# I. Abstract

We develop and test an empirical model to study the factors that affect variation in the proportion of MVP votes received by NBA players over the years 2007 to 2017. Our explanatory variables fall into two categories; player performance and team performance. The empirical results suggest that player performance variables, such as points per game, steals per game, offensive rebounds per game, and fouls per game help to explain the proportion of MVP votes received by players. We find that team characteristics do not have a statistically significant influence on the proportion of MVP votes received by players.

# II. Empirical Model and Variables

MVP = f(Player Characteristics, Team Characteristics)

- **PPG** - Points per game
- **APG** - Assists per game
- **TRB** - Total rebounds per game
- **SPG** - Steals per game
- **BPG** - Blocks per game
- **MPG** - Minutes per game
- **FGM** - Field goals made
- **FGA** - Field goals attempted
- **FTM** - Free throws made
- **FTA** - Free throws attempted
- **ORB** - Offensive rebounds per game
- **DRB** - Defensive rebounds per game
- **TOV** - Turnovers per game
- **FOULS** - Fouls per game
- **BIG** - Designates a forward or center
- **GUARD** - Designates a point guard or shooting guard
- **AGE** - Age of player in years
- **PRVMVP** - Designates whether or not a player has previously won the MVP award
- **TMWN** - Number of regular season wins*
- **EAST** - Designates a team in the Eastern Conference*
- **CONFR** - Conference rank (1-16)*

* Indicates a team characteristic

# III. Theory and Hypotheses

- $PPG_{it}$, $TRB_{it}$, $APG_{it}$, $SPG_{it}$, $BPG_{it}$, $MPG_{it}$, $FGM_{it}$, $FTM_{it}$, $ORB_{it}$, and $DRB_{it}$ are hypothesized to have a positive relationship with $MVP_{it}$,because as these positive measures of player performance increase, MVP should increase.
- $FGA_{it}$, $FTA_{it}$, $TOV_{it}$, and $FOULS_{it}$ are hypothesized to have a negative relationship with $MVP_{it}$ because, as these negative measures of player performance increase, MVP should decrease.
- $AGE_{it}$, are hypothesized to have a positive relationship with $MVP_{it}$ because as a player gains more experience he becomes more skilled and has a greater impact.
- $PRVMVP_{it}$ is hypothesized to have a positive relationship with $MVP_{it}$ because, a former MVP has the skill set needed to win another MVP.
- $TMWN_{it}$, $CON_{it}$, are hypothesized to have a positive relationship with $MVP_{it}$ because more valuable players tend to lead their team's to more wins and an improved conference rank.
- BIG, GUARD, and EAST could have either positive or negative relationships with $MVP_{it}$.

# IV. Data

- A panel data set composed of players receiving MVP votes from the 2006-2007 regular season through the 2016-2017 regular season was utilized in our regression.
- Across the 10 NBA sample seasons, there were 138 players who received at least one MVP vote on an MVP voting ballot resulting in a sample of 138 players.
- Data from the 66 game lockout season (2011-2012) was extrapolated to represent a full 82 game NBA season.
- All sample data was obtained from basketballreference.com and ESPN.com.

# V. Empirical Results

| Explanatory Variable | Coefficient | T-Stat |
|---|---|---|
| Player Performance Characteristics | | |
| | | |
| PPG | **3.741533*** ** | **(2.638568)** |
| TRB | 2.769164 | (1.024507) |
| APG | 1.761225 | (1.458538) |
| SPG | **16.87846*** ** | **(2.659149)** |
| BPG | -1.592447 | -(0.405018) |
| MPG | 1.038783 | (0.974734) |
| FGM | 4.98949 | (1.225983) |
| FGA | **-4.228421** ** | **-(2.249358)** |
| FTM | **6.743229*** | **(1.754291)** |
| FTA | **-5.374725*** | **-(1.882203)** |
| ORB | **7.621858** ** | **(3.267765)** |
| DRB | -1.909138 | -(0.574115) |
| TOV | 5.076559 | (1.228022) |
| FOULS | **-12.5013*** ** | **-(4.340172)** |
| BIG | 2.744295 | (0.417646) |
| GUARD | -5.620211 | -(0.745795) |
| AGE | 0.825609 | (1.150265) |
| PRVMVP | 1.387536 | (0.227381) |
| | | |
| Team Performance Characteristics | | |
| | | |
| TMWN | 0.806115 | (1.387303) |
| EAST | -3.657521 | -(0.667961) |
| CONFR | -1.892521 | -(1.280685) |
| | | |
| Adjusted $R^2$ | 0.556178 | 55.62% |

(*,**,***) **Bold** statistically different from Zero at (0.10, 0.05, 0.01) level of significance

# VI. Conclusion

- We find that the player performance variables, points per game, steals per game, offensive rebounds per game, and fouls per game, help to explain the proportion of MVP votes received.
- In addition, we find that team characteristics do not have a statistically significant effect on the proportion of MVP votes received.