

MOOC 1 Week 3 Assignment, part Ia

As usual, we begin by importing the packages we will need

```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.0 --
## v ggplot2 3.3.2      v purrr  0.3.4
## v tibble  3.0.3      v dplyr  1.0.0
## v tidyr   1.1.0      v stringr 1.4.0
## v readr   1.3.1      v forcats 0.5.0

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

library(patchwork)
```

The data consists of the shot log for the NBA season 2016/17

```
shot = read.csv("~/Google Drive/Sports Analytics Moocs/MOOC 1 - Foundations of sports analytics/Assignment 1/shot_log.csv")
colnames(shot)

## [1] "self_previous_shot"      "player_position"         "home_game"
## [4] "location_x"              "opponent_previous_shot"  "home_team"
## [7] "shot_type"               "points"                  "away_team"
## [10] "location_y"              "time"                    "date"
## [13] "shoot_player"            "time_from_last_shot"    "quarter"
## [16] "current_shot_outcome"

summary(shot)

## self_previous_shot player_position home_game location_x
## Length:210072      Length:210072      Length:210072      Min. : 0.0
## Class :character   Class :character   Class :character   1st Qu.: 94.0
## Mode :character    Mode :character    Mode :character    Median :342.0
##                                     Mean :468.5
##                                     3rd Qu.:843.0
##                                     Max. :933.0
##                                     NA's :397
## opponent_previous_shot home_team shot_type points
## Length:210072          Length:210072      Length:210072      Min. :2.000
## Class :character       Class :character   Class :character   1st Qu.:2.000
## Mode :character        Mode :character    Mode :character    Median :2.000
##                                     Mean :2.316
##                                     3rd Qu.:3.000
##                                     Max. :3.000
##
```

```
## away_team          location_y          time          date
## Length:210072      Min.   : 0.0      Length:210072      Length:210072
## Class :character    1st Qu.:197.0    Class :character    Class :character
## Mode :character      Median :250.0    Mode :character     Mode :character
##                      Mean    :249.4
##                      3rd Qu.:303.0
##                      Max.    :500.0
##                      NA's    :397
## shoot_player        time_from_last_shot    quarter    current_shot_outcome
## Length:210072      Min.   : 0.00      Min.   :1.00      Length:210072
## Class :character    1st Qu.: 22.00      1st Qu.:1.00      Class :character
## Mode :character      Median : 31.00      Median :2.00      Mode :character
##                      Mean    : 33.28      Mean    :2.48
##                      3rd Qu.: 41.00      3rd Qu.:3.00
##                      Max.    :255.00      Max.    :8.00
##                      NA's    :10000
```

```
unique(shot$shoot_player)
```

```
## [1] "Kent Bazemore"          "Dwight Howard"
## [3] "Kyle Korver"           "Dennis Schroder"
## [5] "Paul Millsap"          "Tim Hardaway Jr."
## [7] "Mike Muscala"          "Malcolm Delaney"
## [9] "Thabo Sefolosha"       "Kris Humphries"
## [11] "DeAndre' Bembry"       "Taurean Prince"
## [13] "Walter Tavares"        "Ryan Kelly"
## [15] "Mike Scott"            "Mike Dunleavy"
## [17] "Gary Neal"             "Lamar Patterson"
## [19] "Ersan Ilyasova"        "Jose Calderon"
## [21] "Jae Crowder"           "Al Horford"
## [23] "Avery Bradley"         "Isaiah Thomas"
## [25] "Jaylen Brown"          "Terry Rozier"
## [27] "Amir Johnson"          "Jonas Jerebko"
## [29] "Gerald Green"          "Tyler Zeller"
## [31] "Jordan Mickey"         "Marcus Smart"
## [33] "James Young"           "Demetrius Jackson"
## [35] "Kelly Olynyk"          "Brook Lopez"
## [37] "Bojan Bogdanovic"      "Jeremy Lin"
## [39] "Rondae Hollis-Jefferson" "Joe Harris"
## [41] "Luis Scola"            "Sean Kilpatrick"
## [43] "Justin Hamilton"       "Greivis Vasquez"
## [45] "Trevor Booker"         "Chris McCullough"
## [47] "Anthony Bennett"       "Isaiah Whitehead"
## [49] "Randy Foye"            "Yogi Ferrell"
## [51] "Caris Levert"          "Spencer Dinwiddie"
## [53] "Quincy Acy"            "KJ McDaniels"
## [55] "Andrew Nicholson"      "Archie Goodwin"
## [57] "Michael Kidd-Gilchrist" "Kemba Walker"
## [59] "Roy Hibbert"           "Marvin Williams"
## [61] "Marco Belinelli"       "Cody Zeller"
## [63] "Spencer Hawes"         "Ramon Sessions"
## [65] "Jeremy Lamb"           "Nicolas Batum"
## [67] "Frank Kaminsky"        "Treveon Graham"
## [69] "Brian Roberts"         "Christian Wood"
## [71] "Aaron Harrison"        "Miles Plumlee"
```

## [73]	"Mike Tobey"	"Johnny O'Bryant III"
## [75]	"Briante Weber"	"Dwyane Wade"
## [77]	"Taj Gibson"	"Rajon Rondo"
## [79]	"Robin Lopez"	"Jimmy Butler"
## [81]	"Doug McDermott"	"Isaiah Canaan"
## [83]	"Nikola Mirotic"	"Cristiano Felicio"
## [85]	"Michael Carter-Williams"	"Bobby Portis"
## [87]	"Denzel Valentine"	"Paul Zipser"
## [89]	"Jerian Grant"	"RJ Hunter"
## [91]	"Cameron Payne"	"Joffrey Lauvergne"
## [93]	"Anthony Morrow"	"Kevin Love"
## [95]	"LeBron James"	"Kyrie Irving"
## [97]	"J.R. Smith"	"Tristan Thompson"
## [99]	"Richard Jefferson"	"Iman Shumpert"
## [101]	"Channing Frye"	"DeAndre Liggins"
## [103]	"James Jones"	"Jordan McRae"
## [105]	"Chris Andersen"	"Kay Felder"
## [107]	"Derrick Williams"	"Deron Williams"
## [109]	"Larry Sanders"	"Dirk Nowitzki"
## [111]	"Harrison Barnes"	"Andrew Bogut"
## [113]	"Wesley Matthews"	"Seth Curry"
## [115]	"Dwight Powell"	"J.J. Barea"
## [117]	"Justin Anderson"	"Salah Mejri"
## [119]	"Nicolas Brussino"	"Dorian Finney-Smith"
## [121]	"A.J. Hammons"	"Jonathan Gibson"
## [123]	"Devin Harris"	"Pierre Jackson"
## [125]	"Nerlens Noel"	"Quinn Cook"
## [127]	"Ben Bentil"	"Manny Harris"
## [129]	"Jarrod Uthoff"	"Nikola Jokic"
## [131]	"Danilo Gallinari"	"Jusuf Nurkic"
## [133]	"Emmanuel Mudiay"	"Will Barton"
## [135]	"Wilson Chandler"	"Jameer Nelson"
## [137]	"Jamal Murray"	"Kenneth Faried"
## [139]	"Darrell Arthur"	"Juancho Hernangomez"
## [141]	"Gary Harris"	"Malik Beasley"
## [143]	"Jarnell Stokes"	"Mike Miller"
## [145]	"Alonzo Gee"	"Mason Plumlee"
## [147]	"Kentavious Caldwell-Pope"	"Marcus Morris"
## [149]	"Tobias Harris"	"Andre Drummond"
## [151]	"Ish Smith"	"Aron Baynes"
## [153]	"Jon Leuer"	"Stanley Johnson"
## [155]	"Beno Udrih"	"Boban Marjanovic"
## [157]	"Henry Ellenson"	"Michael Gbinije"
## [159]	"Darrun Hilliard"	"Reggie Bullock"
## [161]	"Reggie Jackson"	"Draymond Green"
## [163]	"Kevin Durant"	"Klay Thompson"
## [165]	"Stephen Curry"	"Ian Clark"
## [167]	"David West"	"Shaun Livingston"
## [169]	"Andre Iguodala"	"Zaza Pachulia"
## [171]	"Patrick McCaw"	"JaVale McGee"
## [173]	"Kevon Looney"	"James Michael McAdoo"
## [175]	"Anderson Varejao"	"Damian Jones"
## [177]	"Matt Barnes"	"Ryan Anderson"
## [179]	"Trevor Ariza"	"James Harden"

## [181]	"Eric Gordon"	"Nene Hilario"
## [183]	"Clint Capela"	"Sam Dekker"
## [185]	"Corey Brewer"	"Tyler Ennis"
## [187]	"Bobby Brown"	"Montrezl Harrell"
## [189]	"Kyle Wiltjer"	"Patrick Beverley"
## [191]	"Chinanu Onuaku"	"Lou Williams"
## [193]	"Troy Williams"	"Isaiah Taylor"
## [195]	"Myles Turner"	"Thaddeus Young"
## [197]	"Monta Ellis"	"Paul George"
## [199]	"Jeff Teague"	"Lavoy Allen"
## [201]	"Al Jefferson"	"Rodney Stuckey"
## [203]	"Glenn Robinson III"	"CJ Miles"
## [205]	"Joe Young"	"Kevin Seraphin"
## [207]	"George Niang"	"Rakeem Christmas"
## [209]	"Aaron Brooks"	"Lance Stephenson"
## [211]	"Chris Paul"	"JJ Redick"
## [213]	"Blake Griffin"	"DeAndre Jordan"
## [215]	"Jamal Crawford"	"Raymond Felton"
## [217]	"Austin Rivers"	"Marreese Speights"
## [219]	"Wesley Johnson"	"Luc Mbah a Moute"
## [221]	"Diamond Stone"	"Brandon Bass"
## [223]	"Alan Anderson"	"Paul Pierce"
## [225]	"Brice Johnson"	"Julius Randle"
## [227]	"Timofey Mozgov"	"D'Angelo Russell"
## [229]	"Luol Deng"	"Nick Young"
## [231]	"Jordan Clarkson"	"Brandon Ingram"
## [233]	"Larry Nance Jr."	"Tarik Black"
## [235]	"Marcelo Huertas"	"Thomas Robinson"
## [237]	"Metta World Peace"	"Ivica Zubac"
## [239]	"David Nwaba"	"JaMychal Green"
## [241]	"Marc Gasol"	"Mike Conley"
## [243]	"Andrew Harrison"	"James Ennis III"
## [245]	"Wade Baldwin IV"	"Zach Randolph"
## [247]	"Vince Carter"	"Troy Daniels"
## [249]	"Jarell Martin"	"Elliott Williams"
## [251]	"Tony Allen"	"Deyonta Davis"
## [253]	"Chandler Parsons"	"Toney Douglas"
## [255]	"Brandan Wright"	"Wayne Selden"
## [257]	"Justise Winslow"	"Hassan Whiteside"
## [259]	"Luke Babbitt"	"Dion Waiters"
## [261]	"Goran Dragic"	"Tyler Johnson"
## [263]	"James Johnson"	"Willie Reed"
## [265]	"Rodney McGruder"	"Udonis Haslem"
## [267]	"Josh Richardson"	"Josh McRoberts"
## [269]	"Wayne Ellington"	"Okaro White"
## [271]	"Matthew Dellavedova"	"Jabari Parker"
## [273]	"Giannis Antetokounmpo"	"Michael Beasley"
## [275]	"Greg Monroe"	"Malcolm Brogdon"
## [277]	"Jason Terry"	"Mirza Teletovic"
## [279]	"John Henson"	"Rashad Vaughn"
## [281]	"Tony Snell"	"Thon Maker"
## [283]	"Steve Novak"	"Khris Middleton"
## [285]	"Axel Toupane"	"Terrence Jones"
## [287]	"Gary Payton II"	"Karl-Anthony Towns"

## [289]	"Andrew Wiggins"	"Zach LaVine"
## [291]	"Gorgui Dieng"	"Ricky Rubio"
## [293]	"Nemanja Bjelica"	"Kris Dunn"
## [295]	"Brandon Rush"	"Shabazz Muhammad"
## [297]	"Cole Aldrich"	"Tyus Jones"
## [299]	"Jordan Hill"	"John Lucas III"
## [301]	"Adreian Payne"	"Omri Casspi"
## [303]	"E'Twaun Moore"	"Anthony Davis"
## [305]	"Tim Frazier"	"Omer Asik"
## [307]	"Solomon Hill"	"Buddy Hield"
## [309]	"Alexis Ajinca"	"Langston Galloway"
## [311]	"Dante Cunningham"	"Cheick Diallo"
## [313]	"Jrue Holiday"	"Anthony Brown"
## [315]	"Reggie Williams"	"Tyreke Evans"
## [317]	"Donatas Motiejunas"	"DeMarcus Cousins"
## [319]	"Hollis Thompson"	"Jarrett Jack"
## [321]	"Jordan Crawford"	"Derrick Rose"
## [323]	"Carmelo Anthony"	"Kristaps Porzingis"
## [325]	"Courtney Lee"	"Joakim Noah"
## [327]	"Brandon Jennings"	"Lance Thomas"
## [329]	"Kyle O'Quinn"	"Justin Holiday"
## [331]	"Guillermo Hernangomez"	"Mindaugas Kuzminskas"
## [333]	"Ron Baker"	"Sasha Vujacic"
## [335]	"Maurice Ndour"	"Marshall Plumlee"
## [337]	"Chasson Randle"	"Russell Westbrook"
## [339]	"Victor Oladipo"	"Steven Adams"
## [341]	"Andre Roberson"	"Domantas Sabonis"
## [343]	"Kyle Singler"	"Semaj Christon"
## [345]	"Enes Kanter"	"Alex Abrines"
## [347]	"Jerami Grant"	"Nick Collison"
## [349]	"Josh Huestis"	"Norris Cole"
## [351]	"Evan Fournier"	"Nikola Vucevic"
## [353]	"Aaron Gordon"	"Serge Ibaka"
## [355]	"Elfrid Payton"	"Jeff Green"
## [357]	"Mario Hezonja"	"D.J. Augustin"
## [359]	"Bismack Biyombo"	"CJ Wilcox"
## [361]	"CJ Watson"	"Stephen Zimmerman"
## [363]	"Damjan Rudez"	"Arinze Onuaku"
## [365]	"Jodie Meeks"	"Terrence Ross"
## [367]	"Marcus Georges-Hunt"	"Patricio Garino"
## [369]	"Joel Embiid"	"Gerald Henderson"
## [371]	"Dario Saric"	"Sergio Rodriguez"
## [373]	"Jahlil Okafor"	"Richaun Holmes"
## [375]	"Robert Covington"	"Nik Stauskas"
## [377]	"TJ McConnell"	"Timothe Luwawu-Cabarrot"
## [379]	"Jerryd Bayless"	"Justin Harper"
## [381]	"Shawn Long"	"Tiago Splitter"
## [383]	"Alex Poythress"	"Jared Dudley"
## [385]	"Devin Booker"	"Tyson Chandler"
## [387]	"Eric Bledsoe"	"TJ Warren"
## [389]	"Alex Len"	"Brandon Knight"
## [391]	"Leandro Barbosa"	"Marquese Chriss"
## [393]	"Tyler Ulis"	"Dragan Bender"
## [395]	"P.J. Tucker"	"Alan Williams"

```
## [397] "John Jenkins"           "Derrick Jones, Jr."
## [399] "Ronnie Price"           "Jarell Eddie"
## [401] "Elijah Millsap"        "Al-Farouq Aminu"
## [403] "Damian Lillard"        "CJ McCollum"
## [405] "Allen Crabbe"          "Ed Davis"
## [407] "Evan Turner"           "Noah Vonleh"
## [409] "Maurice Harkless"      "Meyers Leonard"
## [411] "Jake Layman"           "Shabazz Napier"
## [413] "Tim Quarterman"        "Pat Connaughton"
## [415] "Ty Lawson"             "Kosta Koufos"
## [417] "Arron Afflalo"         "Rudy Gay"
## [419] "Anthony Tolliver"      "Garrett Temple"
## [421] "Ben McLemore"          "Willie Cauley-Stein"
## [423] "Malachi Richardson"    "Jordan Farmar"
## [425] "Skal Labissiere"       "Georgios Papagiannis"
## [427] "Darren Collison"       "LaMarcus Aldridge"
## [429] "Tony Parker"           "Pau Gasol"
## [431] "Kawhi Leonard"         "Patty Mills"
## [433] "Jonathon Simmons"      "Manu Ginobili"
## [435] "David Lee"             "Dewayne Dedmon"
## [437] "Kyle Anderson"         "Davis Bertans"
## [439] "Nicolas Laprovittola"  "Bryn Forbes"
## [441] "Dejounte Murray"       "Danny Green"
## [443] "Joel Anthony"          "DeMar DeRozan"
## [445] "Jonas Valanciunas"     "Kyle Lowry"
## [447] "Pascal Siakam"         "Patrick Patterson"
## [449] "Cory Joseph"           "Jakob Poeltl"
## [451] "DeMarre Carroll"       "Norman Powell"
## [453] "Lucas Nogueira"        "Fred VanVleet"
## [455] "Bruno Caboclo"         "Jared Sullinger"
## [457] "Delon Wright"          "Rodney Hood"
## [459] "George Hill"           "Joe Johnson"
## [461] "Trey Lyles"            "Joe Ingles"
## [463] "Shelvin Mack"          "Rudy Gobert"
## [465] "Boris Diaw"            "Dante Exum"
## [467] "Derrick Favors"        "Joel Bolomboy"
## [469] "Jeff Withey"           "Gordon Hayward"
## [471] "Raul Neto"             "Alec Burks"
## [473] "Markieff Morris"       "John Wall"
## [475] "Bradley Beal"          "Otto Porter Jr."
## [477] "Marcin Gortat"         "Trey Burke"
## [479] "Kelly Oubre Jr."       "Marcus Thornton"
## [481] "Jason Smith"           "Daniel Ochefu"
## [483] "Sheldon McClellan"     "Tomas Satoransky"
## [485] "Ian Mahinmi"
```

```
shot$halfcourt_x = ifelse(shot$location_x < 933/2, 933 - shot$location_x, shot$location_x)
shot$halfcourt_y = ifelse(shot$location_x < 933/2, 500 - shot$location_y, shot$location_y)
summary(shot)
```

```
## self_previous_shot player_position home_game location_x
## Length:210072      Length:210072   Length:210072   Min. : 0.0
## Class :character   Class :character Class :character 1st Qu.: 94.0
## Mode :character     Mode :character  Mode :character Median :342.0
##                                     Mean :468.5
```

```
##                                     3rd Qu.:843.0
##                                     Max.    :933.0
##                                     NA's    :397
## opponent_previous_shot home_team      shot_type      points
## Length:210072          Length:210072 Length:210072 Min.    :2.000
## Class :character       Class :character Class :character 1st Qu.:2.000
## Mode  :character       Mode  :character Mode  :character Median :2.000
##                                     Mean    :2.316
##                                     3rd Qu.:3.000
##                                     Max.    :3.000
##
## away_team      location_y      time      date
## Length:210072 Min.    : 0.0 Length:210072 Length:210072
## Class :character 1st Qu.:197.0 Class :character Class :character
## Mode  :character Median :250.0 Mode  :character Mode  :character
##                                     Mean    :249.4
##                                     3rd Qu.:303.0
##                                     Max.    :500.0
##                                     NA's    :397
## shoot_player    time_from_last_shot quarter current_shot_outcome
## Length:210072 Min.    : 0.00 Min.    :1.00 Length:210072
## Class :character 1st Qu.: 22.00 1st Qu.:1.00 Class :character
## Mode  :character Median : 31.00 Median :2.00 Mode  :character
##                                     Mean    : 33.28 Mean    :2.48
##                                     3rd Qu.: 41.00 3rd Qu.:3.00
##                                     Max.    :255.00 Max.    :8.00
##                                     NA's    :10000
## halfcourt_x      halfcourt_y
## Min.    :468.0 Min.    : 0.0
## 1st Qu.:720.0 1st Qu.:197.0
## Median :841.0 Median :250.0
## Mean    :799.7 Mean    :250.3
## 3rd Qu.:878.0 3rd Qu.:303.0
## Max.    :933.0 Max.    :500.0
## NA's    :397 NA's    :397
```

Comparing players

We use a pivot table here to list players by shots

```
playersn = shot %>% group_by(shoot_player, current_shot_outcome) %>%
  summarise(count = n()) %>% arrange(shoot_player, current_shot_outcome) %>% ungroup()

## 'summarise()' regrouping output by 'shoot_player' (override with '.groups' argument)
playersn

## # A tibble: 1,419 x 3
##   shoot_player    current_shot_outcome count
##   <chr>          <chr>                <int>
## 1 A.J. Hammons   BLOCKED                5
## 2 A.J. Hammons   MISSED                20
## 3 A.J. Hammons   SCORED                17
## 4 Aaron Brooks   BLOCKED                14
```

```
## 5 Aaron Brooks MISSED 165
## 6 Aaron Brooks SCORED 121
## 7 Aaron Gordon BLOCKED 44
## 8 Aaron Gordon MISSED 427
## 9 Aaron Gordon SCORED 393
## 10 Aaron Harrison MISSED 4
## # ... with 1,409 more rows
```

Russell Westbrook subset

```
Westbrook = shot[shot$shoot_player == 'Russell Westbrook', ]
head(Westbrook)
```

```
##      self_previous_shot player_position home_game location_x
## 140312                MISSED           PG        No        853
## 140315                MISSED           PG        No        802
## 140320                BLOCKED           PG        No        853
## 140322                SCORED           PG        No        809
## 140323                MISSED           PG        No        895
## 140325                MISSED           PG        No        882
##      opponent_previous_shot home_team      shot_type points
## 140312                SCORED        PHI          Jump Shot      2
## 140315                SCORED        PHI          Pullup Jump Shot      2
## 140320                SCORED        PHI          Jump Shot      2
## 140322                SCORED        PHI          Pullup Jump Shot      2
## 140323                SCORED        PHI Driving Finger Roll Layup      2
## 140325                BLOCKED        PHI          Running Layup      2
##      away_team location_y time      date      shoot_player
## 140312        OKL        76 0:17 10/26/2016 Russell Westbrook
## 140315        OKL       367 1:51 10/26/2016 Russell Westbrook
## 140320        OKL       308 3:59 10/26/2016 Russell Westbrook
## 140322        OKL       433 4:54 10/26/2016 Russell Westbrook
## 140323        OKL       270 5:44 10/26/2016 Russell Westbrook
## 140325        OKL       241 7:08 10/26/2016 Russell Westbrook
##      time_from_last_shot quarter current_shot_outcome halfcourt_x halfcourt_y
## 140312                NA        1          MISSED        853          76
## 140315                50        1          SCORED        802         367
## 140320                27        1          BLOCKED        853         308
## 140322                34        1          MISSED        809         433
## 140323                50        1          SCORED        895         270
## 140325                45        1          SCORED        882         241
```

Kevin Durant subset

```
Durant = shot[shot$shoot_player == 'Kevin Durant', ]
head(Durant)
```

```
##      self_previous_shot player_position home_game location_x
## 63212                MISSED           SF        Yes        197
## 63218                MISSED           SF        Yes         98
## 63219                SCORED           SF        Yes         92
## 63220                SCORED           SF        Yes        244
## 63228                SCORED           SF        Yes        103
```



```
## 63242          SCORED          SF          Yes          58
##      opponent_previous_shot home_team          shot_type points away_team
## 63212          SCORED          GSW Turnaround Fadeaway          2          SAS
## 63218          MISSED          GSW Step Back Jump Shot          2          SAS
## 63219          MISSED          GSW Turnaround Fadeaway          2          SAS
## 63220          MISSED          GSW Pullup Jump Shot          3          SAS
## 63228          SCORED          GSW Pullup Jump Shot          2          SAS
## 63242          MISSED          GSW Jump Shot          3          SAS
##      location_y time          date shoot_player time_from_last_shot quarter
## 63212          244 1:05 10/25/2016 Kevin Durant          26          1
## 63218           87 5:01 10/25/2016 Kevin Durant          27          1
## 63219          413 5:34 10/25/2016 Kevin Durant          33          1
## 63220          423 5:59 10/25/2016 Kevin Durant          25          1
## 63228          125 11:07 10/25/2016 Kevin Durant          35          1
## 63242          485 7:29 10/25/2016 Kevin Durant          27          2
##      current_shot_outcome halfcourt_x halfcourt_y
## 63212          SCORED          736          256
## 63218          SCORED          835          413
## 63219          SCORED          841           87
## 63220          SCORED          689           77
## 63228          MISSED          830          375
## 63242          MISSED          875           15
```

DeAndre Jordan subset

```
Jordan = shot[shot$shoot_player == 'DeAndre Jordan', ]
head(Jordan)
```

```
##      self_previous_shot player_position home_game location_x
## 84434          MISSED          C          No          895
## 84436          MISSED          C          No          888
## 84467          MISSED          C          No          878
## 84468          MISSED          C          No          887
## 84478          MISSED          C          No           51
## 84486          MISSED          C          No           54
##      opponent_previous_shot home_team          shot_type points away_team
## 84434          MISSED          POR          Layup          2          LAC
## 84436          BLOCKED          POR Putback Dunk          2          LAC
## 84467          SCORED          POR Reverse Layup          2          LAC
## 84468          SCORED          POR Tip Layup Shot          2          LAC
## 84478          SCORED          POR Tip Layup Shot          2          LAC
## 84486          SCORED          POR Tip Layup Shot          2          LAC
##      location_y time          date shoot_player time_from_last_shot quarter
## 84434          267 3:33 10/27/2016 DeAndre Jordan          2          1
## 84436          250 4:08 10/27/2016 DeAndre Jordan          0          1
## 84467          272 9:30 10/27/2016 DeAndre Jordan          17          2
## 84468          272 9:30 10/27/2016 DeAndre Jordan          0          2
## 84478          249 2:23 10/27/2016 DeAndre Jordan          1          3
## 84486          246 6:26 10/27/2016 DeAndre Jordan          1          3
##      current_shot_outcome halfcourt_x halfcourt_y
## 84434          BLOCKED          895          267
## 84436          SCORED          888          250
## 84467          MISSED          878          272
```

```
## 84468          MISSED          887          272
## 84478          MISSED          882          251
## 84486          MISSED          879          254
```

Dwight Howard subset

```
Howard = shot[shot$shoot_player == 'Dwight Howard', ]
head(Howard)
```

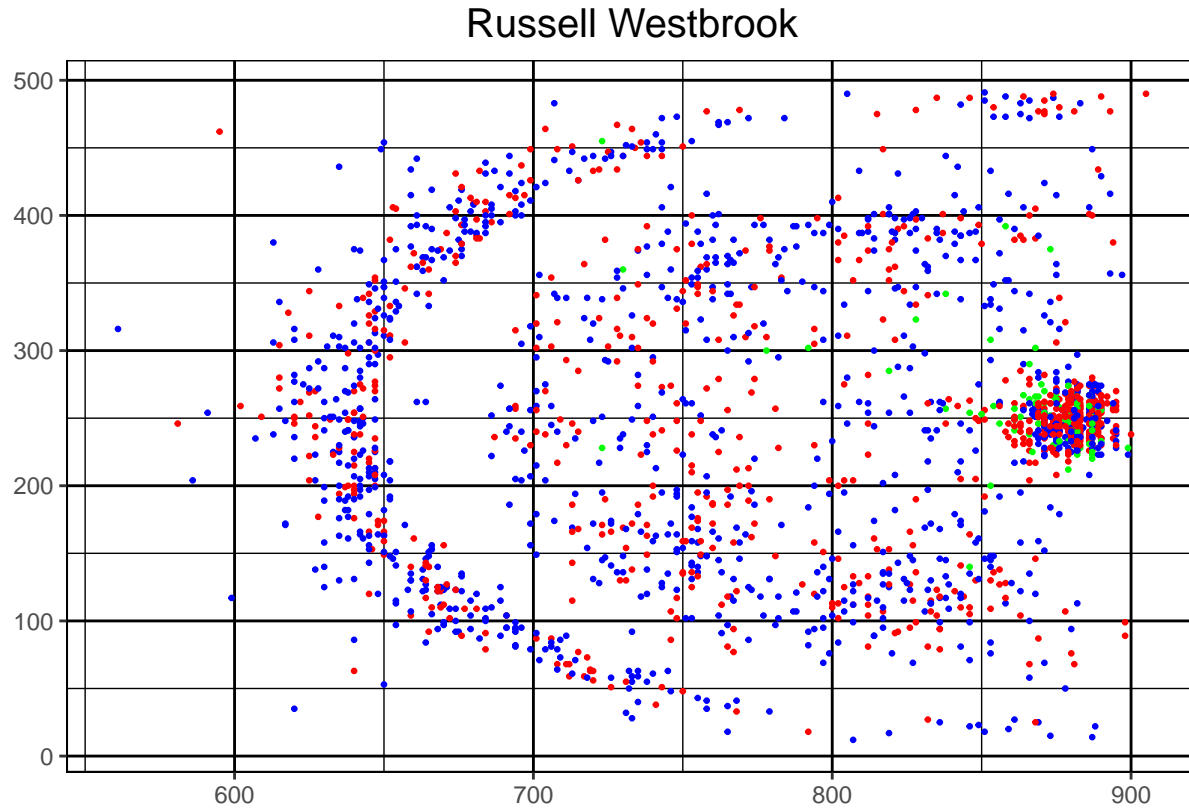
```
##      self_previous_shot player_position home_game location_x
## 2          MISSED          C          Yes          52
## 9          MISSED          C          Yes         107
## 16         MISSED          C          Yes          62
## 18         MISSED          C          Yes          82
## 40         MISSED          C          Yes         112
## 42         MISSED          C          Yes          53
##      opponent_previous_shot home_team          shot_type points away_team
## 2          SCORED          ATL          Tip Dunk Shot          2          WAS
## 9          SCORED          ATL Turnaround Jump Shot          2          WAS
## 16         MISSED          ATL          Jump Shot          2          WAS
## 18         MISSED          ATL          Jump Bank Shot          2          WAS
## 40         MISSED          ATL          Hook Shot          2          WAS
## 42         SCORED          ATL          Tip Layup Shot          2          WAS
##      location_y time          date shoot_player time_from_last_shot quarter
## 2          250 1:11 10/27/2016 Dwight Howard          2          1
## 9          254 4:04 10/27/2016 Dwight Howard          3          1
## 16         329 7:36 10/27/2016 Dwight Howard          3          1
## 18         373 8:22 10/27/2016 Dwight Howard         22          1
## 40         278 8:37 10/27/2016 Dwight Howard        125          2
## 42         251 9:23 10/27/2016 Dwight Howard          3          2
##      current_shot_outcome halfcourt_x halfcourt_y
## 2          SCORED          881          250
## 9          MISSED          826          246
## 16         SCORED          871          171
## 18         MISSED          851          127
## 40         SCORED          821          222
## 42         MISSED          880          249
```

Westbrook plot

```
hxW = Westbrook$halfcourt_x
hyW = Westbrook$halfcourt_y
colors_Westbrook = ifelse(Westbrook$current_shot_outcome == 'SCORED', 'red',
                           ifelse(Westbrook$current_shot_outcome == 'MISSED', 'blue', 'green'))

Westbrook_hxyW <- data.frame(hxW, hyW, colors_Westbrook)

Westbrook_plot <- ggplot(data = Westbrook_hxyW, aes(x = hxW, y = hyW)) +
  geom_point(color = colors_Westbrook, size = .5) +
  ggtitle("Russell Westbrook")+
  xlab("")+
  ylab("")+
  theme(panel.background = element_rect(color = "black", fill = "white"),
        plot.title = element_text(size = 15, hjust = 0.5),
        panel.grid = element_line(color = "black", linetype = "solid", size = 0.5))
Westbrook_plot
```

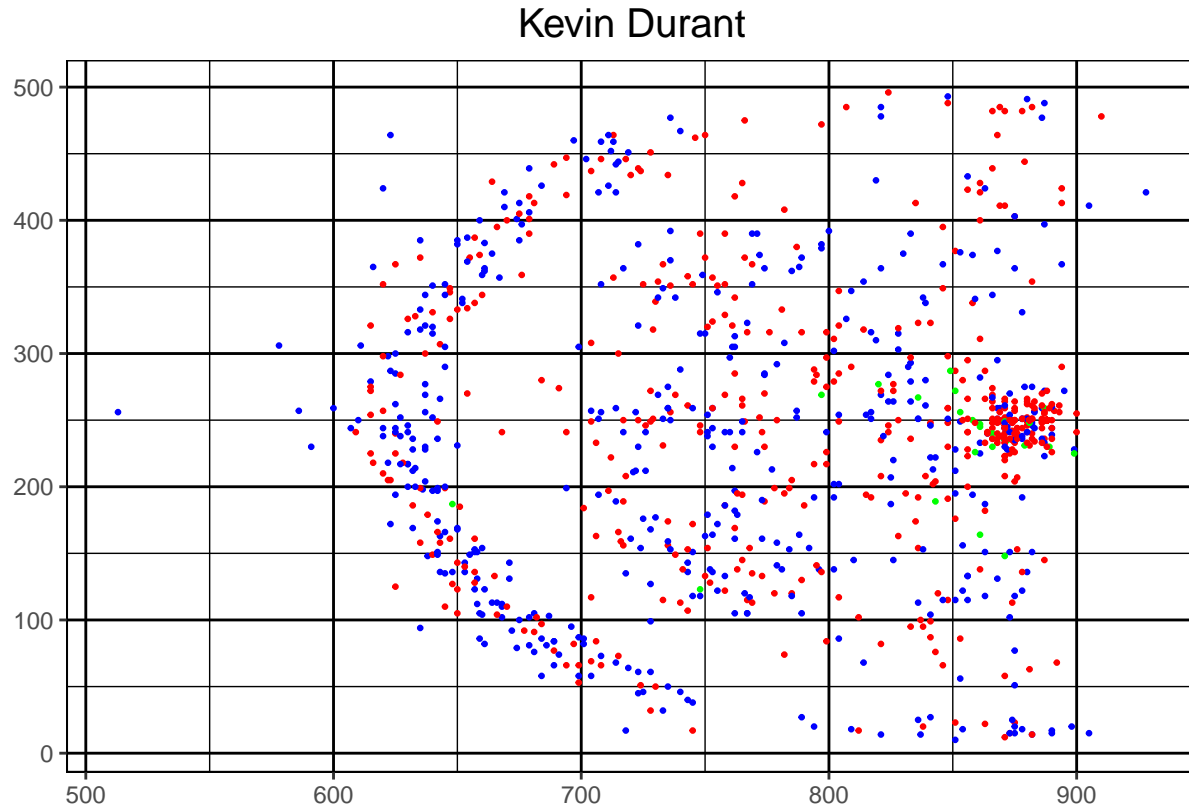


Durant plot

```
hxD = Durant$halfcourt_x
hyD = Durant$halfcourt_y
colors_Durant = ifelse(Durant$current_shot_outcome == 'SCORED', 'red',
                       ifelse(Durant$current_shot_outcome == 'MISSED', 'blue', 'green'))

Durant_hxyD <- data.frame(hxD, hyD, colors_Durant)

Durant_plot <- ggplot(data = Durant_hxyD, aes(x = hxD, y = hyD)) +
  geom_point(color = colors_Durant, size = .5) +
  ggtitle("Kevin Durant")+
  xlab("")+
  ylab("")+
  theme(panel.background = element_rect(color = "black", fill = "white"),
        plot.title = element_text(size = 15, hjust = 0.5),
        panel.grid = element_line(color = "black", linetype = "solid", size = 0.5))
Durant_plot
```



Russell Westbrook and Kevin Durant side by side

Westbrook_plot + Durant_plot

