**Introduction**

An affinity propagation clustering algorithm was used to classify players into different groups or “shooting styles”. The algorithm iterates through every shot taken and clusters the players based on three features of their shots: distance from the basket, distance from the nearest defender, and number of dribbles taken before the shots. The algorithm found 13 clusters to be most efficient, but I combined 2 of them to finalize the groupings at 12.

**VisualsA close up of a map

Description automatically generated**

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**Analysis**

Cluster 11 (Ultimate Catch & Shoot)

* Highest distance from defender
* Highest shot distance
* Extremely low dribbles per shot
* Danny Green, JJ Reddick, Kyle Korver, Nikola Mirotic, Mike Miller

Cluster 9 (Catch & Shoot + Occasional Dribble)

* More likely to take a dribble before a deep shot than Cluster 11
* High distance from defender
* Extremely high shot distance
* Low dribbles per shot
* Joe Ingles, Bogdan Bogdanovic, Hedo Turkoglu, Danilo Gallinari, Richard Jefferson

Cluster 2 (Stretch Fours)

* 50 - 75th percentile shot distance
* Extremely unlikely to dribble before shooting
* 50 – 75th percentile distance from defender
* Kevin Love, Chris Bosh, Dirk Nowitzki, Kevin Garnett, Demarre Carroll

Cluster 3 (Low Post Players)

* Lowest shot distance
* Lowest distance from defender
* Extremely unlikely to dribble before shooting
* Zach Randolph, Andre Drummond, Rudy Gobert, Deandre Jordan, Tristian Thompson
* Surprise name: Shawn Marion
  + Last year in the league, not his general playstyle. Cue that he was ineffective.

Cluster 6 (Post Players with Short-Range Jumper)

* Similar to Low Post players but slightly less efficient shot selection
* More likely to shoot a lower midrange jumper
* Extremely unlikely to dribble before a shot
* 20 – 50th percentile distance from defender
* Jared Sullinger, Anthony Davis, Paul & Marc Gasol, Roy Hibbert, Zaza Pachulia
* Note: Many players in this cluster went on to incorporate the 3’s into their arsenal and reduce the short-range jumper.

Cluster 0 (Rim Runners / Slashers)

* Similar to Post Players with Short-Range Jumper but more likely to dribble
* Low distance from defender
* Low shot distance
* Likely to have a couple dribbles before their shot
* Blake Griffin, Aaron Gordon, Andrew Wiggins, Giannis, Leandro Barbosa
* Note: This was Giannis’ 2nd season. His game still features many of these same shots, but much more dribbles, which would put him closer to Cluster 1.
* Note: Tobias Harris was in this cluster. Thankfully his game has evolved as these types of shots do not fit his skillset.

Cluster 7 (Wings Reluctant to Dribble)

* Dribbles per shot in the 15 – 40th percentile
* Distance from defender in the 40 – 60th percentile
* Willing to take 3 pointers as well as shots at the rim
* Klay Thompson, Bradley Beal, Carmelo Anthony, Jimmy Butler, Paul Pierce, Andre Iguodala
* Note: Earlier in their respective careers Carmelo and Paul Pierce would’ve likely been in clusters 1, 5, or 8 that include much more dribbling

Clusters 4 & 12 (Non-ball Dominant Guards likely to Shoot 3’s)

* These players more than capable of handling the ball, but they don’t need the ball in their hands to create a shot.
* Dribbles per shot in the 30 – 70th percentile
* 50 – 75th percentile distance from defender
* 75 – 100th percentile in shot distance
* Steph Curry, CJ McCollum, Nick Young, Jamal Crawford, Lou Williams
* Note: while Steph has the ability to be ball dominant, the warriors’ free flowing offense keeps his dribble numbers from getting too high

Cluster 10 (Non-ball Dominant Guards unlikely to Shoot 3’s)

* Similar to clusters 4 & 12, they are capable of creating their own shot or allowing teammates to create
* More likely to shoot midrange of at the rim
* Dwayne Wade, Kobe Bryant, Derrick Rose, Evan Turner, Shaun Livingston
* Note: Due to their shot selection shot being less efficient, this cluster’s game doesn’t age as well compared to those more likely to shoot deep

Clusters 1 & 5 (Inefficient Primary Ball Handlers)

* Dribbles per shot in the 70 – 100th percentile
* Distance from defender in the 15-40th percentile
* Shot distance in the 10-45th percentile
* These players have the ball in their hands a ton, are unlikely to create separation, or take valuable deep shots.
* Jeff Teague, Dennis Schroder, Tony Parker, Eric Bledsoe, Victor Oladipo
* Note: The primary way a player in this cluster can offensive value is through shot creation for others

Cluster 8 (Efficient Primary Ball Handlers)

* Dribbles per shot in the 70 – 100th percentile
* Distance from defender in the 40 – 60th percentile
* Shot distance in the 40 – 80th percentile
* Have the ability to shoot deep and at the rim
* Create more separation per shot than the other primary ball handlers
* Lebron James, Damian Lillard, Kyrie Irving, James Harden, Chris Paul, Kemba Walker, Brandon Jennings, Jrue Holiday