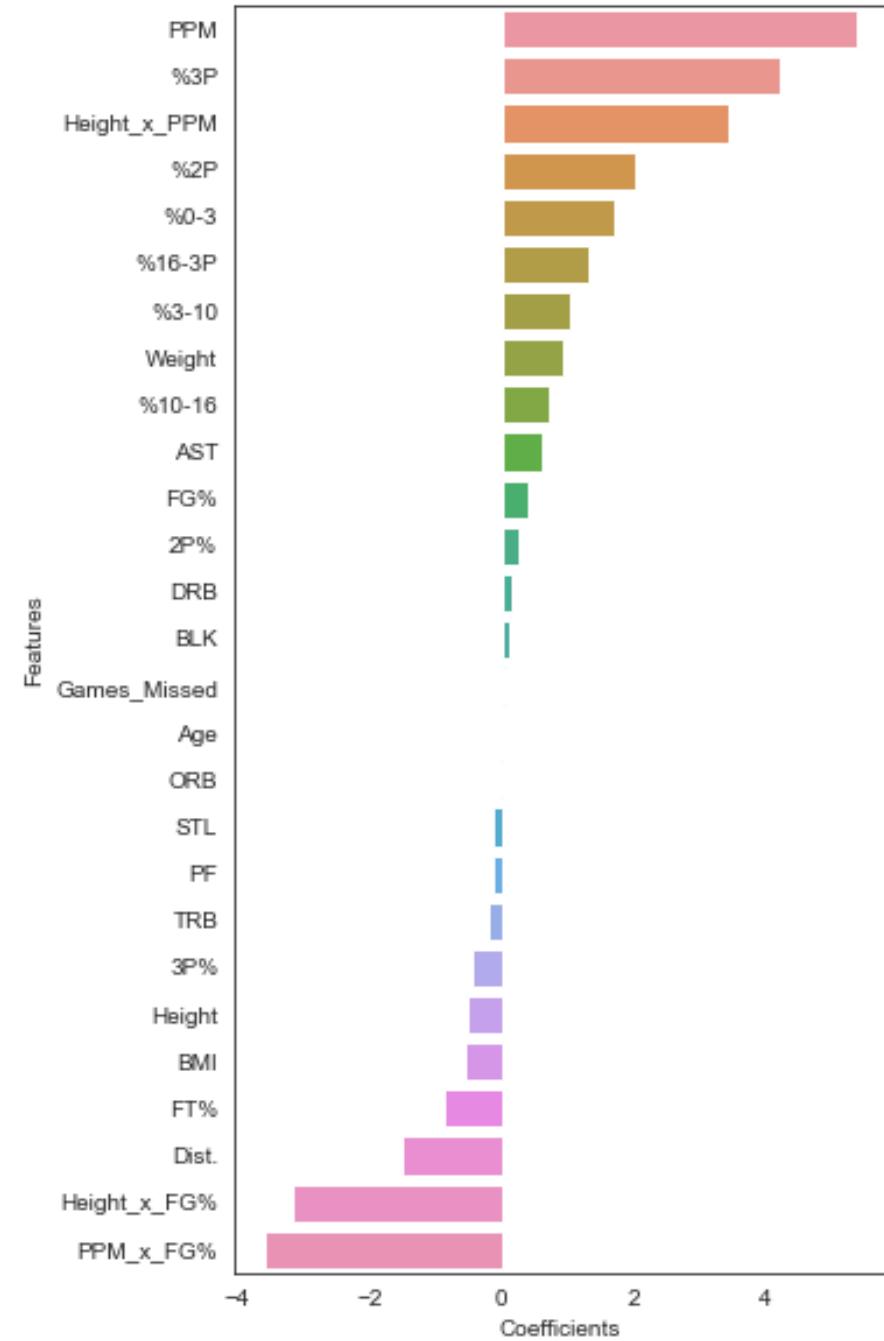
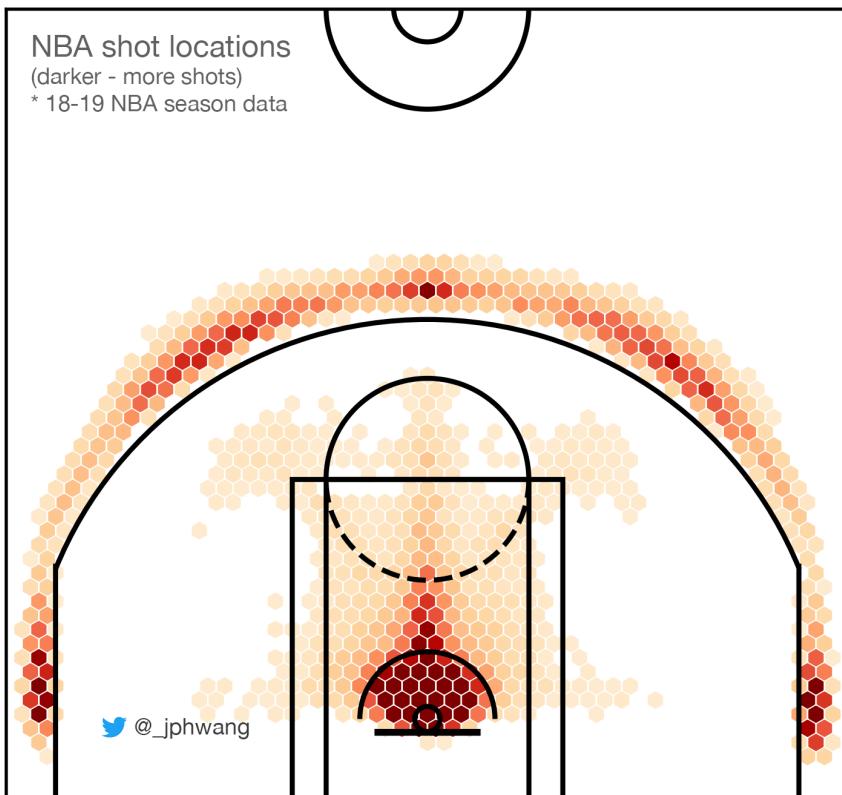
Performance

Actual vs Predicted



# Results

- Most Significant Features



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## Recommendations & Insights

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- NBA teams should incorporate players with:
  - High PPM, High Percentage of 3pt Shot Proportion, Tall Height with High PPM



# Future Work

Separating data by Position using Dummy Variables

