



# NBA POPULARITY & PERFORMANCE MEASURES ON TWITTER

YUCHAO GUO, MENGFEI JIANG, JAMIE PALUMBO, CHIH-HUI WANG, HONGFEI ZHAO



## INTRODUCTION

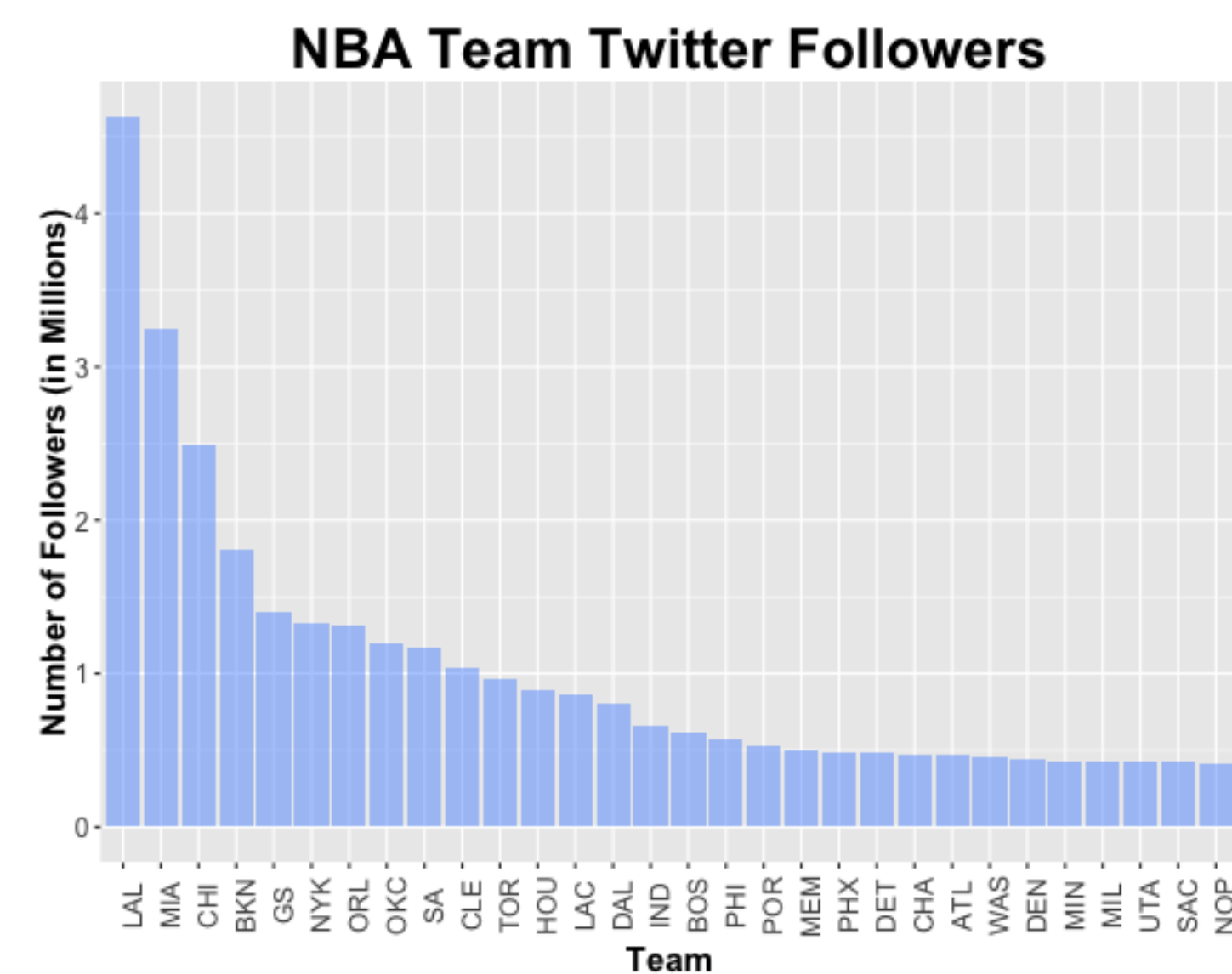
Twitter has become a crucial promotional tool for NBA players and teams. Our analysis addressed two main questions: What makes an NBA Twitter account popular? Does a player's Twitter behavior reflect player performance?

## DATA

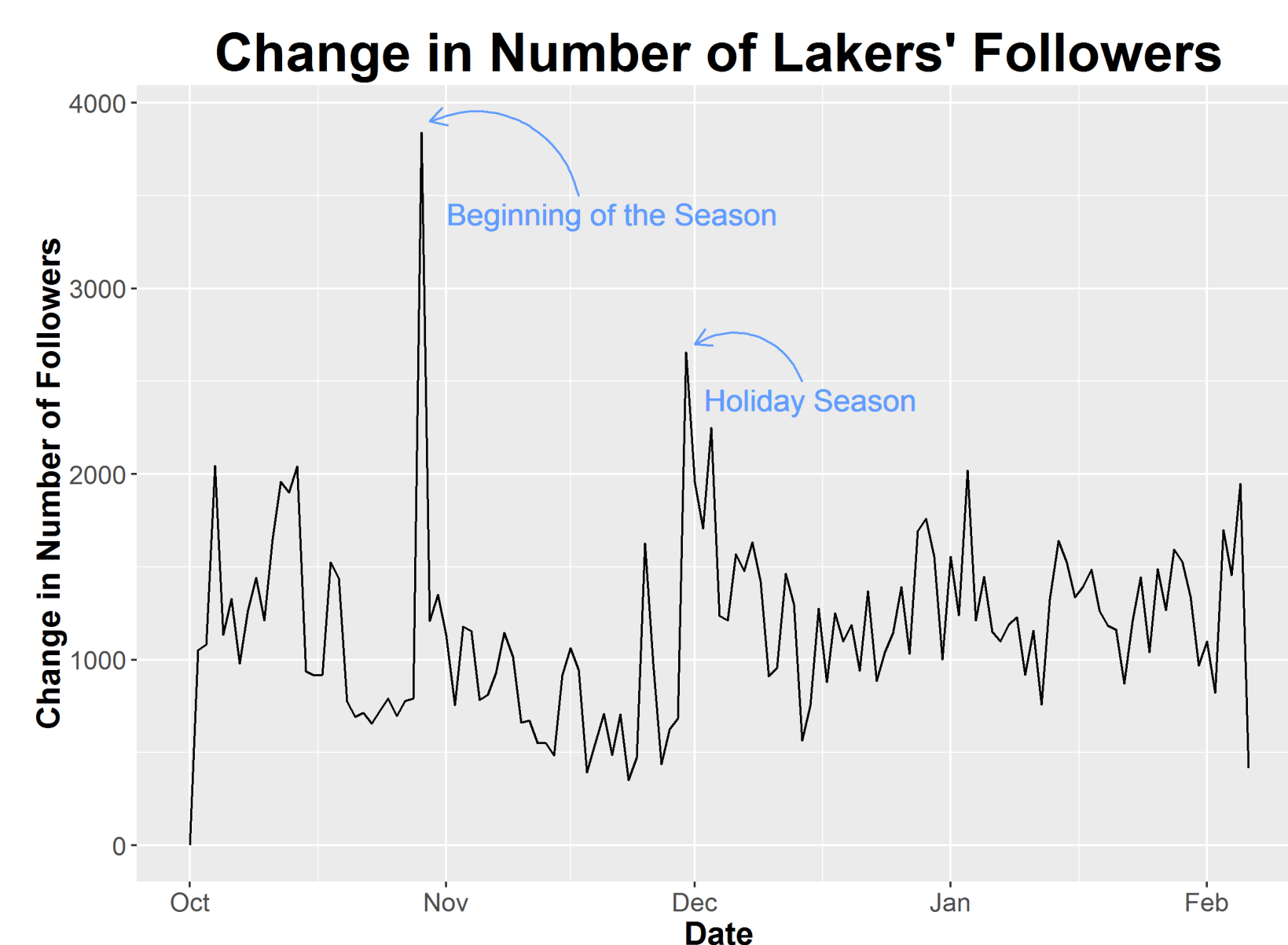
The dataset consisted of Twitter timelines collected from Twitter's REST API from 10/27/15 to 1/28/16 of 30 NBA teams and 349 players with Twitter accounts, excluding players without accounts or with suspended accounts. Outside data sources included *Basketball Reference* and *Twittercounter*. The project repository can be found at <https://github.com/jjasonWang/STAT-222-NBA-Twitter-Project>.

## OVERVIEW

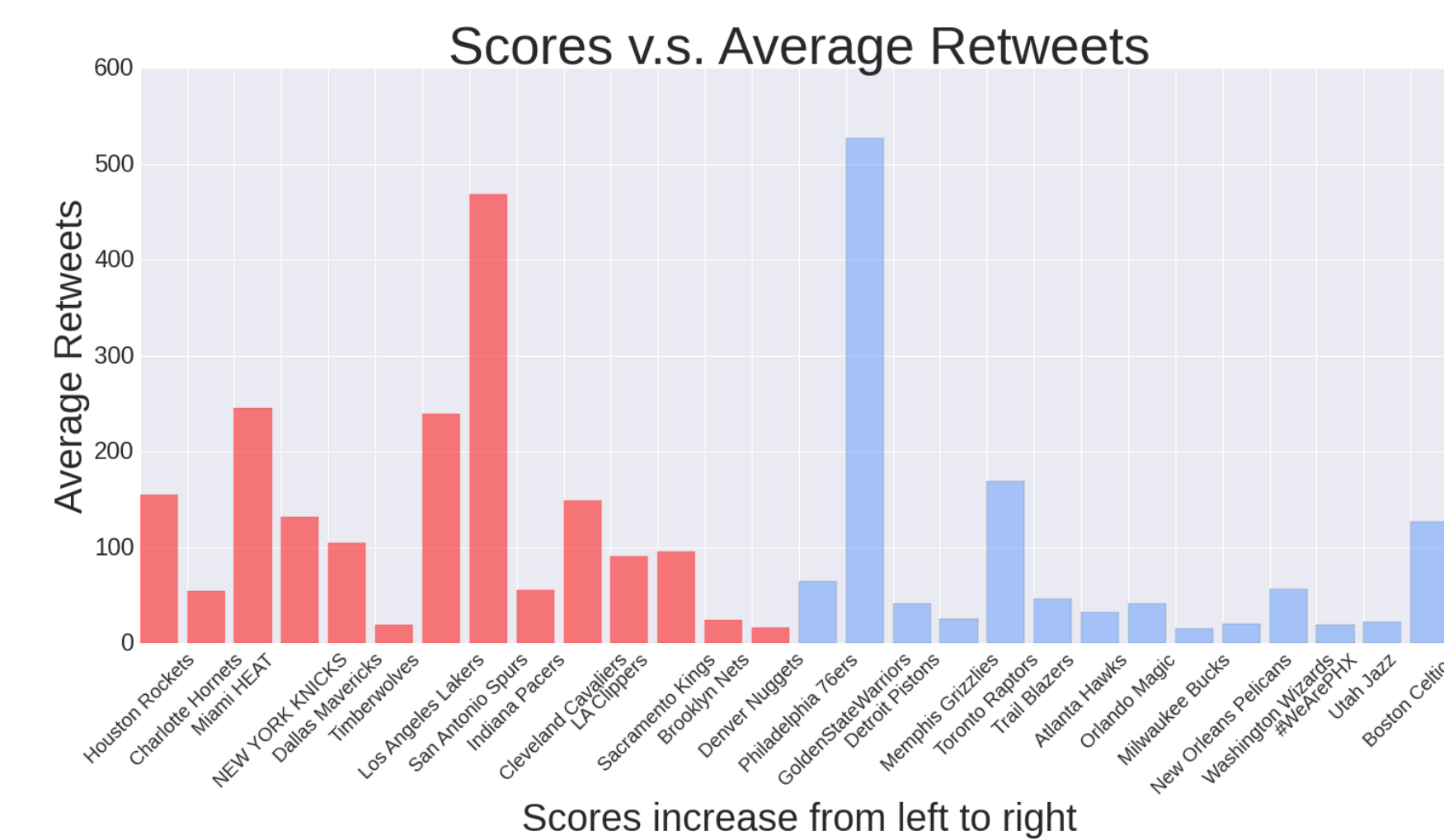
As seen in the bar plot of NBA team Twitter followers, the LA Lakers has the most followers.



Change in the Lakers' followers has two peaks: the beginning of the season and the holidays.



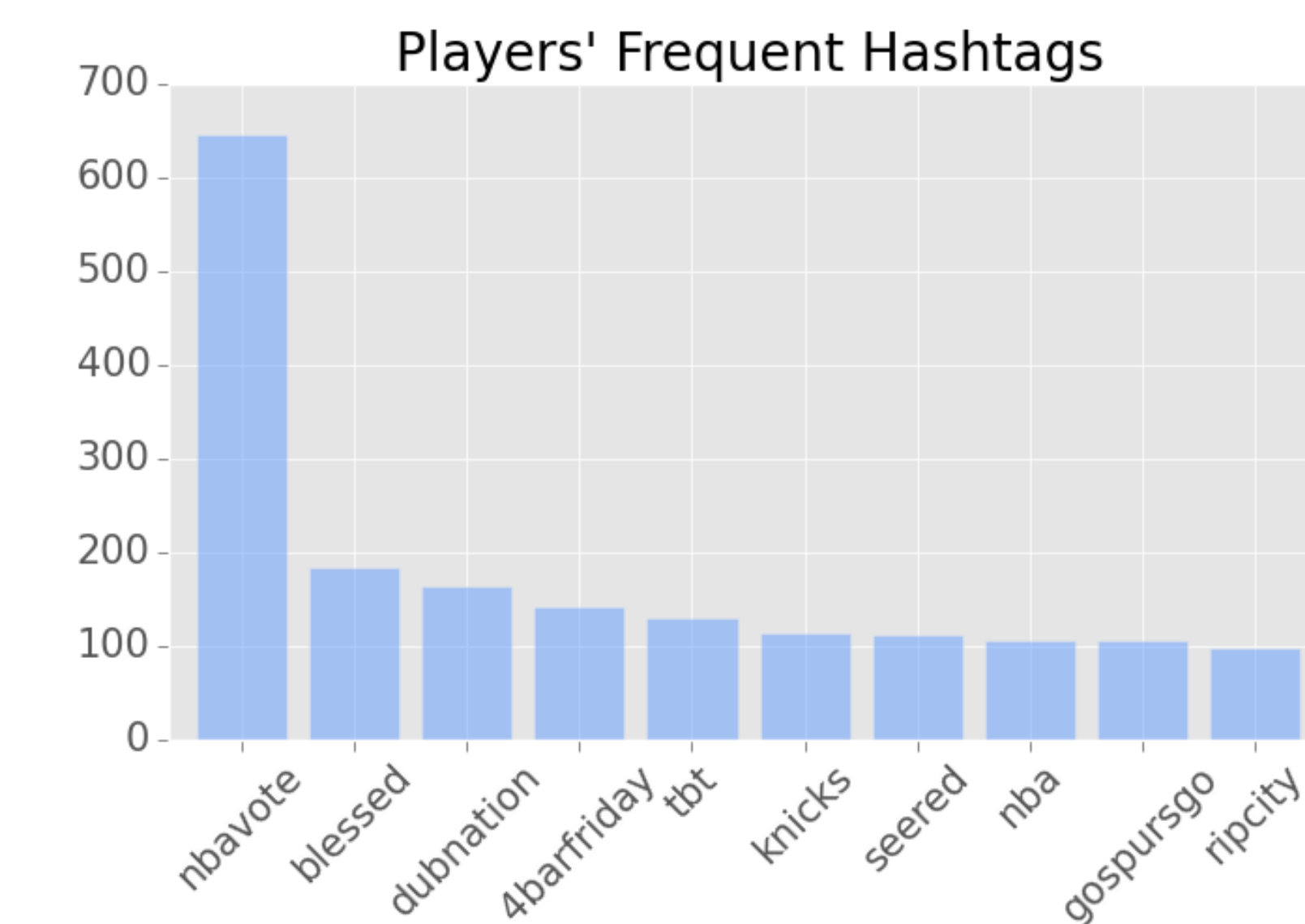
## SVD SCORES



We used SVD on the document matrix and found a principal axis, say  $PC_1$ . We defined scores as:  $s_i = \langle X_i^T, PC_1 \rangle$ , where  $X_i^T$  represents each team's word vector. The left plot showed that higher scoring teams tended to have less retweets. After evaluating the weights of  $\bar{X}$ , we found that tweets written in the native language of the majority of the team's fans tended to be more popular.

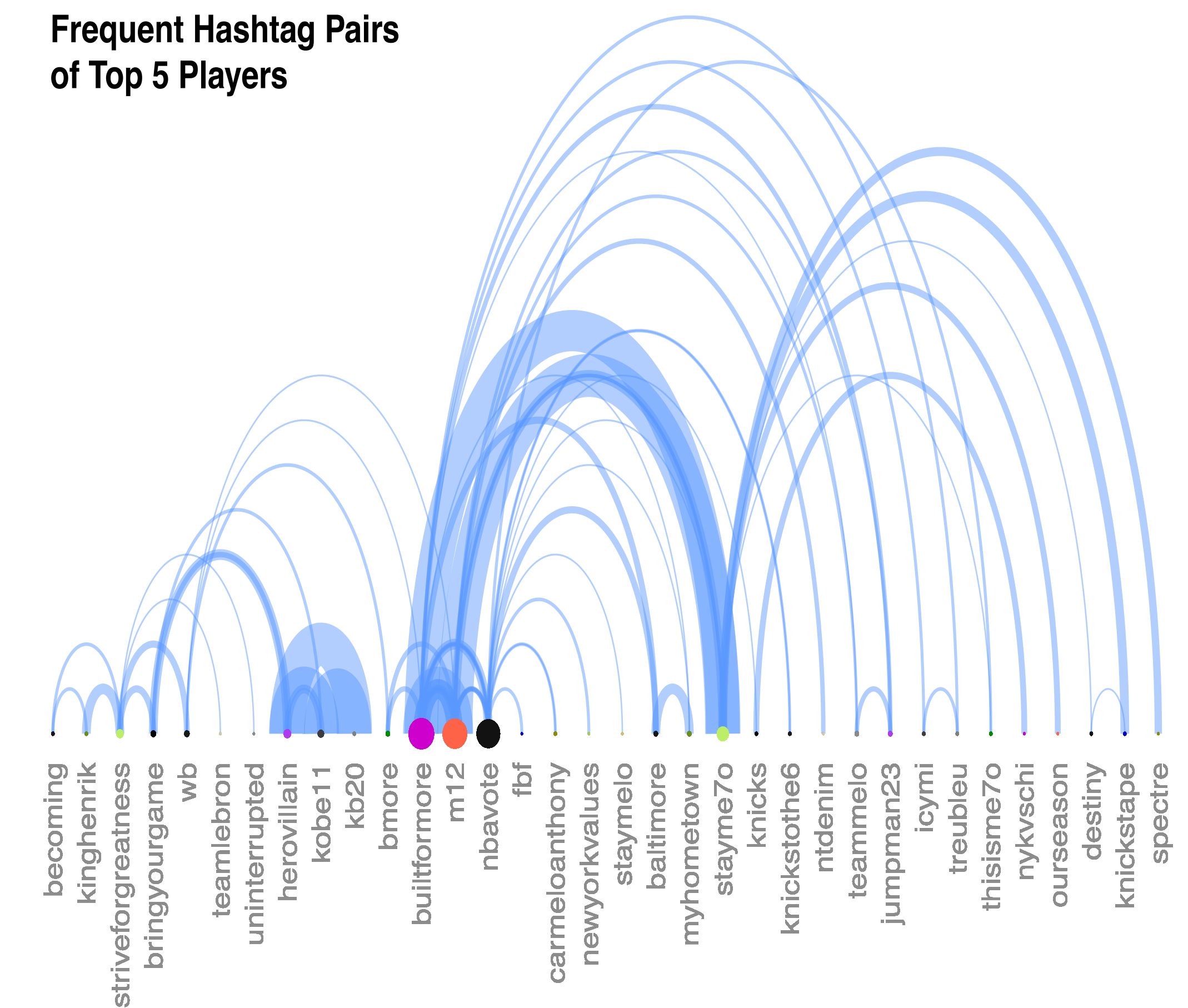
## HASHTAG ANALYSIS

As shown below, NBA players frequently use hashtags referencing popular teams in the league.

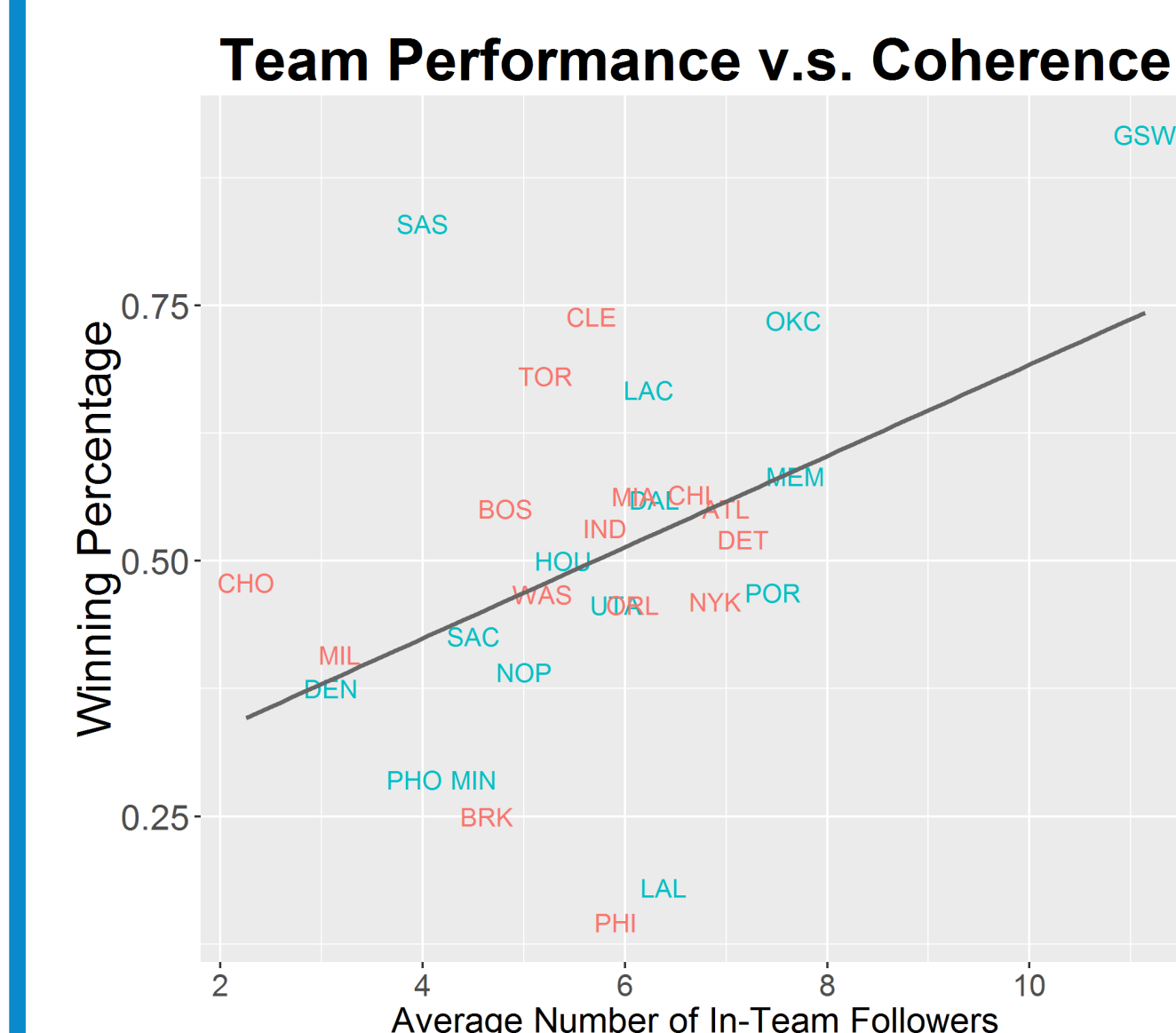


The arc plot displays the most frequent hashtag pairs in player tweets. The size of the dot indicates hashtag frequency while the width of the arc indicates hashtag pair frequency. Players often promote sponsors using hashtags. Notice Carmelo

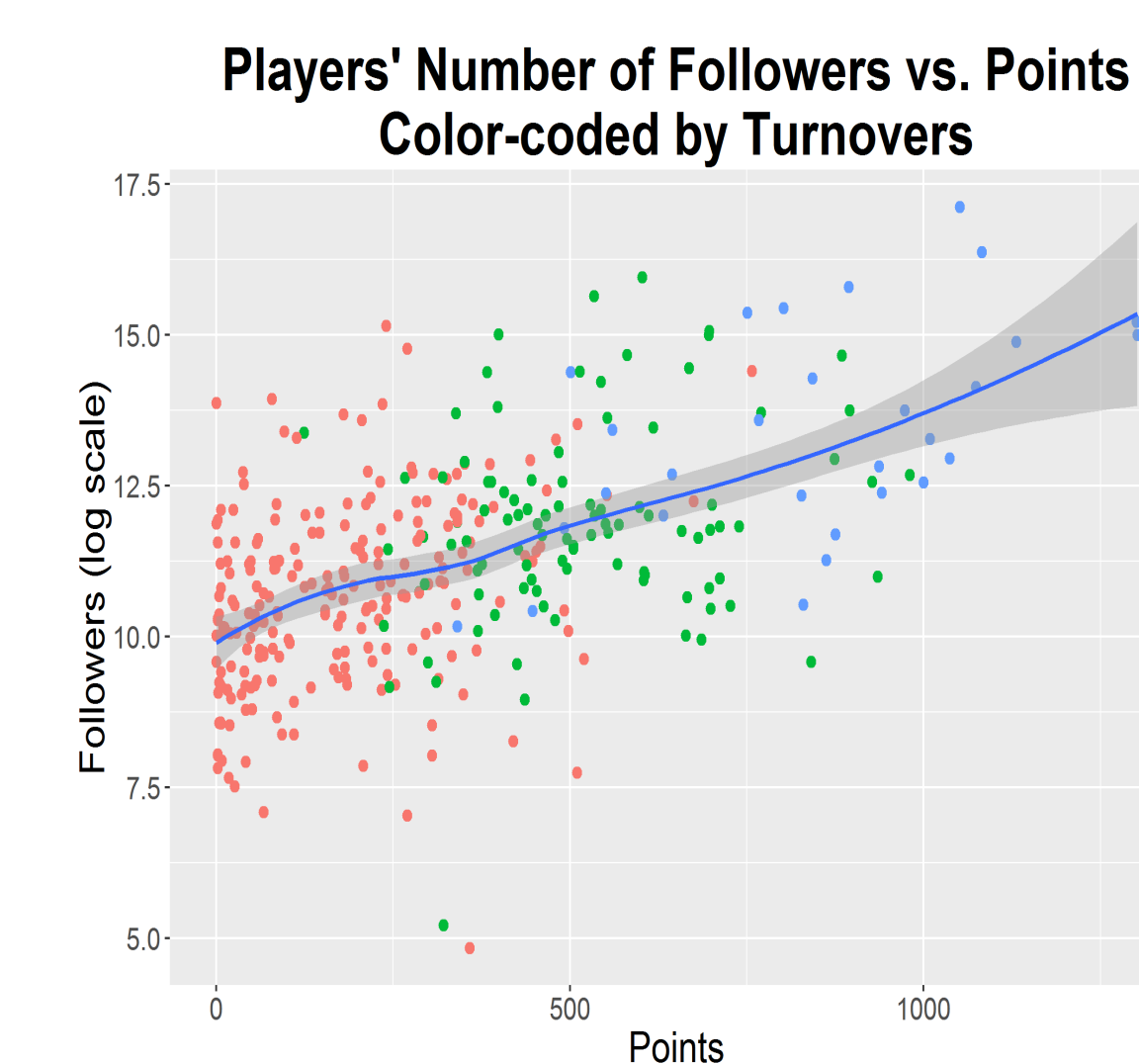
Anthony's #teammelo connects to #m12, #jumpman23, and #builtformore, Nike and Jordan shoes.



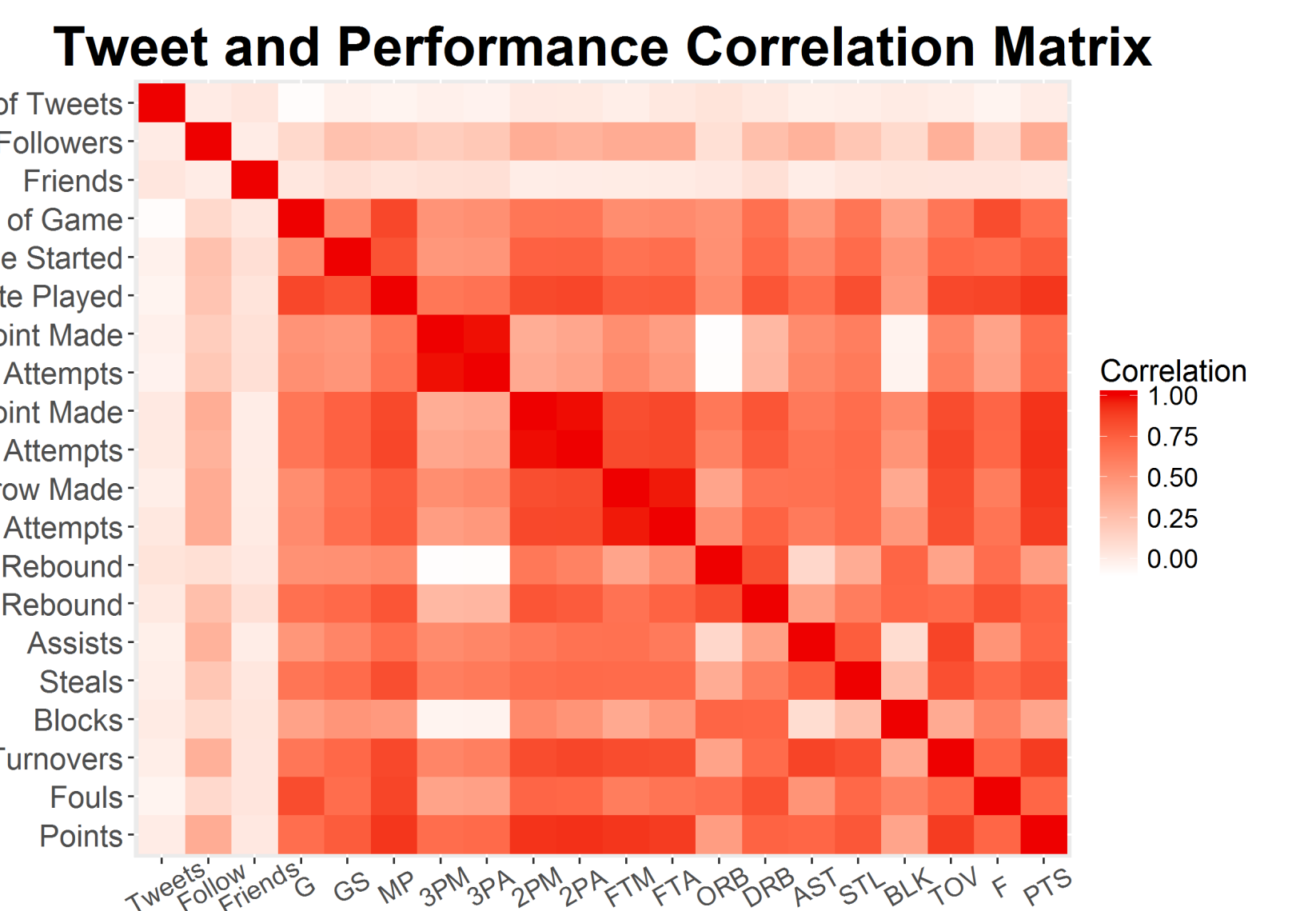
## PERFORMANCE



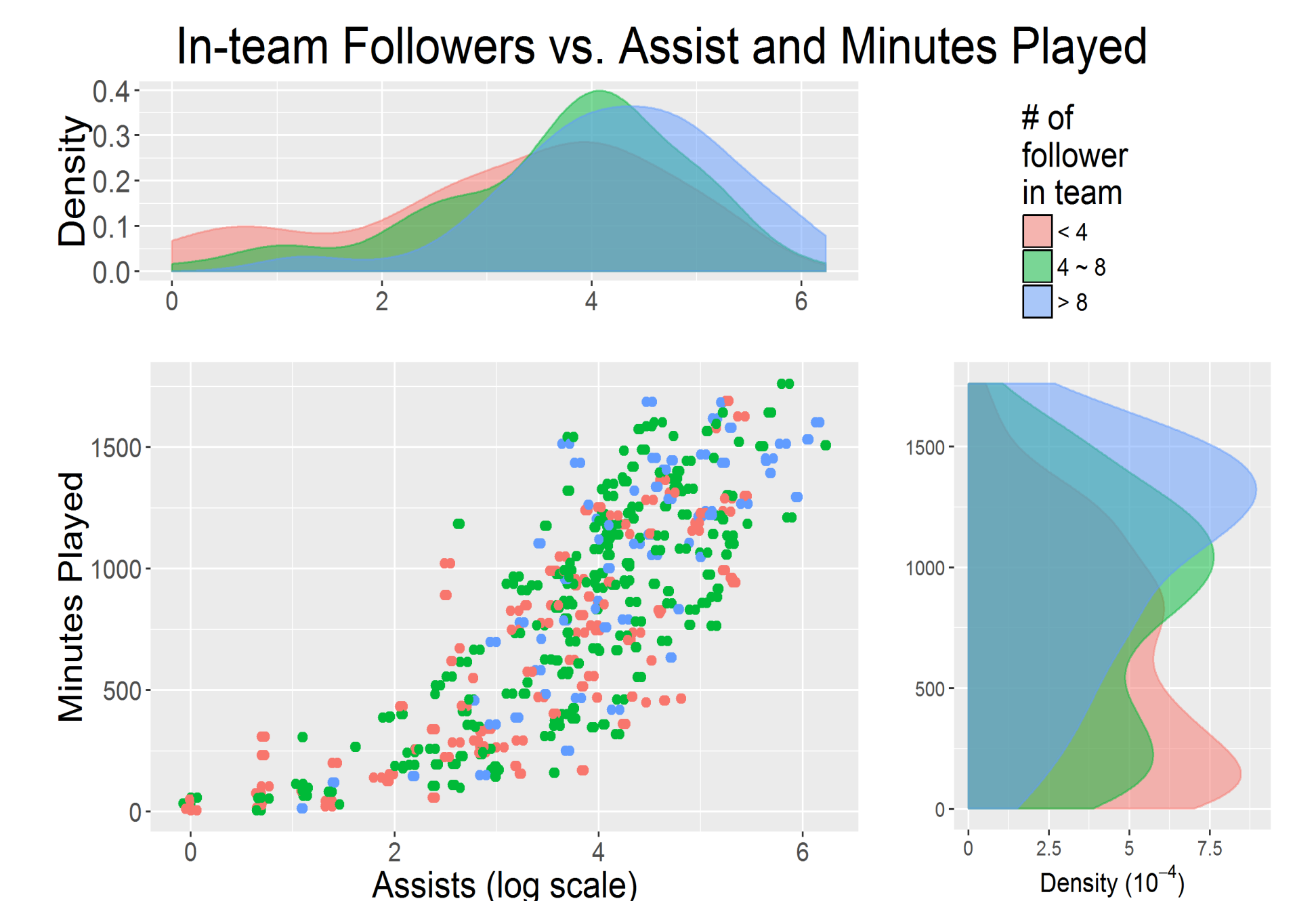
- On average, the more team members follow each other, the better the team performs, in whichever conference.
- Players who score more tend to have more turnovers. This may explain why the relationship between turnovers and number of followers is positive.



## PERFORMANCE



The matrix above illustrates the correlation between three Twitter and seventeen player performance variables. Unsurprisingly, several player performance attributes are highly positively correlated. No negative correlation exists in the data. However, all Twitter attributes, with the exception of number of followers, are uncorrelated with player performance. (Note that the x-axis labels are abbreviations of the y-axis.)



After examining the relationship between number of followers within a player's team and minutes played and assists this season, we found that players with more followers from their team tended to have more minutes played and more assists.

## REFERENCES

- [1] *Basketball-Reference*. [www.basketball-reference.com/](http://www.basketball-reference.com/)
- [2] *Twittercounter*. [www.twittercounter.com](http://www.twittercounter.com)