

# Houston Rockets 2016-2017 NBA Shot Log Project

## July 2021

ANDREW WOLFE

---

## I. Introduction

Over the past couple of weeks, I have conducted projects relating to the shot logs for players on the Houston Rockets, Orlando Magic, Chicago Bulls, and San Antonio Spurs for the 2016-2017 season. To analyze the strategic differences for teams in the NBA, I conducted data analysis for the 2016-2017 NBA season.

## II. Data

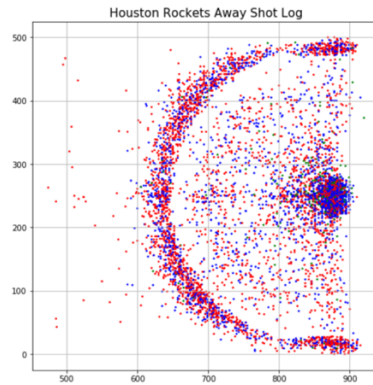
All offensive shots for all NBA players during the 2016-2017 NBA season. The color legend for the shots logs is as follows:

- Red = Missed Shot
- Blue = Made Shot
- Green = Fouled on Shot Attempt

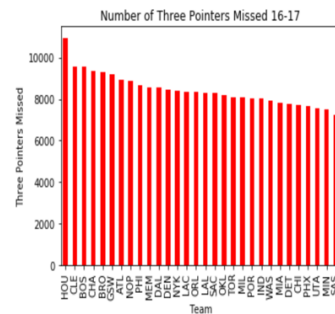
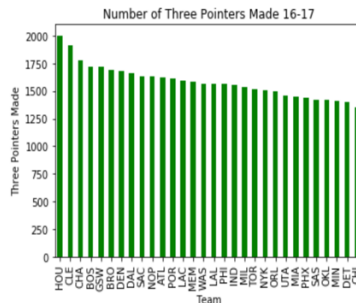
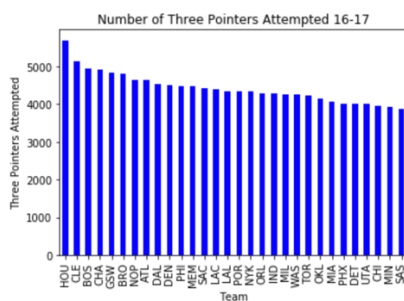
## III. The Efficiency of the Rockets Game

### I. The Rockets attempted, missed, and made the most three-pointers

- a. As seen by the chart below, the Rockets were shooting three-pointers at a rate higher than any other team in the league during the 2016-2017 NBA season. They were doing this because of the emergence of Daryl Morrey and his analytical mindset.



b. The Houston Rockets also attempted the most three-pointers by over 100 hundred shots during the season and were shooting more of these shots than any other NBA team in the league. By attempting the most three-pointers, the Rockets also missed and made more than any other team in the NBA. By looking at these charts we can also see that generally speaking, the more successful the team was, the more three-pointers they attempted and made.

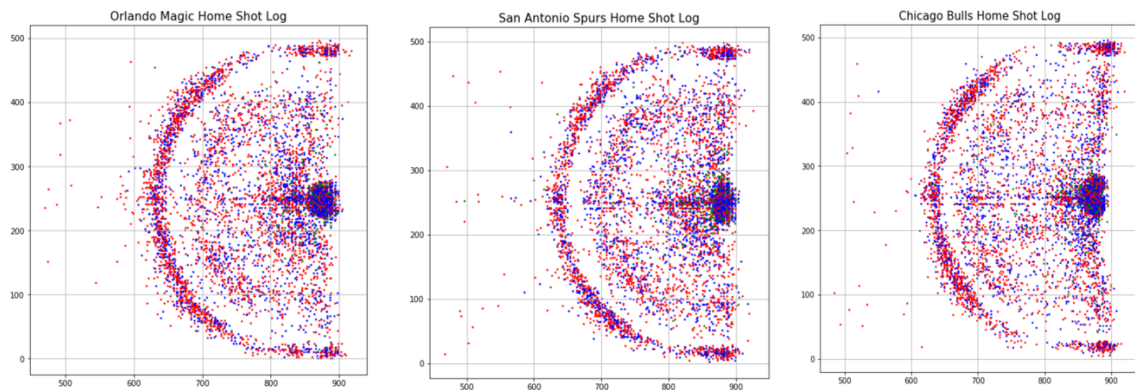


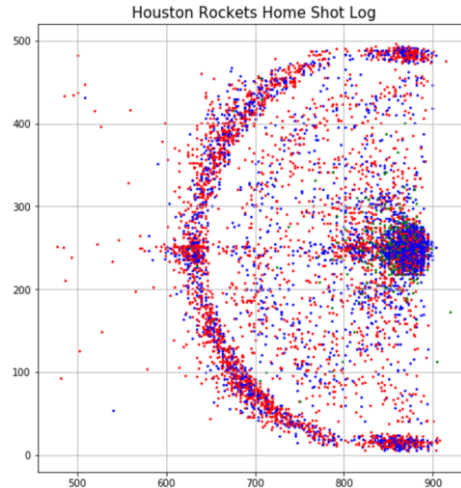
c. Although the Houston Rockets were attempting, making, and missing the most three-pointers during the season, their three-point percentage was not in the top 10 of the league. People may think that this was problematic, but in the Houston Rockets philosophy, they were still succeeding because their number of points coming from three-pointers was still very high.

CLE	0.373611
POR	0.372576
DEN	0.371650
SAC	0.369624
WAS	0.368124
SAS	0.367183
DAL	0.366476
UTA	0.365317
IND	0.364423
LAC	0.362437
MIL	0.360987
CHA	0.360423
MIN	0.358831
PHX	0.358655
TOR	0.358593
LAL	0.358521
GSW	0.355459
MIA	0.354918
MEM	0.353626
NOP	0.351509
HOU	0.351484
BRO	0.351391
ATL	0.349644
NYK	0.348649
DET	0.348455
PHI	0.347749
ORL	0.347674
BOS	0.347264
CHI	0.342611
OKL	0.340876

## II. Compared Against the Rest of the NBA

a. When comparing the shot charts of the Houston Rockets to teams that were at the bottom of three-pointers attempted, missed, or made, we can see a clear strategical difference. The images below reveal the shot logs of the Orlando Magic, San Antonio Spurs, and Chicago Bulls. When compared to the Houston Rockets, these teams were clearly taking less three-pointers and more “long twos”, which is thought to be the least efficient shot in basketball. The explanation for the differences in these shot logs is that the Houston Rockets were one of the first teams to use sports analytics in basketball, whereas the Magic, Spurs, and Bulls relied on old styles of play.





b. Additionally, when comparing the number of three-pointers made by the Rockets, Magic, Spurs, and Bulls during the 2016-2017 season we can clearly see the different philosophies at play. For instance, the Rockets made over 640 more three-pointers than the Chicago Bulls, a tremendous amount that resulted in a dramatic difference in records.

<b>HOU</b>	<b>2001</b>	<b>ORL</b>	<b>1495</b>	<b>SAS</b>	<b>1421</b>	<b>CHI</b>	<b>1354</b>
------------	-------------	------------	-------------	------------	-------------	------------	-------------

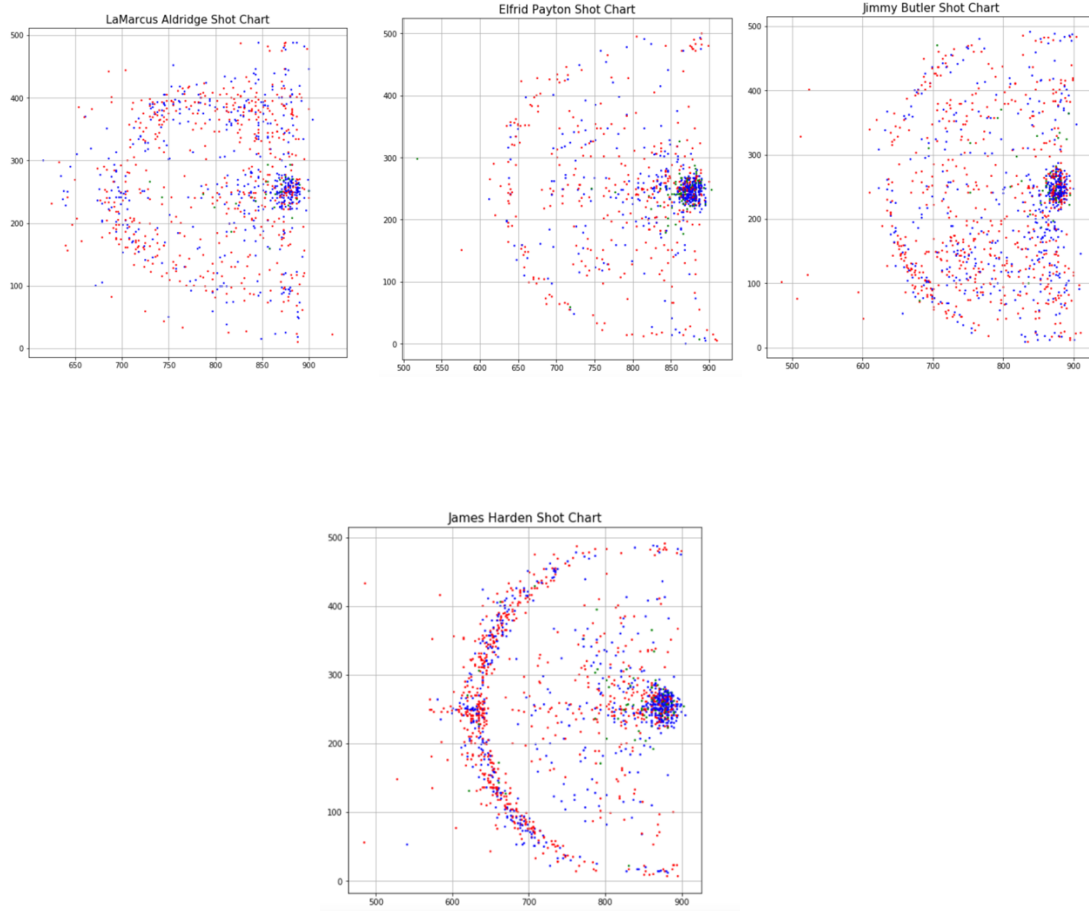
c. Lastly, the same can be said for three-pointers attempted. The Rockets attempted about 1800 more three-pointers than the San Antonio Spurs. This was a dramatic amount and again reveals their different approach to the game of basketball.

---

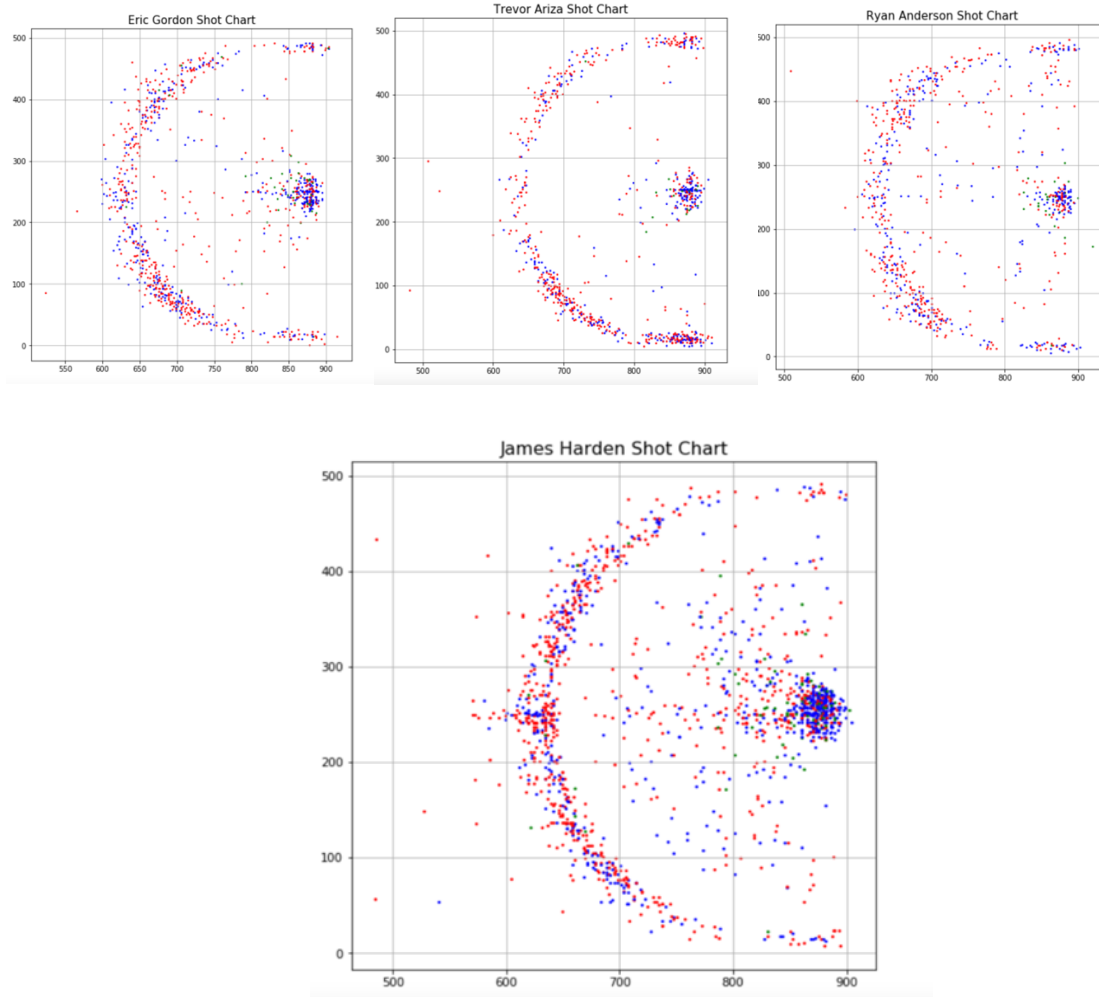
<b>HOU</b>	<b>5693</b>	<b>ORL</b>	<b>4300</b>	<b>CHI</b>	<b>3952</b>	<b>SAS</b>	<b>3870</b>
------------	-------------	------------	-------------	------------	-------------	------------	-------------

### III. The Player Approach

a. In addition to the team approach, I also investigated the shot charts of James Harden, Elfrid Payton, Jimmy Butler, and LaMarcus Aldridge. When looking at these graphics, it is even more clear of the different team approaches with concern to the three-point line.



b. Also, I investigated the player philosophy of shooting efficiency with the just Houston Rockets. When comparing the shot charts of James Harden, Eric Gordon, Trevor Ariza, and Ryan Anderson, there is a clear philosophy that the team was trying to follow. The Houston Rockets were focused on shooting three-pointers and layups, two of the most efficient shots in basketball. Because of this philosophy, the Houston Rockets were a top ten team in the NBA in 2016-2017 and one of the most effective shooting teams.



## IV. Conclusion

### **1. The Houston Rockets were attempting three pointers at a rate greater than any other team in the NBA.**

As seen above, the Houston Rockets were enamored with the three-point shot. This was for multiple reasons, including the efficiency/analytics of the shot, their general manager Daryl Morey, and the playing style of James Harden. It did seem to work for

them as from 2016-2021, the Houston Rockets were among the top 10 teams in the NBA.

**2. The superior teams in the NBA were attempting, making, and missing more three pointers than the inferior teams.**

By looking at the bar graphs and charts on the previous pages, it is clear that generally speaking, the top teams in the NBA were more in love with the three-point shot than the bottom teams. This was an important trend for the NBA because teams started to recognize this and put emphasis on the three-point shot, whether it be through practice, lineups, trades, or free agents.

**3. NBA players match the shooting philosophy of their organizations.**

If we look at the shooting charts of James Harden, Elfrid Payton, Jimmy Butler, and LaMarcus Aldridge and compare them to their respective teams, we can see that they relatively match each other. This similarity reveals that NBA players relatively have the same shooting philosophy as their respective teams. For instance, the Houston Rockets like to shoot lots of three-pointers and layups, similar to what the shot chart of James Harden looks like.

**4. The San Antonio Spurs should have been attempting more three pointers.**

The San Antonio Spurs had a high three-point make percentage but attempted the fewest in the league. They would end up losing to the Golden State Warriors in the Western Conference Finals, a team that is top five in the NBA in three-pointers attempted and made. By looking at the data above for Golden State and the Spurs high three-point percentage, one must wonder: Would the outcome in the playoffs have been different if the Spurs attempted more three-pointers?

**5. The Houston Rockets changed the NBA landscape.**

With everything said and done, the Houston Rockets revolutionized the NBA for good. The Rockets were one of the first teams to use the three-point shot and layup efficiency approach, something that is now used by close to all teams in the NBA today. Using this, it is safe to say that the NBA wouldn't be what it is today without the Houston Rockets.

## V. Special Thanks

I want to thank Professor Stefansyki and Professor Wenche Wang for introducing me to pandas and their coursera course: Foundations of Sports Analytics: Data, Representation, and Models in Sports.