

NBA Shot Chart Analysis

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```
setwd("G:/My Drive/Syracuse University/Berlin Summer Academy/Berlin Working
Directory 2")
#add in neceassrary libraries
library(tidyverse)

## -- Attaching packages -----
----- tidyverse 1.3.0 --

## v ggplot2 3.3.2      v purrr  0.3.3
## v tibble  3.0.4      v dplyr  1.0.2
## v tidyr   1.0.2      v stringr 1.4.0
## v readr   1.3.1      v forcats 0.4.0

## Warning: package 'ggplot2' was built under R version 3.6.3
## Warning: package 'tibble' was built under R version 3.6.3
## Warning: package 'dplyr' was built under R version 3.6.3

## -- Conflicts -----
----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()

# install.packages("BasketballAnalyzeR")
library(BasketballAnalyzeR)

## Warning: package 'BasketballAnalyzeR' was built under R version 3.6.3

## Registered S3 method overwritten by 'GGally':
##   method from
##   +.gg      ggplot2

##
## If you want to reproduce the figures contained in the book of
## Zuccolotto and Manisera (2020) and
## if the version of your R machine is >= 3.6.0, you need to type
## RNGkind(sample.kind = "Rounding")
## at the beginning of your working session

# Import NBA Shot Chart data set
nba_shotcharts <- read.csv("nba201516PbPShots.csv")

head(nba_shotcharts)
```

```

##      game_id      data_set      date      a1
## 1 ="0021500001" 2015-2016 Regular Season 2015-10-27 Marcus Morris
## 2 ="0021500001" 2015-2016 Regular Season 2015-10-27 Marcus Morris
## 3 ="0021500001" 2015-2016 Regular Season 2015-10-27 Marcus Morris
## 4 ="0021500001" 2015-2016 Regular Season 2015-10-27 Marcus Morris
## 5 ="0021500001" 2015-2016 Regular Season 2015-10-27 Marcus Morris
## 6 ="0021500001" 2015-2016 Regular Season 2015-10-27 Marcus Morris
##      a2      a3      a4      a5
## 1 Ersan Ilyasova Andre Drummond Kentavious Caldwell-Pope Reggie Jackson
## 2 Ersan Ilyasova Andre Drummond Kentavious Caldwell-Pope Reggie Jackson
## 3 Ersan Ilyasova Andre Drummond Kentavious Caldwell-Pope Reggie Jackson
## 4 Ersan Ilyasova Andre Drummond Kentavious Caldwell-Pope Reggie Jackson
## 5 Ersan Ilyasova Andre Drummond Kentavious Caldwell-Pope Reggie Jackson
## 6 Ersan Ilyasova Andre Drummond Kentavious Caldwell-Pope Reggie Jackson
##      h1      h2      h3      h4      h5 period
## 1 Kent Bazemore Paul Millsap Al Horford Kyle Korver Jeff Teague      1
## 2 Kent Bazemore Paul Millsap Al Horford Kyle Korver Jeff Teague      1
## 3 Kent Bazemore Paul Millsap Al Horford Kyle Korver Jeff Teague      1
## 4 Kent Bazemore Paul Millsap Al Horford Kyle Korver Jeff Teague      1
## 5 Kent Bazemore Paul Millsap Al Horford Kyle Korver Jeff Teague      1
## 6 Kent Bazemore Paul Millsap Al Horford Kyle Korver Jeff Teague      1
##      away_score home_score remaining_time elapsed play_length play_id team
## 1      0      0      00:11:41 00:00:19      00:00:19      2 DET
## 2      2      0      00:11:21 00:00:39      00:00:16      5 DET
## 3      2      2      00:11:00 00:01:00      00:00:21      6 ATL
## 4      4      2      00:10:44 00:01:16      00:00:16      7 DET
## 5      4      2      00:10:27 00:01:33      00:00:17      8 ATL
## 6      4      2      00:10:13 00:01:47      00:00:12     10 DET
##      event_type      assist away home      block entered left num opponent
## 1      miss      NA      NA Al Horford      NA      NA      NA      NA
## 2      shot Andre Drummond      NA      NA      NA      NA      NA      NA
## 3      shot Kyle Korver      NA      NA      NA      NA      NA      NA
## 4      shot Ersan Ilyasova      NA      NA      NA      NA      NA      NA
## 5      miss      NA      NA      NA      NA      NA      NA
## 6      miss      NA      NA      NA      NA      NA      NA
##      outof      player points possession reason result steal
## 1      NA      Andre Drummond      0      NA      NA missed      NA
## 2      NA      Marcus Morris      2      NA      NA made      NA
## 3      NA      Paul Millsap      2      NA      NA made      NA
## 4      NA Kentavious Caldwell-Pope      2      NA      NA made      NA
## 5      NA      Al Horford      0      NA      NA missed      NA
## 6      NA      Andre Drummond      0      NA      NA missed      NA
##      type shot_distance original_x original_y converted_x
## 1      Driving Layup      2      -17      -6      26.7
## 2      Step Back Jump Shot      13      117      67      13.3
## 3      Step Back Jump Shot      12      76      95      32.6
## 4      unknown      9      -68      51      31.8
## 5      Jump Shot      20      -117      164      13.3
## 6      Turnaround Hook Shot      8      -79      31      32.9
##      converted_y

```

```

## 1      4.4
## 2     11.7
## 3     79.5
## 4     10.1
## 5     72.6
## 6      8.1
##
##                                     description
## 1      MISS Drummond 2' Driving Layup, Horford BLOCK (1 BLK)
## 2      Marc Morris 13' Step Back Jump Shot (2 PTS) (Drummond 1 AST)
## 3      Millsap 12' Step Back Jump Shot (2 PTS) (Korver 1 AST)
## 4 Caldwell-Pope 9' Driving Floating Jump Shot (2 PTS) (Ilyasova 1 AST)
## 5                                     MISS Horford 20' Jump Shot
## 6                                     MISS Drummond 8' Turnaround Hook Shot

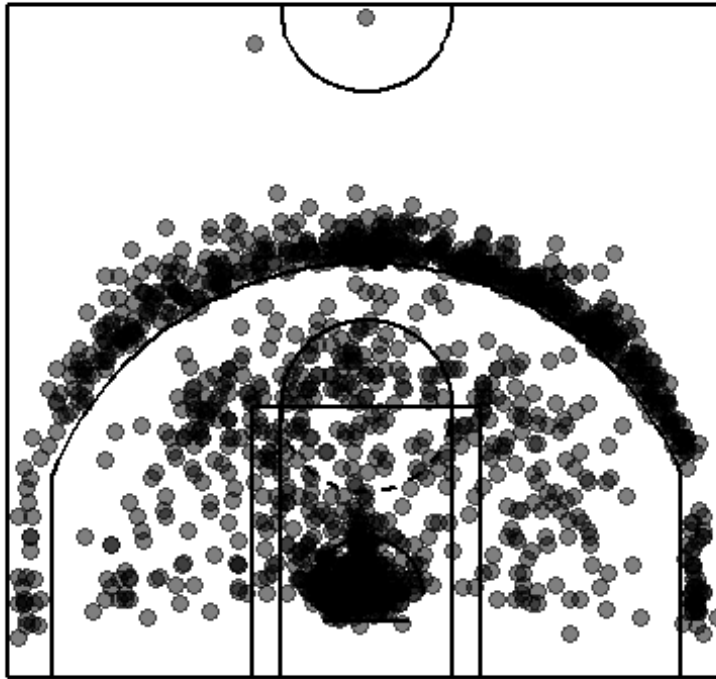
#transform data using PbP Manipulation
PbP <- PbPmanipulation(nba_shotcharts)

#Scale the axis' to center of the hoop
PbP %>% mutate(xx = original_x/10, yy = original_y/10-41.75) -> PbP

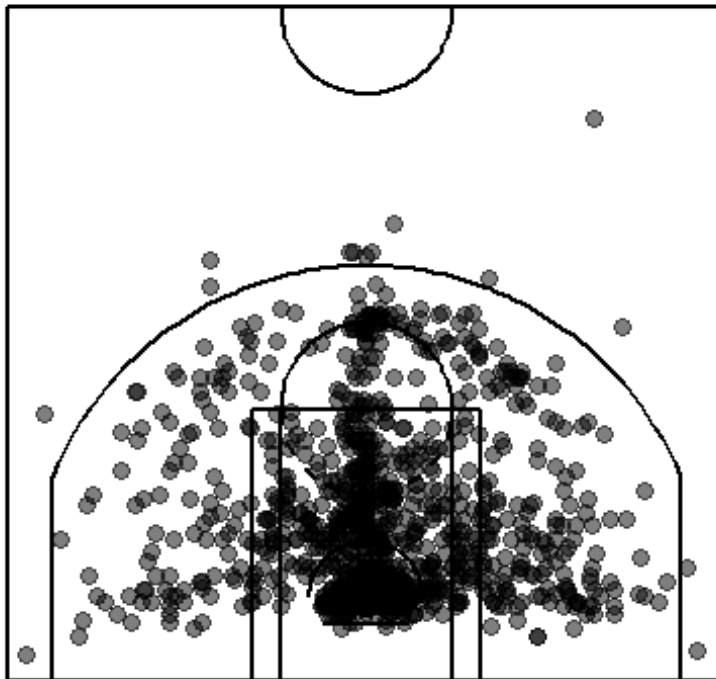
#Filter by a player and create their shot chart
PbP %>% filter(player == "James Harden") -> jamesHarden
PbP %>% filter(player == "Brook Lopez") -> brookLopez
PbP %>% filter(player == "Giannis Antetokounmpo") -> giannisA
PbP %>% filter(player == "Chris Paul") -> chrisPaul
PbP %>% filter(player == "Victor Oladipo") -> victorOladipo

shotchart(data=jamesHarden, x='xx', y='yy', scatter = TRUE)

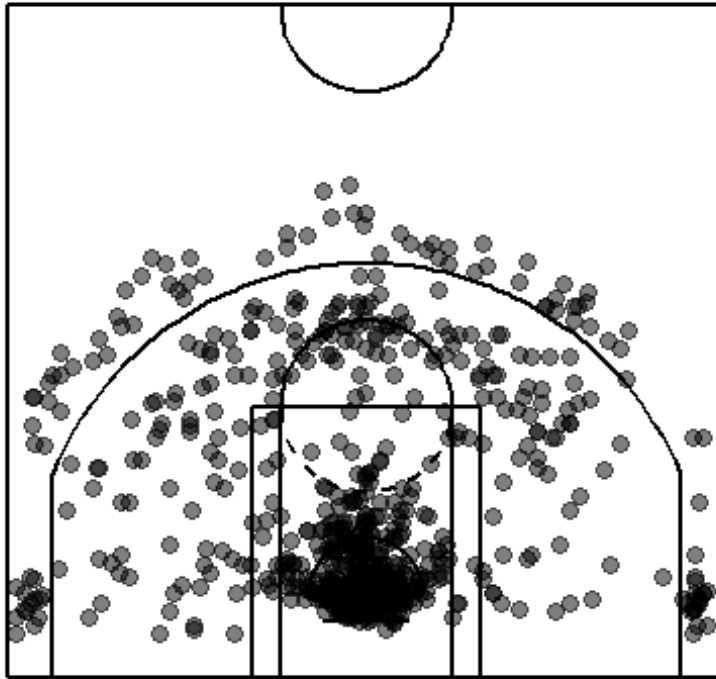
```



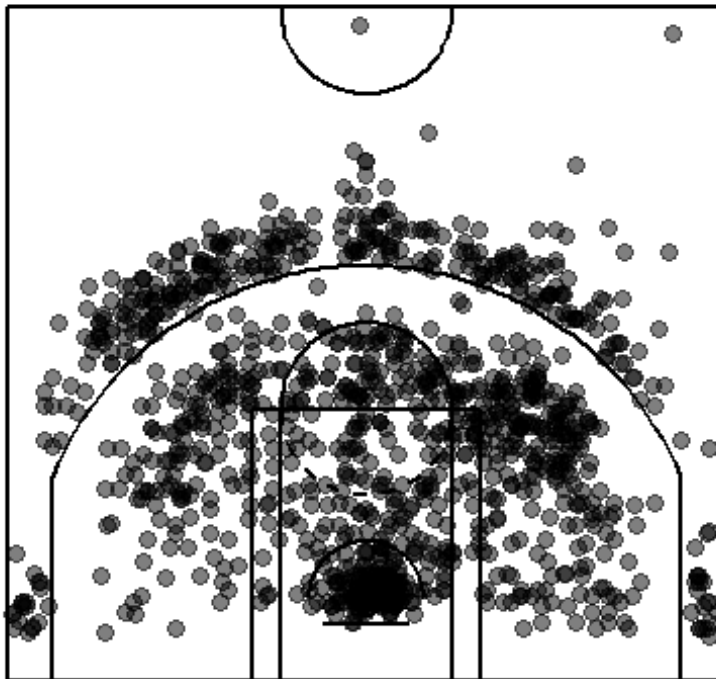
```
shotchart(data=brookLopez, x='xx', y='yy', scatter = TRUE)
```



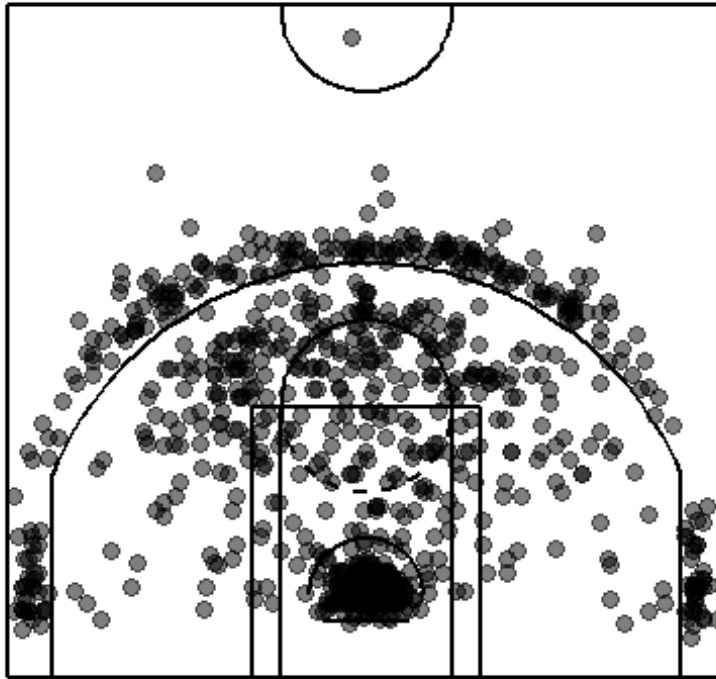
```
shotchart(data=giannisA, x='xx', y='yy', scatter = TRUE)
```



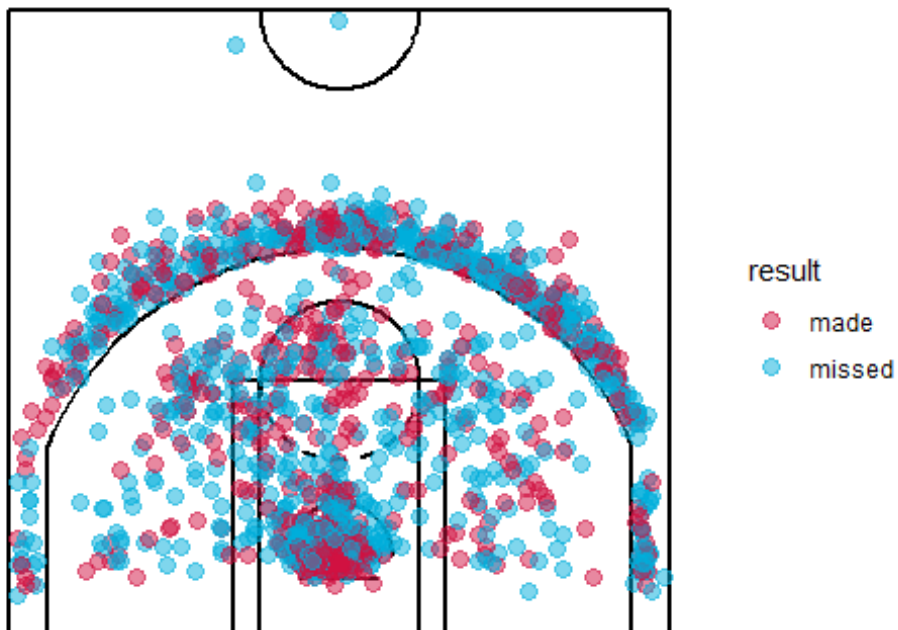
```
shotchart(data=chrisPaul, x='xx', y='yy', scatter = TRUE)
```



```
shotchart(data=victorOladipo, x='xx', y='yy', scatter = TRUE)
```



```
shotchart(data=jamesHarden, x='xx', y='yy', z= "result", scatter = TRUE)
```



```
shotchart(data=jamesHarden, x='xx', y='yy', z= "points", scatter = TRUE)
```

