Statistical Approaches for Analyzing the 2014-2015 NBA Season

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Introduction

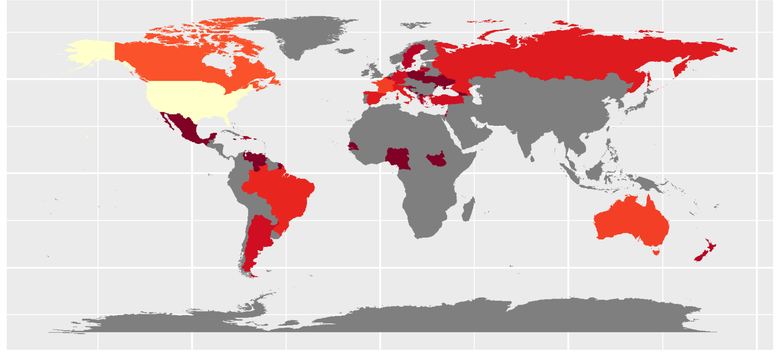
- NBA teams have recently begun to use statistics to aid them in making decisions.
- Sports analytics has exploded in recent years – a lot of faith has been and will continue to be put into conclusions drawn from statistical analysis.
- We are focusing on three main questions to try to draw insight on the composition of team rosters for the 2014-2015 NBA season.
- Our dataset contains all basic game statistics for each player's respective season, vitals, college and even country of origin. For example, some of the included variables are shooting percentage (FG%), weight, height, place of birth, and college.

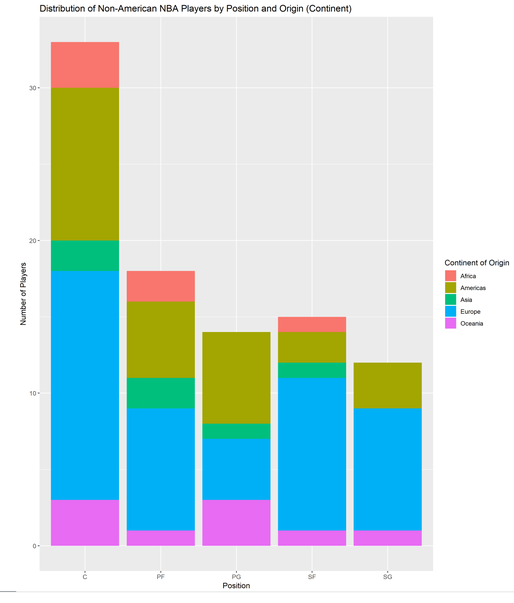
Research Objectives

- What kind of characteristics do certain positions have and share?
- Do certain countries/regions produce more players? What does the distribution of player origins look like?
- How are player statistics related? Can we draw any conclusions about a player's archetype from their statistics?

Player Origins

Distribution of Player Origin (Country) for the 2014-2015 NBA Season

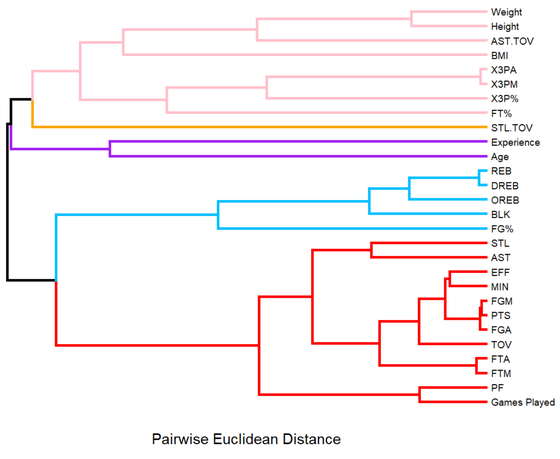




- As expected, the choropleth map shows that the United States produced the most players by far.
- Surprisingly, a decent number of players were from Australia and Brazil but Asia (apart from Russia) and Africa had very little representation.
- We find that most of the non-American players in the NBA were either centers or power forwards.
- Africa tended to produce big men, while the other continents were more balanced.

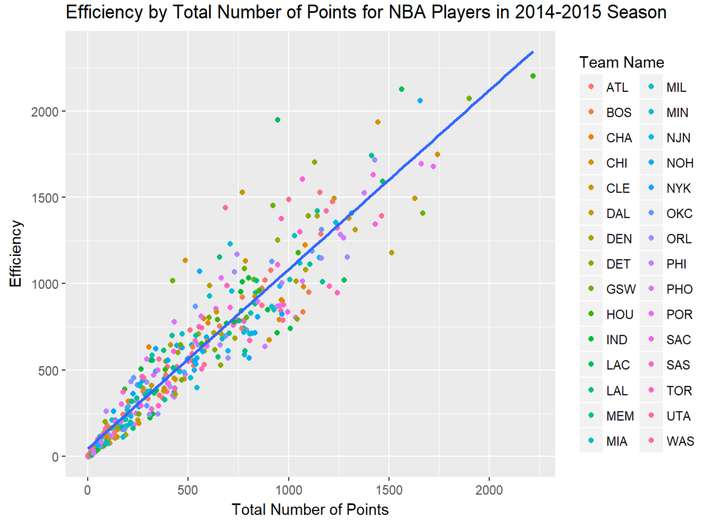
Understanding the Player Statistics

NBA Players' Characteristics Hierarchical Cluster Dendrogram



- Most of the clusters derived from our data support everyday NBA knowledge and accurately reflect trends present during the 2014-2015 NBA season.
- Statistical categories that tend to be associated with defense and are strong areas for power forwards and centers (REB, BLK, FG%) are clustered.
- Categories associated with offense and more agile players, such as point guards and shooting guards, are grouped together (STL, AST, PTS).

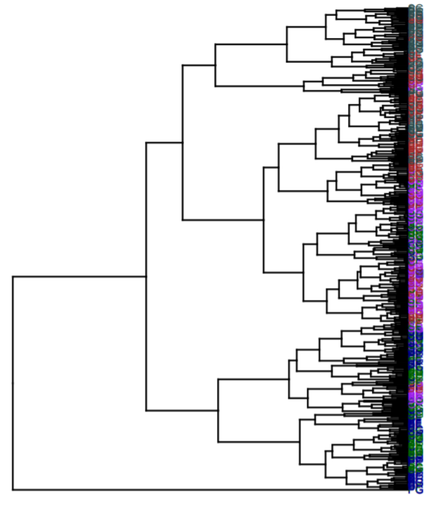
Efficiency by Total Number of Points for NBA Players in 2014-2015 Season



- There appears to be a positive, linear relationship between the number of points that a player scored during the 2014-2015 NBA Season and their efficiency score.
- The respective distributions for total points and efficiency score are skewed right, meaning few players reached high values in either statistical category.
- Some players, such as DeAndre Jordan, had an extremely high efficiency score (~1950) but did not score many points (< 1000).

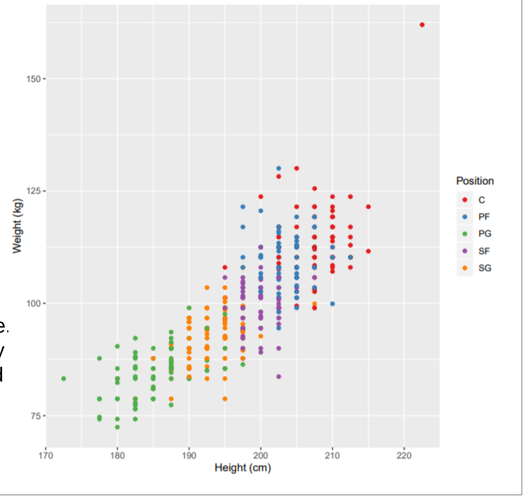
Understanding Player Positions

NBA Players Height, Weight, and Age



- In this dendrogram, the color of the leaf represents the player position: point guard is blue, shooting guard is red, small forward is purple, power forward is green, and center is gray.
- We see that point guards and shooting guards have similar height/weight and ages
- Small forwards and power forwards share a similar relationship

Height and Weight of NBA Players



- Overall, height and weight of players have a positive correlation. In general, tall people tend to have larger weights, so the trend shown by our data makes sense.
- Point guards are the shortest and lightest, followed by shooting guards, small forwards, power forwards, and centers.
- There is one player who is much taller and heavier than the rest: this is Sim Bhullar (7'5").