lab8\_stat123

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2023-03-14

1. Suppose you have a dataset called “sales” that contains the monthly sales (in thousands of dollars) for a company over the past year. You want to estimate the median monthly sales and its standard error using bootstrapping

sales<-read.csv("/Users/itagakikouki/stat123/lab8/sales.csv")  
dim(sales)

## [1] 109 3

#med<-median(sales)  
#n = sample size  
#choose number randomly and assign to the data list  
boostrap<- function(data,n){  
 index<- sample(1:length(data),n, replace = TRUE)  
 #output is data[1],data[34] etc  
 return(data[index])  
}  
#choose 1000 population and choose 30 samples from each of the population  
n\_boostrap <- 1000  
n<- 30  
boot\_sample<-replicate(n\_boostrap,boostrap(sales$sales,n), simplify = FALSE)  
boot\_median<-sapply(boot\_sample,median)  
se<-sd(boot\_median)  
  
boot\_median

## [1] 49.64291 46.74068 51.81303 53.72547 49.56051 51.26571 49.61198 48.61109  
## [9] 49.46530 47.87054 50.12740 51.72615 51.63696 46.96820 52.80471 47.31930  
## [17] 50.20981 49.47609 52.15942 52.34630 51.04145 51.96052 51.41330 49.56051  
## [25] 47.58804 49.56051 51.52579 49.36880 46.89498 51.61913 47.87054 54.00771  
## [33] 49.08040 51.17268 49.26267 49.47609 46.94037 50.13819 49.54771 47.72695  
## [41] 49.46354 52.87878 56.44377 49.64291 51.26571 51.10683 47.92083 50.88429  
## [49] 53.19752 45.21157 50.61756 52.71130 48.12704 47.87054 51.17268 47.58804  
## [57] 48.26596 52.34630 50.32827 47.72026 47.92083 50.12229 47.80769 48.99598  
## [65] 49.63213 50.97181 53.82460 49.88609 49.56051 50.91146 47.80769 48.26596  
## [73] 48.26596 47.71907 50.43209 49.57130 47.69823 52.55101 47.15227 50.41068  
## [81] 50.58223 51.41330 53.28828 47.80769 51.98623 55.84085 50.32827 51.17268  
## [89] 48.58801 47.87054 49.08040 49.85896 51.43225 45.91839 52.38732 47.11140  
## [97] 51.52579 49.93570 47.84544 50.33906 50.03988 47.44728 46.85861 48.60057  
## [105] 52.59735 49.54771 49.46530 50.64809 47.63951 52.73862 52.59735 51.29288  
## [113] 51.63312 50.61756 47.87054 48.82273 47.80953 51.96052 47.67061 48.79536  
## [121] 53.17655 52.10018 49.95198 48.49328 48.54357 50.61756 53.41674 53.79123  
## [129] 51.84657 52.47982 48.99598 50.04298 48.21567 47.61565 50.43209 52.05128  
## [137] 50.41068 54.66516 53.41584 53.59814 52.53319 50.99898 50.90596 54.10231  
## [145] 49.16631 47.10078 49.16281 50.20243 47.80769 45.65230 51.67338 50.90596  
## [153] 50.64809 49.97728 50.61756 49.46530 51.98623 47.66411 46.84053 48.58801  
## [161] 47.83156 49.56051 49.80408 50.53004 50.99898 50.05764 53.80293 48.54357  
## [169] 51.11941 50.05067 51.29288 47.10050 50.53004 49.71453 54.35181 48.45430  
## [177] 52.03346 54.41696 49.56051 46.91010 50.43209 54.43690 47.83156 49.08040  
## [185] 53.17655 47.80769 48.61109 47.10078 49.85896 49.63213 51.17268 53.08349  
## [193] 52.97791 51.96052 48.88870 50.12229 48.26658 51.17268 47.83156 46.89498  
## [201] 51.81303 46.00069 53.82460 50.90596 48.88870 52.15942 46.13691 50.68138  
## [209] 49.57130 47.34268 46.08322 50.93534 51.98623 44.52719 54.05872 52.87878  
## [217] 47.58804 52.47808 50.38136 50.97181 49.46530 53.90205 53.19299 50.58223  
## [225] 50.30971 53.08349 53.58531 49.08040 49.54972 49.09119 51.22248 50.12740  
## [233] 47.56783 54.03052 51.10853 49.56051 51.10683 47.78191 47.42221 52.27894  
## [241] 51.45993 51.19985 51.41330 54.48049 49.47609 49.54771 51.05092 53.90205  
## [249] 46.56171 50.41068 45.30277 54.87431 47.44728 48.11961 50.12740 51.38614  
## [257] 47.92083 52.28451 50.50370 47.24149 50.96852 49.81447 51.26571 51.87019  
## [265] 50.97181 52.10018 52.47808 50.42130 53.66277 44.74247 49.54771 49.47609  
## [273] 46.94648 50.93534 49.54771 49.54771 51.81303 49.81447 50.38136 48.73527  
## [281] 53.18262 48.65086 52.92550 47.72695 48.99598 49.64291 50.61756 48.65679  
## [289] 50.13819 51.68773 49.64291 51.11941 46.10565 54.07410 49.46530 47.37376  
## [297] 52.27337 49.57130 52.05128 50.05067 49.61198 49.16259 47.04632 46.85861  
## [305] 49.64291 49.09119 47.87054 51.53373 49.57130 52.56593 47.38031 52.46025  
## [313] 47.08379 46.72283 48.65086 53.72547 48.76739 49.64291 53.17655 47.79513  
## [321] 51.10853 51.67338 54.25963 50.12740 50.84975 47.85798 47.92083 53.03529  
## [329] 46.73247 46.74068 55.84614 44.85684 53.32598 49.71453 47.79513 51.41330  
## [337] 53.80293 54.97850 48.48072 54.48049 51.69898 52.28451 50.05067 49.08040  
## [345] 50.40492 47.76871 49.71453 50.79569 50.67526 50.04298 49.71926 49.56051  
## [353] 51.38614 49.81447 50.47654 52.99273 53.45798 54.37337 53.17655 46.24786  
## [361] 48.64601 49.27360 47.58804 47.73162 47.29168 46.99483 50.04012 48.54357  
## [369] 50.90596 53.31671 50.61756 49.46530 47.63951 52.36413 49.63213 51.52579  
## [377] 47.79513 50.12740 51.41330 52.94333 52.15942 51.19985 53.28828 47.76871  
## [385] 46.85672 47.66411 49.56051 51.38614 51.23854 51.81293 50.05764 47.04632  
## [393] 53.31671 47.10050 54.48210 51.25906 47.78191 47.04929 46.89498 51.63696  
## [401] 48.54357 48.69577 46.99483 51.10683 47.04929 47.36775 50.41068 50.05067  
## [409] 45.86934 48.56159 51.43225 50.24386 50.05067 46.89498 50.13819 51.03189  
## [417] 51.53161 49.44042 51.19985 47.92083 46.67134 49.88609 50.42130 47.42221  
## [425] 53.93139 48.64601 49.47609 47.69264 52.27337 47.80953 51.67338 47.67061  
## [433] 49.63213 47.66411 52.53319 49.27360 47.53308 51.41330 50.97181 51.81303  
## [441] 50.55251 52.55101 47.44728 47.17241 47.85798 47.71907 50.03988 50.05764  
## [449] 50.81843 51.55296 46.63263 47.87054 52.71130 48.53955 49.36880 46.08322  
## [457] 50.58223 50.05067 51.98623 49.03156 47.47370 47.92083 49.71453 50.33688  
## [465] 52.85257 50.69217 47.67061 51.38614 47.72026 52.97791 49.92481 52.19094  
## [473] 53.27045 51.38614 52.92550 47.72026 50.97181 52.56884 47.42525 48.65086  
## [481] 50.12740 50.90596 52.17311 50.29384 48.20311 51.38614 46.08322 52.27337  
## [489] 46.80415 48.06078 51.29288 50.20981 51.96052 50.67526 50.38136 50.05764  
## [497] 50.99898 49.56051 48.54357 51.14168 48.98923 47.69264 46.63263 53.52150  
## [505] 50.03988 49.56051 48.73527 51.67338 51.07007 51.63312 50.13353 48.92639  
## [513] 48.12704 53.97498 46.63263 49.46530 46.99521 47.76871 53.03529 50.81843  
## [521] 45.65230 46.94037 49.81447 51.11941 52.53319 48.48072 47.69823 47.18308  
## [529] 53.80293 49.80408 51.29288 47.34614 51.67338 47.87054 49.38088 55.16412  
## [537] 49.09119 48.88870 48.56159 48.73527 51.38614 46.80415 49.56051 48.61109  
## [545] 48.99598 49.56051 48.68499 49.16281 49.35802 49.20165 52.56884 49.56051  
## [553] 50.55251 48.48072 48.73527 52.46025 51.52579 51.75546 48.54357 47.28047  
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## [569] 52.46025 51.45993 52.44551 50.40492 53.59814 47.76871 49.16631 51.32028  
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## [585] 49.56051 50.58223 52.56884 49.80368 50.61756 53.08349 50.12229 51.25906  
## [593] 47.74668 47.31930 53.82460 46.84053 47.31930 53.19752 49.51383 48.93895  
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## [617] 49.16281 48.63476 51.38614 52.10018 46.19529 48.92639 49.36880 51.93086  
## [625] 47.78191 50.91146 51.82001 49.86693 50.13657 52.07106 50.04298 53.93026  
## [633] 47.76871 52.27337 49.61198 53.12006 49.63213 49.36880 49.27360 53.69355  
## [641] 45.62162 47.69823 53.45798 53.08349 50.81843 46.63263 49.33436 51.98623  
## [649] 47.19184 47.72026 46.74068 47.15227 46.85861 51.53373 51.10853 49.09119  
## [657] 51.53373 51.67338 48.54357 52.80206 50.88429 50.29384 48.93895 47.87054  
## [665] 47.61565 50.64809 47.83156 47.04929 46.84053 49.47609 49.54972 48.40465  
## [673] 52.36413 44.21950 49.71926 45.21157 50.03988 46.59625 47.92083 47.87054  
## [681] 47.33076 54.24491 49.35802 49.95198 52.36413 47.85798 51.82001 49.27360  
## [689] 52.85257 50.30971 48.49328 47.10078 53.41674 54.48210 48.68321 47.76871  
## [697] 49.88609 47.69264 50.79569 49.80368 47.53308 49.61198 52.53319 51.26571  
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## [713] 47.47370 52.70559 50.58223 49.27360 47.72985 50.93534 49.46530 49.54771  
## [721] 50.42130 48.60057 47.80953 52.36413 53.31782 47.71907 45.81342 52.10018  
## [729] 54.54105 50.05067 52.56884 49.35802 48.72841 48.38191 49.16281 49.27360  
## [737] 47.15227 48.21567 46.19529 51.41330 49.16631 49.84818 51.10853 48.85032  
## [745] 52.03346 46.94037 49.81447 51.26571 49.63213 47.67061 49.57130 50.99898  
## [753] 47.85798 52.56884 47.15546 52.27818 52.73862 51.63312 51.19985 47.48626  
## [761] 49.80368 50.47654 49.27360 48.15466 51.38614 55.04657 51.19985 50.30971  
## [769] 48.21567 52.46025 48.65086 51.63312 50.12740 50.61756 50.30971 52.46025  
## [777] 48.20311 53.79123 49.95198 52.34630 51.38614 46.43161 49.63801 50.05764  
## [785] 47.42221 47.72026 52.03346 49.64291 48.54357 48.65086 47.85798 51.19985  
## [793] 47.58804 46.85861 51.23854 46.66793 51.74707 50.29384 51.84010 50.05067  
## [801] 52.42416 52.70559 48.49328 48.72841 49.84818 47.64300 46.10565 51.54944  
## [809] 48.15599 49.44042 52.15942 49.54771 48.88870 47.69264 47.74668 50.61756  
## [817] 54.30823 50.40492 50.29384 49.22369 46.74068 52.94333 50.05764 47.82025  
## [825] 49.36880 46.70431 52.27818 52.45161 47.72026 50.90596 52.05128 51.87019  
## [833] 50.05764 47.80953 46.80415 52.27337 51.84657 49.85896 50.55251 49.27360  
## [841] 49.71453 51.69898 49.46530 48.17669 51.26571 54.10231 49.80368 50.86536  
## [849] 49.80368 48.49901 46.84053 48.45430 49.38088 51.38614 52.13691 53.80293  
## [857] 48.73527 48.54357 50.03988 50.64809 49.16259 50.35002 47.67667 48.54140  
## [865] 50.58223 49.38581 52.42416 49.35802 46.78693 53.45798 50.90596 46.85861  
## [873] 46.94648 47.10050 48.20311 50.29384 51.51618 52.07106 49.63213 51.41330  
## [881] 50.70508 54.66516 49.33436 51.41330 53.09186 52.42578 52.19094 52.34630  
## [889] 48.40465 46.59625 51.31324 48.07208 51.55296 46.70431 48.74606 54.37337  
## [897] 49.63213 51.87019 52.99273 46.89498 46.75212 49.47609 54.28832 46.24188  
## [905] 49.33436 49.46530 54.28832 50.33906 50.93697 48.68499 53.90205 49.61198  
## [913] 52.78424 47.67667 53.17655 49.54972 49.81447 47.76871 46.08322 47.82025  
## [921] 48.12704 50.30971 52.56543 49.64291 50.13657 48.68499 51.38614 52.46025  
## [929] 46.91010 50.97181 52.19094 50.29384 50.61756 47.42525 52.36413 51.52579  
## [937] 50.97181 49.61198 47.53655 47.67667 47.44728 50.12229 50.61756 46.94648  
## [945] 49.88609 46.66793 50.70508 50.12229 52.42416 46.99483 51.17268 53.66277  
## [953] 51.17268 50.33906 47.64300 49.57130 51.32028 48.74606 51.98623 46.56783  
## [961] 50.81843 47.39763 46.85861 49.80368 47.82025 47.61565 47.76871 48.35100  
## [969] 51.45868 54.91789 49.81447 50.81843 50.45731 48.53955 46.43161 51.53373  
## [977] 50.99898 51.23854 49.35802 54.41696 50.05764 50.90596 46.78693 53.64996  
## [985] 48.21567 49.44042 46.74068 48.72841 51.29541 49.71453 48.45430 49.44042  
## [993] 52.03346 49.54972 51.84010 50.38136 50.29384 48.64601 55.16412 48.75483

se

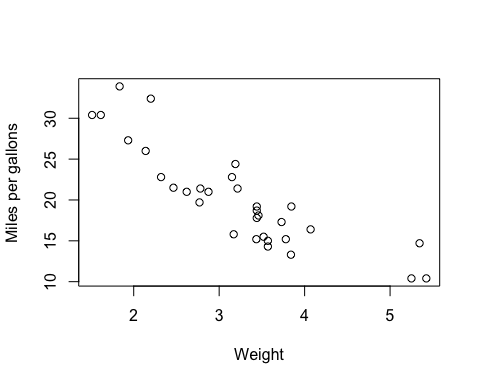
## [1] 2.156445

1. Creating a scatterplot, calculating the correlation coefficient, and computing a confidence interval in R using a “mtcars” dataset in R. (Using cat() to concatenate output together like [cat(“95% Confidence Interval:”, round(lower\_ci, 2), “-”, round(upper\_ci, 2), “”])

data(mtcars)  
head(mtcars)

## mpg cyl disp hp drat wt qsec vs am gear carb  
## Mazda RX4 21.0 6 160 110 3.90 2.620 16.46 0 1 4 4  
## Mazda RX4 Wag 21.0 6 160 110 3.90 2.875 17.02 0 1 4 4  
## Datsun 710 22.8 4 108 93 3.85 2.320 18.61 1 1 4 1  
## Hornet 4 Drive 21.4 6 258 110 3.08 3.215 19.44 1 0 3 1  
## Hornet Sportabout 18.7 8 360 175 3.15 3.440 17.02 0 0 3 2  
## Valiant 18.1 6 225 105 2.76 3.460 20.22 1 0 3 1

plot(mtcars$wt, mtcars$mpg, xlab = "Weight", ylab = "Miles per gallons")



corr\_coef <- cor(mtcars$wt, mtcars$mpg)  
cat("Correlation coefficient: ", round(corr\_coef,2), "\n")

## Correlation coefficient: -0.87

n<-length(mtcars$wt)  
alpha<-0.05  
z\_critical<-qt(1-alpha/2, df = n-2)  
se <- sqrt(1- corr\_coef^2/(n-2))  
lower\_ci <- corr\_coef - z\_critical\*se  
upper\_ci <- corr\_coef + z\_critical\*se  
cat("95% confidence interval: ", round(lower\_ci,2), "-", round(upper\_ci,2),"\n")

## 95% confidence interval: -2.88 - 1.15

1. Load the nba\_player\_data.csv dataset into R and save it to df.

#(a) Copy and paste each of the following three lines into your code to eliminate rows with zeros or NA’s.  
df <- read.csv("/Users/itagakikouki/stat123/lab8/nba\_player\_data.csv")  
dim(df)

## [1] 651 29

head(df)

## Player Pos Age Tm G GS MP FG FGA FG. X3P  
## 1 Steven Adams\\adamsst01 C 26 OKC 63 63 1680 283 478 0.592 1  
## 2 Bam Adebayo\\adebaba01 PF 22 MIA 72 72 2417 440 790 0.557 2  
## 3 LaMarcus Aldridge\\aldrila01 C 34 SAS 53 53 1754 391 793 0.493 61  
## 4 Kyle Alexander\\alexaky01 C 23 MIA 2 0 13 1 2 0.500 0  
## 5 Nickeil Alexander-Walker\\alexani01 SG 21 NOP 47 1 591 98 266 0.368 46  
## 6 Grayson Allen\\allengr01 SG 24 MEM 38 0 718 117 251 0.466 57  
## X3PA X3P. X2P X2PA X2P. eFG. FT FTA FT. ORB DRB TRB AST STL BLK TOV PF  
## 1 3 0.333 282 475 0.594 0.593 117 201 0.582 207 376 583 146 51 67 94 122  
## 2 14 0.143 438 776 0.564 0.558 264 382 0.691 176 559 735 368 82 93 204 182  
## 3 157 0.389 330 636 0.519 0.532 158 191 0.827 103 289 392 129 36 87 74 128  
## 4 0 NA 1 2 0.500 0.500 0 0 NA 2 1 3 0 0 0 1 1  
## 5 133 0.346 52 133 0.391 0.455 25 37 0.676 9 75 84 89 17 8 54 57  
## 6 141 0.404 60 110 0.545 0.580 39 45 0.867 8 77 85 52 10 2 33 53  
## PTS  
## 1 684  
## 2 1146  
## 3 1001  
## 4 2  
## 5 267  
## 6 330

#Eliminate na  
df = na.omit(df)  
#eliminate rows with 0  
rowsub = apply(df, 1, function(row) all(row !=0 ))  
#update dataset with no row with 0  
df = df[rowsub,]  
#• df = na.omit(df)  
#• row sub = apply(df, 1, function(row) all(row !=0 ))  
#• df = df[row sub,]  
df

## Player Pos Age Tm G GS MP FG FGA FG.  
## 1 Steven Adams\\adamsst01 C 26 OKC 63 63 1680 283 478 0.592  
## 2 Bam Adebayo\\adebaba01 PF 22 MIA 72 72 2417 440 790 0.557  
## 3 LaMarcus Aldridge\\aldrila01 C 34 SAS 53 53 1754 391 793 0.493  
## 5 Nickeil Alexander-Walker\\alexani01 SG 21 NOP 47 1 591 98 266 0.368  
## 6 Grayson Allen\\allengr01 SG 24 MEM 38 0 718 117 251 0.466  
## 7 Jarrett Allen\\allenja01 C 21 BRK 70 64 1852 302 465 0.649  
## 8 Kadeem Allen\\allenka01 PG 27 NYK 10 0 117 19 44 0.432  
## 9 Al-Farouq Aminu\\aminual01 PF 29 ORL 18 2 380 25 86 0.291  
## 10 Justin Anderson\\anderju01 SG 26 BRK 10 1 107 10 38 0.263  
## 11 Kyle Anderson\\anderky01 SF 26 MEM 67 28 1330 157 331 0.474  
## 13 Giannis Antetokounmpo\\antetgi01 PF 25 MIL 63 63 1917 685 1238 0.553  
## 15 Thanasis Antetokounmpo\\antetth01 SF 27 MIL 20 2 129 24 48 0.500  
## 16 Carmelo Anthony\\anthoca01 PF 35 POR 58 58 1902 336 782 0.430  
## 17 OG Anunoby\\anunoog01 SF 22 TOR 69 68 2066 286 566 0.505  
## 18 Ryan Arcidiacono\\arcidry01 PG 25 CHI 58 4 930 90 220 0.409  
## 19 Trevor Ariza\\arizatr01 SF 34 TOT 53 21 1493 142 324 0.438  
## 20 Trevor Ariza\\arizatr01 SF 34 SAC 32 0 791 64 165 0.388  
## 21 Trevor Ariza\\arizatr01 SF 34 POR 21 21 702 78 159 0.491  
## 22 D.J. Augustin\\augusdj01 PG 32 ORL 57 13 1420 184 461 0.399  
## 23 Deandre Ayton\\aytonde01 C 21 PHO 38 32 1236 310 568 0.546  
## 24 Dwayne Bacon\\bacondw01 SG 24 CHO 39 11 687 85 244 0.348  
## 25 Marvin Bagley III\\baglema01 C 20 SAC 13 6 334 78 167 0.467  
## 26 Lonzo Ball\\balllo01 PG 22 NOP 63 54 2025 277 687 0.403  
## 27 Mo Bamba\\bambamo01 C 21 ORL 62 0 878 132 286 0.462  
## 28 J.J. Barea\\bareajo01 PG 35 DAL 29 6 450 85 207 0.411  
## 29 Harrison Barnes\\barneha02 PF 27 SAC 72 72 2482 365 793 0.460  
## 30 RJ Barrett\\barrerj01 SG 19 NYK 56 55 1704 292 727 0.402  
## 31 Will Barton\\bartowi01 SF 29 DEN 58 58 1916 332 738 0.450  
## 32 Keita Bates-Diop\\bateske01 PF-SF 24 TOT 44 0 744 100 234 0.427  
## 33 Keita Bates-Diop\\bateske01 PF 24 MIN 37 0 646 87 206 0.422  
## 34 Keita Bates-Diop\\bateske01 SF 24 DEN 7 0 98 13 28 0.464  
## 35 Nicolas Batum\\batumni01 SF 31 CHO 22 3 505 28 81 0.346  
## 36 Aron Baynes\\baynear01 C 33 PHO 42 28 934 183 381 0.480  
## 37 Kent Bazemore\\bazemke01 SF 30 TOT 68 21 1688 200 534 0.375  
## 38 Kent Bazemore\\bazemke01 SF 30 POR 43 21 1111 113 326 0.347  
## 39 Kent Bazemore\\bazemke01 SF 30 SAC 25 0 577 87 208 0.418  
## 40 Darius Bazley\\bazleda01 PF 19 OKC 61 9 1130 125 317 0.394  
## 41 Bradley Beal\\bealbr01 SG 26 WAS 57 57 2053 593 1303 0.455  
## 42 Malik Beasley\\beaslma01 SG 23 TOT 55 14 1209 227 534 0.425  
## 43 Malik Beasley\\beaslma01 SG 23 DEN 41 0 746 117 301 0.389  
## 44 Malik Beasley\\beaslma01 SG 23 MIN 14 14 463 110 233 0.472  
## 45 Marco Belinelli\\belinma01 SG 33 SAS 57 0 883 123 314 0.392  
## 46 Jordan Bell\\belljo01 C 25 TOT 29 0 256 35 67 0.522  
## 47 Jordan Bell\\belljo01 C 25 MIN 27 0 235 32 60 0.533  
## 48 Jordan Bell\\belljo01 C 25 MEM 2 0 21 3 7 0.429  
## 49 DeAndre' Bembry\\bembrde01 SG 25 ATL 43 4 915 104 228 0.456  
## 50 Dragan Bender\\bendedr01 PF-C 22 TOT 16 3 286 41 92 0.446  
## 51 Dragan Bender\\bendedr01 C 22 MIL 7 0 91 10 21 0.476  
## 52 Dragan Bender\\bendedr01 PF 22 GSW 9 3 195 31 71 0.437  
## 53 Dāvis Bertāns\\bertada01 PF 27 WAS 54 4 1583 265 610 0.434  
## 54 Patrick Beverley\\beverpa01 PG 31 LAC 51 50 1342 147 341 0.431  
## 55 Khem Birch\\birchkh01 C 27 ORL 48 24 922 73 143 0.510  
## 56 Goga Bitadze\\bitadgo01 C 20 IND 54 2 471 70 150 0.467  
## 58 Nemanja Bjelica\\bjeline01 PF 31 SAC 72 67 2011 314 653 0.481  
## 59 Eric Bledsoe\\bledser01 PG 30 MIL 61 61 1646 334 703 0.475  
## 60 Bogdan Bogdanović\\bogdabo01 SG 27 SAC 61 28 1766 337 766 0.440  
## 61 Bojan Bogdanović\\bogdabo02 SF 30 UTA 63 63 2083 418 935 0.447  
## 62 Bol Bol\\bolbo01 PF 20 DEN 7 0 87 14 28 0.500  
## 63 Jonah Bolden\\boldejo01 C 24 TOT 7 0 47 4 11 0.364  
## 64 Jonah Bolden\\boldejo01 C 24 PHI 4 0 14 2 3 0.667  
## 65 Jonah Bolden\\boldejo01 C 24 PHO 3 0 33 2 8 0.250  
## 68 Isaac Bonga\\bongais01 SF 20 WAS 66 49 1250 118 234 0.504  
## 69 Devin Booker\\bookede01 SG 23 PHO 70 70 2512 627 1283 0.489  
## 70 Chris Boucher\\bouchch01 C 27 TOR 62 0 819 141 299 0.472  
## 72 Ky Bowman\\bowmaky01 PG 22 GSW 45 12 1015 134 321 0.417  
## 73 Avery Bradley\\bradlav01 SG 29 LAL 49 44 1186 170 383 0.444  
## 74 Tony Bradley\\bradlto01 C 22 UTA 58 3 663 126 189 0.667  
## 75 Jarrell Brantley\\brantja01 PF 23 UTA 9 0 96 10 28 0.357  
## 76 Ignas Brazdeikis\\brazdig01 SF 21 NYK 9 0 53 6 22 0.273  
## 77 Corey Brewer\\breweco01 PF 33 SAC 5 0 33 2 4 0.500  
## 78 Mikal Bridges\\bridgmi01 SF 23 PHO 73 32 2042 247 484 0.510  
## 79 Miles Bridges\\bridgmi02 SF 21 CHO 65 64 1995 319 753 0.424  
## 80 Oshae Brissett\\brissos01 SF 21 TOR 19 0 135 13 36 0.361  
## 81 Ryan Broekhoff\\broekry01 SF 29 DAL 17 1 180 22 59 0.373  
## 82 Malcolm Brogdon\\brogdma01 PG 27 IND 54 54 1666 326 744 0.438  
## 83 Dillon Brooks\\brookdi01 SG 24 MEM 73 73 2112 435 1068 0.407  
## 84 Bruce Brown\\brownbr01 PG 23 DET 58 43 1634 198 447 0.443  
## 85 Charlie Brown\\brownch02 SG 22 ATL 10 0 40 6 19 0.316  
## 86 Jaylen Brown\\brownja02 SG 23 BOS 57 57 1934 427 887 0.481  
## 88 Sterling Brown\\brownst02 SF 24 MIL 52 1 767 95 256 0.371  
## 89 Troy Brown Jr.\\browntr01 SF 20 WAS 69 22 1782 273 622 0.439  
## 90 Jalen Brunson\\brunsja01 PG 23 DAL 57 16 1022 181 388 0.466  
## 91 Thomas Bryant\\bryanth01 C 22 WAS 46 36 1147 243 418 0.581  
## 92 Reggie Bullock\\bullore01 SG 28 NYK 29 19 684 90 224 0.402  
## 93 Trey Burke\\burketr01 PG 27 TOT 33 1 520 94 209 0.450  
## 94 Trey Burke\\burketr01 PG 27 PHI 25 0 329 59 127 0.465  
## 95 Trey Burke\\burketr01 PG 27 DAL 8 1 191 35 82 0.427  
## 96 Alec Burks\\burksal01 SF-SG 28 TOT 66 19 1754 321 768 0.418  
## 97 Alec Burks\\burksal01 SF 28 GSW 48 18 1390 244 601 0.406  
## 98 Alec Burks\\burksal01 SG 28 PHI 18 1 364 77 167 0.461  
## 99 Deonte Burton\\burtode02 SF 26 OKC 39 0 356 43 125 0.344  
## 100 Jimmy Butler\\butleji01 SF 30 MIA 58 58 1959 345 758 0.455  
## 101 Bruno Caboclo\\cabocbr01 C 24 TOT 30 0 244 38 89 0.427  
## 102 Bruno Caboclo\\cabocbr01 C 24 MEM 22 0 192 28 69 0.406  
## 103 Bruno Caboclo\\cabocbr01 C 24 HOU 8 0 52 10 20 0.500  
## 105 Kentavious Caldwell-Pope\\caldwke01 SG 26 LAL 69 26 1762 237 507 0.467  
## 106 Vlatko Čančar\\cancavl01 PF 22 DEN 14 0 45 6 15 0.400  
## 108 DeMarre Carroll\\carrode01 SF-C 33 TOT 24 0 290 25 66 0.379  
## 109 DeMarre Carroll\\carrode01 SF 33 SAS 15 0 135 9 29 0.310  
## 110 DeMarre Carroll\\carrode01 C 33 HOU 9 0 155 16 37 0.432  
## 111 Jevon Carter\\carteje01 PG 24 PHO 58 2 945 101 243 0.416  
## 112 Vince Carter\\cartevi01 PF 43 ATL 60 0 876 107 304 0.352  
## 113 Wendell Carter Jr.\\cartewe01 C 20 CHI 43 43 1256 183 343 0.534  
## 114 Michael Carter-Williams\\cartemi01 SG 28 ORL 45 0 833 111 260 0.427  
## 115 Alex Caruso\\carusal01 PG 25 LAL 64 2 1175 120 291 0.412  
## 116 Willie Cauley-Stein\\caulewi01 C 26 TOT 54 39 1097 175 302 0.579  
## 118 Willie Cauley-Stein\\caulewi01 C 26 DAL 13 2 157 31 45 0.689  
## 120 Wilson Chandler\\chandwi01 PF 32 BRK 35 3 734 74 183 0.404  
## 121 Joe Chealey\\chealjo01 PG 24 CHO 4 0 33 0 7 0.000  
## 123 Chris Chiozza\\chiozch01 PG 24 TOT 28 2 401 55 140 0.393  
## 125 Chris Chiozza\\chiozch01 PG 24 BRK 18 2 278 45 106 0.425  
## 126 Marquese Chriss\\chrisma01 PF 22 GSW 59 21 1196 210 385 0.545  
## 127 Gary Clark\\clarkga01 SF-PF 25 TOT 42 5 567 54 133 0.406  
## 128 Gary Clark\\clarkga01 PF 25 HOU 18 0 212 23 59 0.390  
## 129 Gary Clark\\clarkga01 SF 25 ORL 24 5 355 31 74 0.419  
## 130 Brandon Clarke\\clarkbr01 PF 23 MEM 58 4 1300 296 479 0.618  
## 131 Jordan Clarkson\\clarkjo01 SG 27 TOT 71 2 1705 394 867 0.454  
## 132 Jordan Clarkson\\clarkjo01 SG 27 CLE 29 0 666 144 326 0.442  
## 133 Jordan Clarkson\\clarkjo01 SG 27 UTA 42 2 1039 250 541 0.462  
## 134 Nicolas Claxton\\claxtni01 C 20 BRK 15 0 187 27 48 0.563  
## 135 Chris Clemons\\clemoch01 SG 22 HOU 33 0 291 57 142 0.401  
## 136 Antonius Cleveland\\clevean01 SG 25 DAL 11 0 46 4 14 0.286  
## 137 Amir Coffey\\coffeam01 SG 22 LAC 18 1 159 23 54 0.426  
## 138 John Collins\\collijo01 PF 22 ATL 41 41 1363 353 605 0.583  
## 139 Zach Collins\\colliza01 PF 22 POR 11 11 290 32 68 0.471  
## 140 Mike Conley\\conlemi01 PG 32 UTA 47 41 1363 232 567 0.409  
## 141 Pat Connaughton\\connapa01 SG 27 MIL 67 4 1243 137 301 0.455  
## 142 Quinn Cook\\cookqu01 PG 26 LAL 44 1 508 91 214 0.425  
## 146 Robert Covington\\covinro01 PF-C 29 TOT 70 68 2137 305 723 0.422  
## 147 Robert Covington\\covinro01 PF 29 MIN 48 47 1411 216 496 0.435  
## 148 Robert Covington\\covinro01 C 29 HOU 22 21 726 89 227 0.392  
## 149 Allen Crabbe\\crabbal01 SG-SF 27 TOT 37 1 653 63 177 0.356  
## 150 Allen Crabbe\\crabbal01 SG 27 ATL 28 1 522 52 143 0.364  
## 151 Allen Crabbe\\crabbal01 SF 27 MIN 9 0 131 11 34 0.324  
## 152 Torrey Craig\\craigto01 SF 29 DEN 58 27 1072 124 269 0.461  
## 154 Jae Crowder\\crowdja01 SF-PF 29 TOT 65 53 1875 226 563 0.401  
## 155 Jae Crowder\\crowdja01 SF 29 MEM 45 45 1322 147 399 0.368  
## 156 Jae Crowder\\crowdja01 PF 29 MIA 20 8 553 79 164 0.482  
## 157 Jarrett Culver\\culveja01 SG 20 MIN 63 35 1506 230 569 0.404  
## 158 Seth Curry\\curryse01 SG 29 DAL 64 25 1576 284 574 0.495  
## 159 Stephen Curry\\curryst01 PG 31 GSW 5 5 139 33 82 0.402  
## 160 Troy Daniels\\danietr01 SG 28 TOT 47 0 532 72 186 0.387  
## 161 Troy Daniels\\danietr01 SG 28 LAL 41 0 456 62 158 0.392  
## 163 Anthony Davis\\davisan02 PF 26 LAL 62 62 2131 551 1096 0.503  
## 165 Terence Davis\\daviste02 SG 22 TOR 72 4 1209 199 436 0.456  
## 166 Dewayne Dedmon\\dedmode01 C 30 TOT 44 18 774 102 255 0.400  
## 167 Dewayne Dedmon\\dedmode01 C 30 SAC 34 10 541 69 171 0.404  
## 168 Dewayne Dedmon\\dedmode01 C 30 ATL 10 8 233 33 84 0.393  
## 169 Matthew Dellavedova\\dellama01 PG 29 CLE 57 4 821 62 175 0.354  
## 170 DeMar DeRozan\\derozde01 SF 30 SAS 68 68 2316 557 1049 0.531  
## 171 Cheick Diallo\\diallch01 C 23 PHO 47 2 479 92 142 0.648  
## 172 Hamidou Diallo\\diallha01 SF 21 OKC 46 3 896 132 296 0.446  
## 173 Gorgui Dieng\\dienggo01 C 30 TOT 63 17 1096 166 364 0.456  
## 174 Gorgui Dieng\\dienggo01 C 30 MIN 46 17 778 124 277 0.448  
## 175 Gorgui Dieng\\dienggo01 C 30 MEM 17 0 318 42 87 0.483  
## 176 Spencer Dinwiddie\\dinwisp01 PG 26 BRK 64 49 1994 424 1021 0.415  
## 177 Donte DiVincenzo\\divindo01 SG 23 MIL 66 24 1520 232 510 0.455  
## 178 Luka Dončić\\doncilu01 PG 20 DAL 61 61 2047 581 1255 0.463  
## 179 Luguentz Dort\\dortlu01 SF 20 OKC 36 28 820 86 218 0.394  
## 180 Damyean Dotson\\dotsoda01 SG 25 NYK 48 0 836 120 290 0.414  
## 181 Sekou Doumbouya\\doumbse01 PF 19 DET 38 19 754 92 236 0.390  
## 182 PJ Dozier\\doziepj01 SG 23 DEN 29 0 412 65 157 0.414  
## 183 Goran Dragić\\dragigo01 PG 33 MIA 59 3 1663 319 724 0.441  
## 184 Andre Drummond\\drumman01 C 26 TOT 57 56 1879 418 784 0.533  
## 185 Andre Drummond\\drumman01 C 26 DET 49 48 1654 360 679 0.530  
## 186 Andre Drummond\\drumman01 C 26 CLE 8 8 225 58 105 0.552  
## 187 Jared Dudley\\dudleja01 PF 34 LAL 45 1 364 24 60 0.400  
## 188 Kris Dunn\\dunnkr01 PG 25 CHI 51 32 1269 152 342 0.444  
## 189 Carsen Edwards\\edwarca01 SG 21 BOS 37 0 351 42 128 0.328  
## 191 Wayne Ellington\\ellinwa01 SG 32 NYK 36 1 558 61 174 0.351  
## 192 Joel Embiid\\embiijo01 C 25 PHI 51 51 1506 382 801 0.477  
## 193 James Ennis\\ennisja01 SF-SG 29 TOT 69 18 1265 160 359 0.446  
## 194 James Ennis\\ennisja01 SF 29 PHI 49 0 776 100 226 0.442  
## 195 James Ennis\\ennisja01 SG 29 ORL 20 18 489 60 133 0.451  
## 196 Drew Eubanks\\eubandr01 C 22 SAS 22 3 272 43 67 0.642  
## 197 Jacob Evans\\evansja02 SG 22 TOT 29 1 418 45 134 0.336  
## 198 Jacob Evans\\evansja02 SG 22 GSW 27 1 414 45 133 0.338  
## 200 Dante Exum\\exumda01 SG 24 TOT 35 1 485 56 119 0.471  
## 201 Dante Exum\\exumda01 SG 24 UTA 11 0 83 10 23 0.435  
## 202 Dante Exum\\exumda01 SG 24 CLE 24 1 402 46 96 0.479  
## 204 Derrick Favors\\favorde01 C 28 NOP 51 49 1243 209 339 0.617  
## 205 Cristiano Felício\\feliccr01 C 27 CHI 22 0 386 34 54 0.630  
## 206 Terrance Ferguson\\fergute01 SF 21 OKC 56 38 1257 78 220 0.355  
## 207 Bruno Fernando\\fernabr01 C 21 ATL 56 13 713 103 199 0.518  
## 208 Yogi Ferrell\\ferreyo01 PG 26 SAC 50 0 530 79 188 0.420  
## 209 Dorian Finney-Smith\\finnedo01 PF 26 DAL 71 68 2120 243 522 0.466  
## 210 Bryn Forbes\\forbebr01 SG 26 SAS 63 62 1579 242 581 0.417  
## 211 Evan Fournier\\fournev01 SF 27 ORL 66 66 2076 434 929 0.467  
## 212 De'Aaron Fox\\foxde01 PG 22 SAC 51 49 1634 391 815 0.480  
## 213 Melvin Frazier\\frazime01 SG 23 ORL 19 0 126 15 34 0.441  
## 214 Michael Frazier\\frazimi01 SG 25 HOU 13 0 145 7 29 0.241  
## 215 Tim Frazier\\fraziti01 PG 29 DET 27 11 355 34 94 0.362  
## 216 Markelle Fultz\\fultzma01 PG 21 ORL 72 60 1996 359 772 0.465  
## 217 Wenyen Gabriel\\gabriwe01 PF 22 TOT 30 1 235 21 48 0.438  
## 218 Wenyen Gabriel\\gabriwe01 PF 22 SAC 11 0 61 6 17 0.353  
## 219 Wenyen Gabriel\\gabriwe01 PF 22 POR 19 1 174 15 31 0.484  
## 221 Danilo Gallinari\\gallida01 PF 31 OKC 62 62 1834 358 817 0.438  
## 222 Langston Galloway\\gallola01 SG 28 DET 66 6 1702 236 542 0.435  
## 223 Darius Garland\\garlada01 SG 20 CLE 59 59 1824 280 699 0.401  
## 224 Marc Gasol\\gasolma01 C 35 TOR 44 43 1161 119 279 0.427  
## 225 Rudy Gay\\gayru01 PF 33 SAS 67 5 1461 266 596 0.446  
## 226 Paul George\\georgpa01 SF 29 LAC 48 48 1419 343 782 0.439  
## 227 Taj Gibson\\gibsota01 C 34 NYK 62 56 1025 167 286 0.584  
## 228 Harry Giles\\gilesha01 C 21 SAC 46 17 667 139 251 0.554  
## 229 Shai Gilgeous-Alexander\\gilgesh01 SG 21 OKC 70 70 2428 478 1015 0.471  
## 231 Brandon Goodwin\\goodwbr01 PG 24 ATL 34 1 430 76 190 0.400  
## 232 Aaron Gordon\\gordoaa01 PF 24 ORL 62 62 2017 335 767 0.437  
## 233 Eric Gordon\\gordoer01 SF 31 HOU 36 15 1016 171 463 0.369  
## 234 Devonte' Graham\\grahade01 PG 24 CHO 63 53 2211 368 963 0.382  
## 235 Treveon Graham\\grahatr01 SF 26 TOT 55 20 929 87 242 0.360  
## 236 Treveon Graham\\grahatr01 SF 26 MIN 33 20 663 62 175 0.354  
## 237 Treveon Graham\\grahatr01 SF 26 ATL 22 0 266 25 67 0.373  
## 238 Jerami Grant\\grantje01 PF 25 DEN 71 24 1892 303 634 0.478  
## 239 Jerian Grant\\grantje02 SG 27 WAS 6 0 80 10 27 0.370  
## 241 Danny Green\\greenda02 SG 32 LAL 68 68 1687 197 474 0.416  
## 242 Draymond Green\\greendr01 PF 29 GSW 43 43 1222 123 316 0.389  
## 243 JaMychal Green\\greenja01 PF 29 LAC 63 1 1307 151 352 0.429  
## 244 Javonte Green\\greenja02 SG 26 BOS 48 2 468 63 126 0.500  
## 245 Jeff Green\\greenje02 PF-C 33 TOT 48 4 960 159 344 0.462  
## 246 Jeff Green\\greenje02 PF 33 UTA 30 2 553 75 195 0.385  
## 247 Jeff Green\\greenje02 C 33 HOU 18 2 407 84 149 0.564  
## 248 Blake Griffin\\griffbl01 PF 30 DET 18 18 512 88 250 0.352  
## 249 Marko Guduric\\gudurma01 SG 24 MEM 44 0 484 62 157 0.395  
## 251 Rui Hachimura\\hachiru01 PF 21 WAS 48 48 1444 254 545 0.466  
## 252 Devon Hall\\hallde01 PG 24 OKC 11 0 81 6 30 0.200  
## 256 Dusty Hannahs\\hannadu01 SG 26 MEM 2 0 13 4 9 0.444  
## 257 Tim Hardaway Jr.\\hardati02 SG 27 DAL 71 58 2091 384 884 0.434  
## 258 James Harden\\hardeja01 SG 30 HOU 68 68 2483 672 1514 0.444  
## 259 Maurice Harkless\\harklma01 PF-SF 26 TOT 62 48 1427 142 283 0.502  
## 260 Maurice Harkless\\harklma01 PF 26 LAC 50 38 1141 112 217 0.516  
## 261 Maurice Harkless\\harklma01 SF 26 NYK 12 10 286 30 66 0.455  
## 263 Montrezl Harrell\\harremo01 C 26 LAC 63 2 1749 471 812 0.580  
## 264 Gary Harris\\harriga01 SG 25 DEN 56 55 1780 218 519 0.420  
## 265 Joe Harris\\harrijo01 SF 28 BRK 69 69 2123 381 784 0.486  
## 266 Tobias Harris\\harrito02 PF 27 PHI 72 72 2469 553 1173 0.471  
## 267 Shaquille Harrison\\harrish01 SG 26 CHI 43 10 484 77 165 0.467  
## 268 Josh Hart\\hartjo01 SF 24 NOP 65 16 1755 225 532 0.423  
## 269 Isaiah Hartenstein\\harteis01 C 21 HOU 23 2 266 44 67 0.657  
## 270 Udonis Haslem\\hasleud01 C 39 MIA 4 1 44 4 11 0.364  
## 271 Jaxson Hayes\\hayesja02 C 19 NOP 64 14 1080 174 259 0.672  
## 272 Gordon Hayward\\haywago01 SF 29 BOS 52 52 1740 350 700 0.500  
## 273 John Henson\\hensojo01 C 29 TOT 40 8 600 95 171 0.556  
## 274 John Henson\\hensojo01 C 29 CLE 29 2 412 61 120 0.508  
## 275 John Henson\\hensojo01 C 29 DET 11 6 188 34 51 0.667  
## 276 Dewan Hernandez\\hernade01 C 23 TOR 6 0 28 5 14 0.357  
## 277 Juan Hernangómez\\hernaju01 PF 24 TOT 48 14 833 100 247 0.405  
## 278 Juan Hernangómez\\hernaju01 PF 24 DEN 34 0 422 38 110 0.345  
## 279 Juan Hernangómez\\hernaju01 PF 24 MIN 14 14 411 62 137 0.453  
## 280 Willy Hernangómez\\hernawi01 C 25 CHO 31 0 375 74 139 0.532  
## 281 Tyler Herro\\herroty01 SG 20 MIA 55 8 1508 270 631 0.428  
## 283 Mario Hezonja\\hezonma01 PF 24 POR 53 4 871 92 218 0.422  
## 284 Buddy Hield\\hieldbu01 SG 27 SAC 72 44 2216 498 1162 0.429  
## 285 George Hill\\hillge01 PG 33 MIL 59 2 1271 194 376 0.516  
## 286 Solomon Hill\\hillso01 PF 28 TOT 59 4 1088 110 278 0.396  
## 287 Solomon Hill\\hillso01 PF 28 MEM 48 3 901 96 233 0.412  
## 288 Solomon Hill\\hillso01 PF 28 MIA 11 1 187 14 45 0.311  
## 289 Jaylen Hoard\\hoardja01 PF 20 POR 13 0 103 15 32 0.469  
## 290 Aaron Holiday\\holidaa01 PG 23 IND 66 33 1617 233 563 0.414  
## 291 Jrue Holiday\\holidjr01 SG 29 NOP 61 61 2117 458 1006 0.455  
## 292 Justin Holiday\\holidju01 SF 30 IND 73 6 1826 208 486 0.428  
## 293 Rondae Hollis-Jefferson\\holliro01 PF 25 TOR 60 6 1122 155 329 0.471  
## 295 Rodney Hood\\hoodro01 SF 27 POR 21 21 619 87 172 0.506  
## 296 Al Horford\\horfoal01 C 33 PHI 67 61 2025 319 709 0.450  
## 297 Talen Horton-Tucker\\hortota01 SG 19 LAL 6 1 81 14 30 0.467  
## 298 Danuel House\\houseda01 SF 26 HOU 63 52 1913 230 539 0.427  
## 299 Dwight Howard\\howardw01 C 34 LAL 69 2 1306 202 277 0.729  
## 301 Kevin Huerter\\huertke01 SG 21 ATL 56 48 1760 252 610 0.413  
## 302 De'Andre Hunter\\huntede01 SF 22 ATL 63 62 2018 280 683 0.410  
## 303 Chandler Hutchison\\hutchch01 SF 23 CHI 28 10 527 80 175 0.457  
## 304 Serge Ibaka\\ibakase01 C 30 TOR 55 27 1485 343 670 0.512  
## 305 Andre Iguodala\\iguodan01 SF 36 MIA 21 0 418 38 88 0.432  
## 306 Ersan İlyasova\\ilyaser01 PF 32 MIL 63 8 986 146 313 0.466  
## 307 Joe Ingles\\inglejo01 PF 32 UTA 72 45 2137 246 553 0.445  
## 308 Brandon Ingram\\ingrabr01 PF 22 NOP 62 62 2104 507 1096 0.463  
## 309 Kyrie Irving\\irvinky01 PG 27 BRK 20 20 658 199 416 0.478  
## 310 Jonathan Isaac\\isaacjo01 PF 22 ORL 34 32 980 156 332 0.470  
## 311 Wesley Iwundu\\iwundwe01 SF 25 ORL 52 21 953 97 233 0.416  
## 312 Frank Jackson\\jacksfr01 PG 21 NOP 59 2 797 134 331 0.405  
## 313 Jaren Jackson Jr.\\jacksja02 C 20 MEM 57 57 1622 353 753 0.469  
## 314 Josh Jackson\\jacksjo02 SF 22 MEM 22 0 381 70 159 0.440  
## 315 Justin Jackson\\jacksju01 PF 24 DAL 65 3 1045 135 341 0.396  
## 316 Reggie Jackson\\jacksre01 SG-PG 29 TOT 31 16 743 134 326 0.411  
## 317 Reggie Jackson\\jacksre01 PG 29 DET 14 10 381 76 198 0.384  
## 318 Reggie Jackson\\jacksre01 SG 29 LAC 17 6 362 58 128 0.453  
## 319 Justin James\\jamesju01 SF 23 SAC 36 0 232 35 84 0.417  
## 320 LeBron James\\jamesle01 PG 35 LAL 67 67 2316 643 1303 0.493  
## 322 DaQuan Jeffries\\jeffrda01 SG 22 SAC 13 0 141 20 40 0.500  
## 323 Ty Jerome\\jeromty01 SG 22 PHO 31 0 328 38 113 0.336  
## 324 Alize Johnson\\johnsal02 PF 23 IND 17 1 118 12 29 0.414  
## 325 B.J. Johnson\\johnsbj01 SF 24 ORL 10 0 83 9 32 0.281  
## 326 Cameron Johnson\\johnsca02 PF 23 PHO 57 9 1255 176 405 0.435  
## 327 James Johnson\\johnsja01 PF-C 32 TOT 32 1 619 103 215 0.479  
## 328 James Johnson\\johnsja01 PF 32 MIA 18 0 281 39 87 0.448  
## 329 James Johnson\\johnsja01 C 32 MIN 14 1 338 64 128 0.500  
## 330 Keldon Johnson\\johnske04 SF 20 SAS 17 1 301 53 89 0.596  
## 331 Stanley Johnson\\johnsst04 PF 23 TOR 25 0 150 22 59 0.373  
## 332 Tyler Johnson\\johnsty01 PG-SG 27 TOT 39 7 709 97 250 0.388  
## 333 Tyler Johnson\\johnsty01 PG 27 PHO 31 3 515 65 171 0.380  
## 334 Tyler Johnson\\johnsty01 SG 27 BRK 8 4 194 32 79 0.405  
## 335 Nikola Jokić\\jokicni01 C 24 DEN 73 73 2336 565 1071 0.528  
## 336 Damian Jones\\jonesda03 C 24 ATL 55 27 887 121 178 0.680  
## 337 Derrick Jones Jr.\\jonesde02 SF 22 MIA 59 16 1375 184 349 0.527  
## 338 Tyus Jones\\jonesty01 PG 23 MEM 65 6 1232 197 429 0.459  
## 340 Cory Joseph\\josepco01 PG 28 SAC 72 26 1759 171 412 0.415  
## 341 Mfiondu Kabengele\\kabenmf01 C 22 LAC 12 0 64 14 32 0.438  
## 342 Frank Kaminsky\\kaminfr01 C 26 PHO 39 13 777 138 307 0.450  
## 343 Enes Kanter\\kanteen01 C 27 BOS 58 7 983 199 348 0.572  
## 344 Luke Kennard\\kennalu01 SG 23 DET 28 25 922 151 342 0.442  
## 346 Michael Kidd-Gilchrist\\kiddgmi01 PF 26 TOT 25 0 281 22 66 0.333  
## 347 Michael Kidd-Gilchrist\\kiddgmi01 PF 26 CHO 12 0 160 18 53 0.340  
## 348 Michael Kidd-Gilchrist\\kiddgmi01 PF 26 DAL 13 0 121 4 13 0.308  
## 349 Louis King\\kinglo02 SF 20 DET 10 0 62 8 21 0.381  
## 350 Maxi Kleber\\klebima01 PF 28 DAL 74 21 1890 237 514 0.461  
## 351 Brandon Knight\\knighbr03 SG-PG 28 TOT 25 3 462 59 167 0.353  
## 352 Brandon Knight\\knighbr03 SG 28 CLE 16 0 241 28 86 0.326  
## 353 Brandon Knight\\knighbr03 PG 28 DET 9 3 221 31 81 0.383  
## 354 Kevin Knox\\knoxke01 SF 20 NYK 65 4 1166 144 401 0.359  
## 355 John Konchar\\konchjo01 SG 23 MEM 19 0 181 24 37 0.649  
## 356 Furkan Korkmaz\\korkmfu01 SG 22 PHI 72 12 1559 242 563 0.430  
## 357 Luke Kornet\\kornelu01 C 24 CHI 36 14 559 82 187 0.439  
## 358 Kyle Korver\\korveky01 SF 38 MIL 58 1 960 126 293 0.430  
## 359 Rodions Kurucs\\kurucro01 PF 21 BRK 47 9 684 79 177 0.446  
## 360 Kyle Kuzma\\kuzmaky01 PF 24 LAL 61 9 1526 291 668 0.436  
## 361 Skal Labissière\\labissk01 C 23 POR 33 1 567 81 147 0.551  
## 362 Jeremy Lamb\\lambje01 SG 27 IND 46 42 1291 216 479 0.451  
## 363 Romeo Langford\\langfro01 SG 20 BOS 32 2 370 28 80 0.350  
## 364 Zach LaVine\\lavinza01 SG 24 CHI 60 60 2085 539 1199 0.450  
## 365 Vic Law\\lawvi01 PF 24 ORL 8 0 62 6 18 0.333  
## 366 Jake Layman\\laymaja01 SF 25 MIN 23 2 505 81 179 0.453  
## 367 T.J. Leaf\\leaftj01 PF 22 IND 28 1 222 36 86 0.419  
## 368 Jalen Lecque\\lecquja01 SG 19 PHO 5 0 32 4 10 0.400  
## 369 Courtney Lee\\leeco01 SG 34 DAL 24 9 345 40 82 0.488  
## 370 Damion Lee\\leeda03 SG 27 GSW 49 36 1423 213 511 0.417  
## 371 Alex Len\\lenal01 C 26 TOT 55 12 970 177 319 0.555  
## 372 Alex Len\\lenal01 C 26 ATL 40 9 745 142 260 0.546  
## 373 Alex Len\\lenal01 C 26 SAC 15 3 225 35 59 0.593  
## 374 Kawhi Leonard\\leonaka01 SF 28 LAC 57 57 1848 532 1133 0.470  
## 375 Meyers Leonard\\leoname01 C 27 MIA 51 49 1034 119 234 0.509  
## 376 Caris LeVert\\leverca01 SG 25 BRK 45 31 1330 311 732 0.425  
## 377 Damian Lillard\\lillada01 PG 29 POR 66 66 2474 624 1349 0.463  
## 378 Nassir Little\\littlna01 PF 19 POR 48 5 573 65 151 0.430  
## 379 Kevon Looney\\looneke01 C 23 GSW 20 4 262 29 79 0.367  
## 380 Brook Lopez\\lopezbr01 C 31 MIL 68 67 1817 292 671 0.435  
## 381 Robin Lopez\\lopezro01 C 31 MIL 66 5 958 147 299 0.492  
## 382 Kevin Love\\loveke01 PF 31 CLE 56 56 1780 327 727 0.450  
## 383 Kyle Lowry\\lowryky01 PG 33 TOR 58 58 2098 334 803 0.416  
## 384 Timothé Luwawu-Cabarrot\\luwawti01 SF 24 BRK 47 2 853 117 269 0.435  
## 385 Trey Lyles\\lylestr01 PF 24 SAS 63 53 1271 153 343 0.446  
## 388 Josh Magette\\magetjo01 PG 30 ORL 8 0 38 5 15 0.333  
## 389 Ian Mahinmi\\mahinia01 C 33 WAS 38 35 808 104 210 0.495  
## 390 Thon Maker\\makerth01 C 22 DET 60 14 776 93 193 0.482  
## 391 Terance Mann\\mannte01 SF 23 LAC 41 6 362 37 79 0.468  
## 392 Boban Marjanović\\marjabo01 C 31 DAL 44 5 422 121 211 0.573  
## 393 Lauri Markkanen\\markkla01 PF 22 CHI 50 50 1492 251 591 0.425  
## 394 Caleb Martin\\martica02 SF 24 CHO 18 1 317 37 84 0.440  
## 395 Cody Martin\\martico01 SF 24 CHO 48 3 903 89 207 0.430  
## 396 Jeremiah Martin\\martije02 PG 23 BRK 9 0 99 24 53 0.453  
## 397 Kelan Martin\\martike03 SF 24 MIN 31 4 495 71 181 0.392  
## 398 Frank Mason III\\masonfr01 PG 25 MIL 9 0 118 23 51 0.451  
## 399 Garrison Mathews\\mathega01 SG 23 WAS 18 0 227 24 56 0.429  
## 400 Wesley Matthews\\matthwe02 SG 33 MIL 67 67 1635 167 422 0.396  
## 401 Luc Mbah a Moute\\mbahalu01 PF 33 HOU 3 0 25 2 5 0.400  
## 402 Patrick McCaw\\mccawpa01 SF 24 TOR 37 12 908 67 162 0.414  
## 403 CJ McCollum\\mccolcj01 SG 28 POR 70 70 2556 611 1356 0.451  
## 404 T.J. McConnell\\mccontj01 PG 27 IND 71 3 1326 212 411 0.516  
## 405 Jalen McDaniels\\mcdanja01 SF 22 CHO 16 0 293 33 70 0.471  
## 406 Doug McDermott\\mcderdo01 PF 28 IND 69 0 1372 267 547 0.488  
## 407 JaVale McGee\\mcgeeja01 C 32 LAL 68 68 1130 195 306 0.637  
## 408 Rodney McGruder\\mcgruro01 SG 28 LAC 56 4 871 72 181 0.398  
## 409 Alfonzo McKinnie\\mckinal01 SF 27 CLE 40 1 593 73 171 0.427  
## 410 Jordan McLaughlin\\mclaujo01 PG 23 MIN 30 2 590 87 178 0.489  
## 411 Ben McLemore\\mclembe01 SF 26 HOU 71 23 1619 242 545 0.444  
## 412 Jordan McRae\\mcraejo01 SG 28 TOT 37 4 784 149 366 0.407  
## 413 Jordan McRae\\mcraejo01 SG 28 WAS 29 4 654 133 317 0.420  
## 414 Jordan McRae\\mcraejo01 SG 28 DEN 4 0 32 2 6 0.333  
## 415 Jordan McRae\\mcraejo01 SG 28 DET 4 0 98 14 43 0.326  
## 416 Nicolò Melli\\mellini01 C 29 NOP 60 8 1042 136 323 0.421  
## 417 De'Anthony Melton\\meltode01 PG 21 MEM 60 8 1167 161 401 0.401  
## 418 Chimezie Metu\\metuch01 C 22 SAS 18 0 105 24 42 0.571  
## 419 Khris Middleton\\middlkh01 SF 28 MIL 62 59 1853 471 947 0.497  
## 421 C.J. Miles\\milescj01 SF 32 WAS 10 0 161 19 59 0.322  
## 422 Malcolm Miller\\millema01 SF 26 TOR 28 1 162 12 29 0.414  
## 423 Patty Mills\\millspa02 PG 31 SAS 66 1 1485 258 598 0.431  
## 424 Paul Millsap\\millspa01 PF 34 DEN 51 48 1240 211 438 0.482  
## 425 Shake Milton\\miltosh01 SG 23 PHI 40 24 805 134 277 0.484  
## 426 Donovan Mitchell\\mitchdo01 SG 23 UTA 69 69 2364 602 1342 0.449  
## 428 Adam Mokoka\\mokokad01 SF 21 CHI 11 0 112 12 28 0.429  
## 429 Malik Monk\\monkma01 SG 21 CHO 55 1 1169 212 488 0.434  
## 431 E'Twaun Moore\\mooreet01 SG 30 NOP 56 6 1020 186 437 0.426  
## 432 Ja Morant\\moranja01 PG 20 MEM 67 67 2074 447 937 0.477  
## 433 Juwan Morgan\\morgaju01 PF 22 UTA 21 0 134 15 26 0.577  
## 434 Marcus Morris\\morrima03 SF-PF 30 TOT 62 62 1936 355 810 0.438  
## 435 Marcus Morris\\morrima03 SF 30 NYK 43 43 1387 281 636 0.442  
## 436 Marcus Morris\\morrima03 PF 30 LAC 19 19 549 74 174 0.425  
## 437 Markieff Morris\\morrima02 PF 30 TOT 58 17 1187 203 458 0.443  
## 438 Markieff Morris\\morrima02 PF 30 DET 44 16 988 175 389 0.450  
## 439 Markieff Morris\\morrima02 PF 30 LAL 14 1 199 28 69 0.406  
## 440 Monte Morris\\morrimo01 PG 24 DEN 73 12 1636 260 566 0.459  
## 441 Johnathan Motley\\motlejo01 PF 24 LAC 13 0 41 11 15 0.733  
## 442 Emmanuel Mudiay\\mudiaem01 PG 23 UTA 54 2 850 151 327 0.462  
## 443 Mychal Mulder\\muldemy01 SF 25 GSW 7 3 204 26 67 0.388  
## 444 Dejounte Murray\\murrade01 PG 23 SAS 66 58 1687 294 637 0.462  
## 445 Jamal Murray\\murraja01 PG 22 DEN 59 59 1904 408 894 0.456  
## 446 Džanan Musa\\musadz01 SF 20 BRK 40 0 487 64 172 0.372  
## 447 Mike Muscala\\muscami01 C 28 OKC 47 2 572 77 189 0.407  
## 448 Sviatoslav Mykhailiuk\\mykhasv01 SF 22 DET 56 27 1265 166 405 0.410  
## 449 Abdel Nader\\naderab01 SF 26 OKC 55 6 867 123 263 0.468  
## 450 Larry Nance Jr.\\nancela02 PF 27 CLE 56 10 1472 229 431 0.531  
## 451 Shabazz Napier\\napiesh01 PG 28 TOT 56 32 1344 188 456 0.412  
## 452 Shabazz Napier\\napiesh01 PG 28 MIN 36 22 856 114 283 0.403  
## 453 Shabazz Napier\\napiesh01 PG 28 WAS 20 10 488 74 173 0.428  
## 454 Raul Neto\\netora01 PG 27 PHI 54 3 668 101 222 0.455  
## 455 Malik Newman\\newmama01 SG 22 CLE 1 0 4 0 2 0.000  
## 456 Georges Niang\\niangge01 PF 26 UTA 66 1 923 141 322 0.438  
## 458 Nerlens Noel\\noelne01 C 25 OKC 61 7 1127 184 269 0.684  
## 459 Zach Norvell\\norveza01 SG 22 TOT 5 0 41 3 12 0.250  
## 461 Zach Norvell\\norveza01 SG 22 GSW 3 0 36 3 11 0.273  
## 462 Jaylen Nowell\\nowelja01 SG 20 MIN 15 0 151 19 53 0.358  
## 463 Frank Ntilikina\\ntilila01 PG 21 NYK 57 26 1187 131 333 0.393  
## 464 Kendrick Nunn\\nunnke01 PG 24 MIA 67 67 1962 401 914 0.439  
## 465 Jusuf Nurkić\\nurkiju01 C 25 POR 8 8 253 54 109 0.495  
## 466 David Nwaba\\nwabada01 SF 27 BRK 20 0 268 37 71 0.521  
## 467 Royce O'Neale\\onealro01 SF 26 UTA 71 62 2049 158 365 0.433  
## 468 Kyle O'Quinn\\oquinky01 C 29 PHI 29 2 313 42 85 0.494  
## 469 Semi Ojeleye\\ojelese01 PF 25 BOS 69 6 1011 80 196 0.408  
## 470 Jahlil Okafor\\okafoja01 C 24 NOP 30 9 467 101 162 0.623  
## 471 Elie Okobo\\okoboel01 PG 22 PHO 55 3 719 72 181 0.398  
## 472 Josh Okogie\\okogijo01 SG 21 MIN 62 28 1547 170 398 0.427  
## 473 KZ Okpala\\okpalkz01 PF 20 MIA 5 0 26 3 5 0.600  
## 474 Victor Oladipo\\oladivi01 SG 27 IND 19 16 528 97 246 0.394  
## 475 Kelly Olynyk\\olynyke01 C 28 MIA 67 9 1300 184 398 0.462  
## 476 Miye Oni\\onimi01 SF 22 UTA 10 1 109 12 32 0.375  
## 477 Cedi Osman\\osmande01 SF 24 CLE 65 65 1910 266 609 0.437  
## 478 Kelly Oubre Jr.\\oubreke01 SF 24 PHO 56 55 1933 373 826 0.452  
## 479 Tariq Owens\\owensta01 PF 24 PHO 3 0 15 1 5 0.200  
## 480 Jeremy Pargo\\pargoje01 PG 33 GSW 3 0 44 11 22 0.500  
## 481 Jabari Parker\\parkeja01 PF 24 TOT 38 23 917 219 429 0.510  
## 482 Jabari Parker\\parkeja01 PF 24 ATL 32 23 837 198 393 0.504  
## 483 Jabari Parker\\parkeja01 PF 24 SAC 6 0 80 21 36 0.583  
## 485 Eric Paschall\\pascher01 PF 23 GSW 60 26 1654 318 640 0.497  
## 486 Anžejs Pasečņiks\\pasecan01 C 24 WAS 27 0 437 61 116 0.526  
## 487 Patrick Patterson\\pattepa01 PF 30 LAC 59 18 776 95 233 0.408  
## 489 Chris Paul\\paulch01 PG 34 OKC 70 70 2208 434 887 0.489  
## 490 Cameron Payne\\payneca01 SG 25 PHO 8 0 183 33 68 0.485  
## 491 Elfrid Payton\\paytoel01 PG 25 NYK 45 36 1246 193 440 0.439  
## 492 Gary Payton II\\paytoga02 SF 27 WAS 29 17 432 48 116 0.414  
## 493 Norvel Pelle\\pelleno01 C 26 PHI 24 0 232 25 48 0.521  
## 494 Theo Pinson\\pinsoth01 SG 24 BRK 33 0 365 45 155 0.290  
## 495 Mason Plumlee\\plumlma01 C 29 DEN 61 1 1057 177 288 0.615  
## 497 Vincent Poirier\\poirivi01 C 26 BOS 22 0 130 17 36 0.472  
## 498 Shamorie Ponds\\pondssh01 PG 21 TOR 4 0 11 3 5 0.600  
## 499 Jordan Poole\\poolejo01 SG 20 GSW 57 14 1274 167 502 0.333  
## 500 Kevin Porter Jr.\\porteke02 SF 19 CLE 50 3 1162 186 421 0.442  
## 501 Michael Porter Jr.\\portemi01 SF 21 DEN 55 8 903 195 383 0.509  
## 502 Otto Porter\\porteot01 SF 26 CHI 14 9 331 62 140 0.443  
## 503 Bobby Portis\\portibo01 PF 24 NYK 66 5 1393 265 589 0.450  
## 504 Kristaps Porziņģis\\porzikr01 C 24 DAL 57 57 1814 398 932 0.427  
## 505 Dwight Powell\\poweldw01 C 28 DAL 40 37 1061 146 229 0.638  
## 506 Norman Powell\\powelno01 SG 26 TOR 52 26 1479 296 598 0.495  
## 507 Taurean Prince\\princta02 PF 25 BRK 64 61 1857 278 739 0.376  
## 508 Chasson Randle\\randlch01 PG 26 GSW 3 0 40 0 4 0.000  
## 509 Julius Randle\\randlju01 PF 25 NYK 64 64 2080 463 1006 0.460  
## 510 Josh Reaves\\reavejo02 SF 22 DAL 4 0 28 3 9 0.333  
## 511 Cam Reddish\\reddica01 SF 20 ATL 58 34 1551 213 554 0.384  
## 512 J.J. Redick\\redicjj01 SG 35 NOP 60 36 1581 286 631 0.453  
## 513 Naz Reid\\reidna01 C 20 MIN 30 11 495 100 243 0.412  
## 514 Josh Richardson\\richajo01 SG 26 PHI 55 53 1693 278 646 0.430  
## 515 Austin Rivers\\riverau01 SG 27 HOU 68 4 1594 211 501 0.421  
## 516 Andre Roberson\\roberan03 SF 28 OKC 7 0 87 8 29 0.276  
## 517 Duncan Robinson\\robindu01 SG 25 MIA 73 68 2166 323 687 0.470  
## 518 Glenn Robinson III\\robingl02 SF 26 TOT 62 52 1786 288 592 0.486  
## 519 Glenn Robinson III\\robingl02 SF 26 GSW 48 48 1516 244 507 0.481  
## 520 Glenn Robinson III\\robingl02 SF 26 PHI 14 4 270 44 85 0.518  
## 521 Jerome Robinson\\robinje01 SG 22 TOT 63 6 979 115 310 0.371  
## 522 Jerome Robinson\\robinje01 SG 22 LAC 42 1 476 46 136 0.338  
## 523 Jerome Robinson\\robinje01 SG 22 WAS 21 5 503 69 174 0.397  
## 527 Rajon Rondo\\rondora01 PG 33 LAL 48 3 984 137 328 0.418  
## 528 Derrick Rose\\rosede01 PG 31 DET 50 15 1298 369 753 0.490  
## 529 Terrence Ross\\rosste01 SG 28 ORL 69 0 1889 341 846 0.403  
## 530 Terry Rozier\\roziete01 PG 25 CHO 63 63 2164 398 941 0.423  
## 531 Ricky Rubio\\rubiori01 PG 29 PHO 65 65 2016 287 692 0.415  
## 532 D'Angelo Russell\\russeda01 PG 23 TOT 45 45 1452 360 846 0.426  
## 533 D'Angelo Russell\\russeda01 PG 23 GSW 33 33 1060 273 635 0.430  
## 534 D'Angelo Russell\\russeda01 PG 23 MIN 12 12 392 87 211 0.412  
## 535 Domantas Sabonis\\sabondo01 PF 23 IND 62 62 2159 458 848 0.540  
## 536 Luka Šamanić\\samanlu01 PF 20 SAS 3 1 48 5 16 0.313  
## 537 JaKarr Sampson\\sampsja02 PF 26 IND 34 12 471 68 115 0.591  
## 538 Dario Šarić\\saricda01 PF 25 PHO 66 51 1632 256 538 0.476  
## 539 Tomáš Satoranský\\satorto01 SG 28 CHI 65 64 1878 237 551 0.430  
## 540 Admiral Schofield\\schofad01 PF 22 WAS 33 2 368 35 92 0.380  
## 541 Dennis Schröder\\schrode01 PG 26 OKC 65 2 1999 453 965 0.469  
## 542 Mike Scott\\scottmi01 PF 31 PHI 68 11 1207 149 350 0.426  
## 543 Thabo Sefolosha\\sefolth01 PF 35 HOU 41 0 436 37 91 0.407  
## 544 Collin Sexton\\sextoco01 PG 21 CLE 65 65 2143 513 1086 0.472  
## 545 Landry Shamet\\shamela01 SG 22 LAC 53 30 1452 158 391 0.404  
## 546 Marial Shayok\\shayoma01 SG 24 PHI 4 0 28 3 12 0.250  
## 547 Iman Shumpert\\shumpim01 SF 29 BRK 13 0 241 21 64 0.328  
## 548 Pascal Siakam\\siakapa01 PF 25 TOR 60 60 2110 500 1104 0.453  
## 549 Chris Silva\\silvach01 PF 23 MIA 44 0 346 48 78 0.615  
## 550 Ben Simmons\\simmobe01 PG 23 PHI 57 57 2017 375 647 0.580  
## 551 Anfernee Simons\\simonan01 SG 20 POR 70 4 1449 214 536 0.399  
## 552 Alen Smailagić\\smailal01 C 19 GSW 14 0 139 20 40 0.500  
## 553 Marcus Smart\\smartma01 SG 25 BOS 60 40 1919 256 682 0.375  
## 554 Dennis Smith Jr.\\smithde03 PG 22 NYK 34 3 537 72 211 0.341  
## 555 Ish Smith\\smithis01 PG 31 WAS 68 23 1787 308 689 0.447  
## 556 J.R. Smith\\smithjr01 SG 34 LAL 6 0 79 7 22 0.318  
## 557 Zhaire Smith\\smithzh01 SF 20 PHI 7 0 32 3 11 0.273  
## 558 Tony Snell\\snellto01 SF 28 DET 59 57 1641 170 382 0.445  
## 559 Omari Spellman\\spellom01 C 22 GSW 49 3 886 127 295 0.431  
## 560 Max Strus\\strusma01 SF 23 CHI 2 0 6 2 3 0.667  
## 561 Edmond Sumner\\sumneed01 SG 24 IND 31 3 447 61 142 0.430  
## 562 Caleb Swanigan\\swanica01 PF-C 22 TOT 27 1 288 28 47 0.596  
## 564 Caleb Swanigan\\swanica01 PF 22 POR 20 1 265 26 43 0.605  
## 565 Jayson Tatum\\tatumja01 PF 21 BOS 66 66 2265 552 1226 0.450  
## 566 Jeff Teague\\teaguje01 PG 31 TOT 59 17 1464 213 489 0.436  
## 567 Jeff Teague\\teaguje01 PG 31 MIN 34 13 945 145 324 0.448  
## 568 Jeff Teague\\teaguje01 PG 31 ATL 25 4 519 68 165 0.412  
## 569 Garrett Temple\\templga01 SG 33 BRK 62 35 1730 222 587 0.378  
## 570 Daniel Theis\\theisda01 C 27 BOS 65 64 1566 241 426 0.566  
## 571 Isaiah Thomas\\thomais02 PG 30 WAS 40 37 925 174 426 0.408  
## 572 Khyri Thomas\\thomakh01 SG 23 DET 8 0 61 5 17 0.294  
## 573 Lance Thomas\\thomala01 PF 31 BRK 7 4 98 8 23 0.348  
## 574 Matt Thomas\\thomama02 SG 25 TOR 41 1 440 73 150 0.487  
## 575 Tristan Thompson\\thomptr01 PF 28 CLE 57 51 1721 288 562 0.512  
## 576 Sindarius Thornwell\\thornsi01 SF 25 NOP 2 0 35 6 11 0.545  
## 577 Matisse Thybulle\\thybuma01 SG 22 PHI 65 14 1287 112 265 0.423  
## 578 Anthony Tolliver\\tollian01 PF 34 TOT 55 13 872 65 182 0.357  
## 579 Anthony Tolliver\\tollian01 PF 34 POR 33 9 554 43 117 0.368  
## 580 Anthony Tolliver\\tollian01 PF 34 SAC 9 0 82 3 17 0.176  
## 581 Anthony Tolliver\\tollian01 PF 34 MEM 13 4 236 19 48 0.396  
## 582 Juan Toscano-Anderson\\toscaju01 SG 26 GSW 13 6 272 29 63 0.460  
## 583 Karl-Anthony Towns\\townska01 C 24 MIN 35 35 1187 316 622 0.508  
## 584 Gary Trent Jr.\\trentga02 SF 21 POR 61 8 1332 196 441 0.444  
## 585 Allonzo Trier\\trieral01 SG 24 NYK 24 1 291 51 106 0.481  
## 586 P.J. Tucker\\tuckepj01 PF 34 HOU 72 72 2467 177 426 0.415  
## 587 Rayjon Tucker\\tuckera01 SG 22 UTA 20 0 161 20 43 0.465  
## 588 Evan Turner\\turneev01 SG 31 ATL 19 0 251 25 67 0.373  
## 589 Myles Turner\\turnemy01 C 23 IND 62 62 1826 268 587 0.457  
## 590 Jarrod Uthoff\\uthofja01 PF 26 TOT 7 0 53 7 18 0.389  
## 591 Jarrod Uthoff\\uthofja01 PF 26 MEM 4 0 14 1 7 0.143  
## 593 Jonas Valančiūnas\\valanjo01 C 27 MEM 70 70 1845 432 739 0.585  
## 594 Denzel Valentine\\valende01 SF 26 CHI 36 5 488 97 237 0.409  
## 595 Jarred Vanderbilt\\vandeja01 PF 20 TOT 11 0 46 5 8 0.625  
## 598 Fred VanVleet\\vanvlfr01 SG 25 TOR 54 54 1928 319 773 0.413  
## 600 Noah Vonleh\\vonleno01 C 24 TOT 36 1 377 52 92 0.565  
## 601 Noah Vonleh\\vonleno01 C 24 MIN 29 1 347 47 86 0.547  
## 602 Noah Vonleh\\vonleno01 C 24 DEN 7 0 30 5 6 0.833  
## 603 Nikola Vučević\\vucevni01 C 29 ORL 62 62 1998 493 1033 0.477  
## 604 Dean Wade\\wadede01 PF 23 CLE 12 0 71 9 13 0.692  
## 605 Moritz Wagner\\wagnemo01 C 22 WAS 45 5 835 145 266 0.545  
## 606 Dion Waiters\\waitedi01 SG 28 TOT 10 0 207 41 99 0.414  
## 607 Dion Waiters\\waitedi01 SG 28 MIA 3 0 42 10 26 0.385  
## 608 Dion Waiters\\waitedi01 SG 28 LAL 7 0 165 31 73 0.425  
## 609 Kemba Walker\\walkeke02 PG 29 BOS 56 56 1742 378 889 0.425  
## 610 Lonnie Walker\\walkelo01 SG 21 SAS 61 12 988 152 357 0.426  
## 611 Tyrone Wallace\\wallaty01 SG 25 ATL 14 0 160 14 44 0.318  
## 612 Derrick Walton\\waltode01 PG 24 TOT 26 1 248 18 39 0.462  
## 613 Derrick Walton\\waltode01 PG 24 LAC 23 1 222 17 36 0.472  
## 615 Brad Wanamaker\\wanambr01 PG 30 BOS 71 1 1369 162 362 0.448  
## 616 T.J. Warren\\warretj01 SF 26 IND 67 67 2202 534 997 0.536  
## 617 P.J. Washington\\washipj01 PF 21 CHO 58 57 1759 268 589 0.455  
## 618 Yuta Watanabe\\watanyu01 SF 25 MEM 18 0 105 15 34 0.441  
## 619 Tremont Waters\\watertr01 PG 22 BOS 11 1 119 14 49 0.286  
## 620 Paul Watson\\watsopa01 SF 25 TOT 10 0 87 10 26 0.385  
## 622 Paul Watson\\watsopa01 SF 25 TOR 8 0 70 10 19 0.526  
## 623 Quinndary Weatherspoon\\weathqu01 SG 23 SAS 11 0 78 5 17 0.294  
## 624 Russell Westbrook\\westbru01 PG 31 HOU 57 57 2049 604 1281 0.472  
## 625 Coby White\\whiteco01 PG 19 CHI 65 1 1674 312 792 0.394  
## 626 Derrick White\\whitede01 SG 25 SAS 68 20 1677 253 552 0.458  
## 627 Hassan Whiteside\\whiteha01 C 30 POR 67 61 2008 436 702 0.621  
## 628 Andrew Wiggins\\wiggian01 SF 24 TOT 54 54 1858 437 978 0.447  
## 629 Andrew Wiggins\\wiggian01 SF 24 MIN 42 42 1455 351 790 0.444  
## 630 Andrew Wiggins\\wiggian01 SF 24 GSW 12 12 403 86 188 0.457  
## 631 Grant Williams\\willigr01 PF 21 BOS 69 5 1043 87 211 0.412  
## 632 Johnathan Williams\\willijo04 PF 24 WAS 15 6 180 19 34 0.559  
## 633 Kenrich Williams\\willike04 PF 25 NOP 39 18 832 51 147 0.347  
## 634 Lou Williams\\willilo02 PG 33 LAC 65 8 1864 391 936 0.418  
## 635 Marvin Williams\\willima02 PF 33 TOT 58 1 1129 119 267 0.446  
## 636 Marvin Williams\\willima02 PF 33 CHO 41 1 808 94 210 0.448  
## 637 Marvin Williams\\willima02 PF 33 MIL 17 0 321 25 57 0.439  
## 639 Nigel Williams-Goss\\willini01 PG 25 UTA 10 0 50 5 16 0.313  
## 640 Zion Williamson\\willizi01 PF 19 NOP 24 24 668 210 360 0.583  
## 641 D.J. Wilson\\wilsodj01 PF 23 MIL 37 1 363 52 132 0.394  
## 642 Justise Winslow\\winslju01 SG 23 MIA 11 5 352 50 129 0.388  
## 643 Christian Wood\\woodch01 PF 24 DET 62 12 1325 288 508 0.567  
## 644 Delon Wright\\wrighde01 PG 27 DAL 73 5 1570 190 411 0.462  
## 645 Justin Wright-Foreman\\wrighju02 PG 22 UTA 4 0 45 7 20 0.350  
## 646 Thaddeus Young\\youngth01 PF 31 CHI 64 16 1591 269 601 0.448  
## 647 Trae Young\\youngtr01 PG 21 ATL 60 60 2120 546 1249 0.437  
## 648 Cody Zeller\\zelleco01 C 27 CHO 58 39 1341 251 479 0.524  
## 651 Ivica Zubac\\zubaciv01 C 22 LAC 72 70 1326 236 385 0.613  
## X3P X3PA X3P. X2P X2PA X2P. eFG. FT FTA FT. ORB DRB TRB AST STL BLK  
## 1 1 3 0.333 282 475 0.594 0.593 117 201 0.582 207 376 583 146 51 67  
## 2 2 14 0.143 438 776 0.564 0.558 264 382 0.691 176 559 735 368 82 93  
## 3 61 157 0.389 330 636 0.519 0.532 158 191 0.827 103 289 392 129 36 87  
## 5 46 133 0.346 52 133 0.391 0.455 25 37 0.676 9 75 84 89 17 8  
## 6 57 141 0.404 60 110 0.545 0.580 39 45 0.867 8 77 85 52 10 2  
## 7 0 6 0.000 302 459 0.658 0.649 171 270 0.633 216 455 671 110 40 92  
## 8 5 16 0.313 14 28 0.500 0.489 7 11 0.636 2 7 9 21 5 2  
## 9 9 36 0.250 16 50 0.320 0.343 19 29 0.655 24 63 87 21 18 8  
## 10 6 29 0.207 4 9 0.444 0.342 2 4 0.500 1 20 21 8 0 6  
## 11 24 85 0.282 133 246 0.541 0.511 52 78 0.667 58 227 285 162 54 37  
## 13 89 293 0.304 596 945 0.631 0.589 398 629 0.633 140 716 856 354 61 66  
## 15 0 10 0.000 24 38 0.632 0.500 7 17 0.412 12 12 24 15 7 2  
## 16 87 226 0.385 249 556 0.448 0.485 136 161 0.845 71 297 368 85 49 27  
## 17 89 228 0.390 197 338 0.583 0.584 72 102 0.706 80 284 364 108 96 45  
## 18 54 138 0.391 36 82 0.439 0.532 27 38 0.711 20 90 110 96 27 3  
## 19 77 207 0.372 65 117 0.556 0.557 62 74 0.838 34 212 246 91 69 15  
## 20 43 122 0.352 21 43 0.488 0.518 21 27 0.778 21 125 146 50 35 7  
## 21 34 85 0.400 44 74 0.595 0.597 41 47 0.872 13 87 100 41 34 8  
## 22 70 201 0.348 114 260 0.438 0.475 161 181 0.890 22 100 122 262 34 1  
## 23 3 13 0.231 307 555 0.553 0.548 67 89 0.753 147 289 436 72 26 58  
## 24 19 67 0.284 66 177 0.373 0.387 35 53 0.660 15 85 100 52 23 2  
## 25 4 22 0.182 74 145 0.510 0.479 25 31 0.806 29 68 97 10 6 12  
## 26 148 395 0.375 129 292 0.442 0.511 43 76 0.566 71 312 383 438 88 38  
## 27 37 107 0.346 95 179 0.531 0.526 31 46 0.674 100 202 302 42 23 86  
## 28 32 85 0.376 53 122 0.434 0.488 20 22 0.909 10 43 53 112 5 2  
## 29 102 268 0.381 263 525 0.501 0.525 214 267 0.801 77 278 355 159 43 12  
## 30 63 197 0.320 229 530 0.432 0.445 156 254 0.614 50 229 279 143 55 17  
## 31 108 288 0.375 224 450 0.498 0.523 102 133 0.767 76 289 365 212 61 29  
## 32 34 103 0.330 66 131 0.504 0.500 54 75 0.720 25 102 127 30 19 24  
## 33 31 94 0.330 56 112 0.500 0.498 46 65 0.708 21 89 110 30 17 20  
## 34 3 9 0.333 10 19 0.526 0.518 8 10 0.800 4 13 17 0 2 4  
## 35 14 49 0.286 14 32 0.438 0.432 9 10 0.900 25 75 100 66 17 8  
## 36 59 168 0.351 124 213 0.582 0.558 56 75 0.747 71 166 237 67 10 23  
## 37 84 244 0.344 116 290 0.400 0.453 113 147 0.769 27 267 294 93 74 40  
## 38 56 171 0.327 57 155 0.368 0.433 58 72 0.806 13 159 172 61 45 31  
## 39 28 73 0.384 59 135 0.437 0.486 55 75 0.733 14 108 122 32 29 9  
## 40 49 141 0.348 76 176 0.432 0.472 43 62 0.694 30 216 246 41 23 41  
## 41 170 481 0.353 423 822 0.515 0.520 385 457 0.842 52 190 242 347 71 23  
## 42 107 276 0.388 120 258 0.465 0.525 54 66 0.818 18 130 148 75 40 8  
## 43 58 161 0.360 59 140 0.421 0.485 33 38 0.868 9 68 77 48 31 6  
## 44 49 115 0.426 61 118 0.517 0.577 21 28 0.750 9 62 71 27 9 2  
## 45 67 178 0.376 56 136 0.412 0.498 48 58 0.828 7 92 99 69 12 1  
## 46 4 12 0.333 31 55 0.564 0.552 19 31 0.613 30 51 81 16 3 10  
## 47 2 9 0.222 30 51 0.588 0.550 17 29 0.586 28 50 78 14 2 10  
## 48 2 3 0.667 1 4 0.250 0.571 2 2 1.000 2 1 3 2 1 0  
## 49 15 65 0.231 89 163 0.546 0.489 26 48 0.542 34 118 152 81 55 19  
## 50 15 43 0.349 26 49 0.531 0.527 10 14 0.714 16 57 73 28 4 9  
## 51 4 9 0.444 6 12 0.500 0.571 2 3 0.667 0 20 20 9 0 5  
## 52 11 34 0.324 20 37 0.541 0.514 8 11 0.727 16 37 53 19 4 4  
## 53 200 472 0.424 65 138 0.471 0.598 104 122 0.852 35 210 245 92 37 33  
## 54 80 206 0.388 67 135 0.496 0.548 31 47 0.660 57 209 266 183 54 25  
## 55 0 1 0.000 73 142 0.514 0.510 66 101 0.653 91 129 220 50 20 23  
## 56 8 42 0.190 62 108 0.574 0.493 24 33 0.727 25 81 106 23 10 37  
## 58 134 320 0.419 180 333 0.541 0.583 69 84 0.821 111 347 458 203 62 40  
## 59 74 215 0.344 260 488 0.533 0.528 169 214 0.790 43 239 282 328 57 26  
## 60 164 441 0.372 173 325 0.532 0.547 86 116 0.741 26 181 207 207 64 15  
## 61 189 457 0.414 229 478 0.479 0.548 250 277 0.903 39 220 259 131 34 7  
## 62 4 9 0.444 10 19 0.526 0.571 8 10 0.800 5 14 19 6 2 6  
## 63 0 4 0.000 4 7 0.571 0.364 2 4 0.500 3 6 9 0 3 2  
## 64 0 1 0.000 2 2 1.000 0.667 0 2 0.000 0 1 1 0 1 0  
## 65 0 3 0.000 2 5 0.400 0.250 2 2 1.000 3 5 8 0 2 2  
## 68 25 71 0.352 93 163 0.571 0.558 69 85 0.812 71 151 222 76 45 22  
## 69 141 398 0.354 486 885 0.549 0.544 468 509 0.919 29 268 297 456 49 18  
## 70 38 118 0.322 103 181 0.569 0.535 91 116 0.784 107 170 277 26 22 61  
## 72 33 107 0.308 101 214 0.472 0.469 34 41 0.829 24 97 121 131 44 10  
## 73 63 173 0.364 107 210 0.510 0.526 20 24 0.833 18 97 115 63 43 5  
## 74 3 3 1.000 123 186 0.661 0.675 30 46 0.652 111 156 267 23 14 33  
## 75 3 13 0.231 7 15 0.467 0.411 1 2 0.500 2 18 20 11 3 5  
## 76 1 9 0.111 5 13 0.385 0.295 4 5 0.800 2 3 5 4 0 1  
## 77 0 1 0.000 2 3 0.667 0.500 1 3 0.333 2 6 8 2 4 0  
## 78 70 194 0.361 177 290 0.610 0.583 103 122 0.844 66 226 292 129 102 46  
## 79 99 300 0.330 220 453 0.486 0.489 106 131 0.809 88 274 362 114 40 48  
## 80 3 15 0.200 10 21 0.476 0.403 8 10 0.800 9 17 26 7 4 1  
## 81 20 51 0.392 2 8 0.250 0.542 7 8 0.875 5 38 43 11 5 4  
## 82 75 230 0.326 251 514 0.488 0.489 166 186 0.892 46 216 262 381 35 10  
## 83 147 411 0.358 288 657 0.438 0.476 164 203 0.808 68 175 243 150 63 27  
## 84 33 96 0.344 165 351 0.470 0.480 88 119 0.739 61 213 274 230 63 29  
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## 86 129 338 0.382 298 549 0.543 0.554 176 243 0.724 62 302 364 118 65 20  
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## 402 23 71 0.324 44 91 0.484 0.485 13 18 0.722 19 67 86 79 39 4  
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## 410 29 76 0.382 58 102 0.569 0.570 26 39 0.667 7 42 49 125 34 4  
## 411 181 452 0.400 61 93 0.656 0.610 50 67 0.746 21 136 157 58 45 16  
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## 413 40 106 0.377 93 211 0.441 0.483 64 83 0.771 17 87 104 82 19 15  
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## 159 16 11 104  
## 160 12 37 200  
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## 165 76 124 543  
## 166 57 133 256  
## 167 47 93 175  
## 168 10 40 81  
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## 170 164 180 1504  
## 171 32 55 219  
## 172 51 101 318  
## 173 60 124 464  
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## 175 16 35 123  
## 176 174 180 1318  
## 177 90 113 610  
## 178 260 153 1759  
## 179 22 97 244  
## 180 21 44 321  
## 181 35 80 243  
## 182 27 45 168  
## 183 144 124 953  
## 184 203 201 1010  
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## 186 29 25 140  
## 187 8 41 68  
## 188 68 158 373  
## 189 15 34 121  
## 191 18 41 183  
## 192 159 174 1172  
## 193 58 137 454  
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## 198 25 41 128  
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## 204 55 107 459  
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## 206 31 155 220  
## 207 42 107 240  
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## 210 57 113 707  
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## 224 59 124 331  
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## 226 125 113 1033  
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## 275 15 23 76  
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## 331 15 16 60  
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## 369 11 33 107  
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## 408 24 74 187  
## 409 26 72 182  
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## 436 24 52 192  
## 437 76 133 560  
## 438 70 104 486  
## 439 6 29 74  
## 440 53 73 660  
## 441 5 6 28  
## 442 76 72 395  
## 443 5 20 77  
## 444 125 143 720  
## 445 127 102 1091  
## 446 36 30 192  
## 447 17 58 226  
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## 450 60 91 564  
## 451 128 101 578  
## 452 76 62 347  
## 453 52 39 231  
## 454 47 50 275  
## 455 1 0 2  
## 456 30 75 392  
## 458 66 166 449  
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## 461 3 4 10  
## 462 3 11 57  
## 463 71 142 357  
## 464 114 152 1024  
## 465 19 39 141  
## 466 8 32 104  
## 467 61 202 450  
## 468 20 37 102  
## 469 19 80 236  
## 470 38 67 243  
## 471 38 54 219  
## 472 87 139 533  
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## 474 47 36 275  
## 475 71 173 549  
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## 477 91 160 718  
## 478 83 192 1046  
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## 483 4 6 51  
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## 486 24 75 156  
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## 492 20 54 113  
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## 553 103 162 776  
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## 567 76 70 448  
## 568 40 36 193  
## 569 62 108 641  
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## 573 6 11 24  
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## 575 103 124 684  
## 576 2 2 16  
## 577 51 141 305  
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## 580 4 6 9  
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## 595 7 6 12  
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## 601 19 36 119  
## 602 2 4 13  
## 603 88 135 1215  
## 604 3 8 20  
## 605 66 152 393  
## 606 16 21 111  
## 607 3 5 28  
## 608 13 16 83  
## 609 117 91 1145  
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## 611 10 19 40  
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## 613 4 19 50  
## 615 76 133 487  
## 616 84 187 1326  
## 617 93 158 710  
## 618 2 9 36  
## 619 15 13 40  
## 620 3 5 31  
## 622 3 4 31  
## 623 5 8 12  
## 624 255 200 1553  
## 625 109 117 859  
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## 627 120 196 1040  
## 628 132 127 1175  
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## 630 25 26 233  
## 631 50 163 237  
## 632 5 16 45  
## 633 22 88 136  
## 634 182 80 1185  
## 635 33 103 343  
## 636 25 71 275  
## 637 8 32 68  
## 639 3 6 14  
## 640 59 42 540  
## 641 19 33 133  
## 642 24 38 124  
## 643 84 98 810  
## 644 73 93 504  
## 645 3 5 19  
## 646 102 134 659  
## 647 289 104 1778  
## 648 75 140 642  
## 651 61 168 596

#(b) We are only concerned with the categories listed above so use the following   
#code to #save only the relevant columns to a new dataframe called dfc:  
#try to keep 7 columns  
dfc = df[, c(13:16, 18:20)]  
dfc

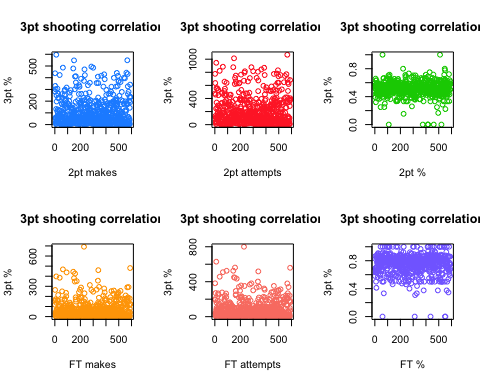
## X3P. X2P X2PA X2P. FT FTA FT.  
## 1 0.333 282 475 0.594 117 201 0.582  
## 2 0.143 438 776 0.564 264 382 0.691  
## 3 0.389 330 636 0.519 158 191 0.827  
## 5 0.346 52 133 0.391 25 37 0.676  
## 6 0.404 60 110 0.545 39 45 0.867  
## 7 0.000 302 459 0.658 171 270 0.633  
## 8 0.313 14 28 0.500 7 11 0.636  
## 9 0.250 16 50 0.320 19 29 0.655  
## 10 0.207 4 9 0.444 2 4 0.500  
## 11 0.282 133 246 0.541 52 78 0.667  
## 13 0.304 596 945 0.631 398 629 0.633  
## 15 0.000 24 38 0.632 7 17 0.412  
## 16 0.385 249 556 0.448 136 161 0.845  
## 17 0.390 197 338 0.583 72 102 0.706  
## 18 0.391 36 82 0.439 27 38 0.711  
## 19 0.372 65 117 0.556 62 74 0.838  
## 20 0.352 21 43 0.488 21 27 0.778  
## 21 0.400 44 74 0.595 41 47 0.872  
## 22 0.348 114 260 0.438 161 181 0.890  
## 23 0.231 307 555 0.553 67 89 0.753  
## 24 0.284 66 177 0.373 35 53 0.660  
## 25 0.182 74 145 0.510 25 31 0.806  
## 26 0.375 129 292 0.442 43 76 0.566  
## 27 0.346 95 179 0.531 31 46 0.674  
## 28 0.376 53 122 0.434 20 22 0.909  
## 29 0.381 263 525 0.501 214 267 0.801  
## 30 0.320 229 530 0.432 156 254 0.614  
## 31 0.375 224 450 0.498 102 133 0.767  
## 32 0.330 66 131 0.504 54 75 0.720  
## 33 0.330 56 112 0.500 46 65 0.708  
## 34 0.333 10 19 0.526 8 10 0.800  
## 35 0.286 14 32 0.438 9 10 0.900  
## 36 0.351 124 213 0.582 56 75 0.747  
## 37 0.344 116 290 0.400 113 147 0.769  
## 38 0.327 57 155 0.368 58 72 0.806  
## 39 0.384 59 135 0.437 55 75 0.733  
## 40 0.348 76 176 0.432 43 62 0.694  
## 41 0.353 423 822 0.515 385 457 0.842  
## 42 0.388 120 258 0.465 54 66 0.818  
## 43 0.360 59 140 0.421 33 38 0.868  
## 44 0.426 61 118 0.517 21 28 0.750  
## 45 0.376 56 136 0.412 48 58 0.828  
## 46 0.333 31 55 0.564 19 31 0.613  
## 47 0.222 30 51 0.588 17 29 0.586  
## 48 0.667 1 4 0.250 2 2 1.000  
## 49 0.231 89 163 0.546 26 48 0.542  
## 50 0.349 26 49 0.531 10 14 0.714  
## 51 0.444 6 12 0.500 2 3 0.667  
## 52 0.324 20 37 0.541 8 11 0.727  
## 53 0.424 65 138 0.471 104 122 0.852  
## 54 0.388 67 135 0.496 31 47 0.660  
## 55 0.000 73 142 0.514 66 101 0.653  
## 56 0.190 62 108 0.574 24 33 0.727  
## 58 0.419 180 333 0.541 69 84 0.821  
## 59 0.344 260 488 0.533 169 214 0.790  
## 60 0.372 173 325 0.532 86 116 0.741  
## 61 0.414 229 478 0.479 250 277 0.903  
## 62 0.444 10 19 0.526 8 10 0.800  
## 63 0.000 4 7 0.571 2 4 0.500  
## 64 0.000 2 2 1.000 0 2 0.000  
## 65 0.000 2 5 0.400 2 2 1.000  
## 68 0.352 93 163 0.571 69 85 0.812  
## 69 0.354 486 885 0.549 468 509 0.919  
## 70 0.322 103 181 0.569 91 116 0.784  
## 72 0.308 101 214 0.472 34 41 0.829  
## 73 0.364 107 210 0.510 20 24 0.833  
## 74 1.000 123 186 0.661 30 46 0.652  
## 75 0.231 7 15 0.467 1 2 0.500  
## 76 0.111 5 13 0.385 4 5 0.800  
## 77 0.000 2 3 0.667 1 3 0.333  
## 78 0.361 177 290 0.610 103 122 0.844  
## 79 0.330 220 453 0.486 106 131 0.809  
## 80 0.200 10 21 0.476 8 10 0.800  
## 81 0.392 2 8 0.250 7 8 0.875  
## 82 0.326 251 514 0.488 166 186 0.892  
## 83 0.358 288 657 0.438 164 203 0.808  
## 84 0.344 165 351 0.470 88 119 0.739  
## 85 0.333 3 10 0.300 5 5 1.000  
## 86 0.382 298 549 0.543 176 243 0.724  
## 88 0.324 51 120 0.425 32 40 0.800  
## 89 0.341 212 443 0.479 109 139 0.784  
## 90 0.358 138 268 0.515 61 75 0.813  
## 91 0.407 206 327 0.630 86 116 0.741  
## 92 0.333 53 113 0.469 17 21 0.810  
## 93 0.427 62 134 0.463 23 29 0.793  
## 94 0.421 43 89 0.483 13 18 0.722  
## 95 0.432 19 45 0.422 10 11 0.909  
## 96 0.385 205 467 0.439 235 265 0.887  
## 97 0.375 160 377 0.424 201 224 0.897  
## 98 0.416 45 90 0.500 34 41 0.829  
## 99 0.189 33 72 0.458 8 14 0.571  
## 100 0.244 316 639 0.495 438 525 0.834  
## 101 0.182 32 56 0.571 8 9 0.889  
## 102 0.160 24 44 0.545 2 3 0.667  
## 103 0.250 8 12 0.667 6 6 1.000  
## 105 0.385 145 268 0.541 79 102 0.775  
## 106 0.167 5 9 0.556 4 4 1.000  
## 108 0.242 17 33 0.515 29 42 0.690  
## 109 0.231 6 16 0.375 12 20 0.600  
## 110 0.250 11 17 0.647 17 22 0.773  
## 111 0.425 39 97 0.402 23 27 0.852  
## 112 0.302 46 102 0.451 23 29 0.793  
## 113 0.207 177 314 0.564 112 152 0.737  
## 114 0.293 89 185 0.481 79 95 0.832  
## 115 0.333 80 171 0.468 69 94 0.734  
## 116 0.000 175 301 0.581 40 66 0.606  
## 118 0.000 31 44 0.705 5 9 0.556  
## 120 0.306 37 62 0.597 20 23 0.870  
## 121 0.000 0 3 0.000 2 2 1.000  
## 123 0.375 28 68 0.412 5 5 1.000  
## 125 0.357 25 50 0.500 5 5 1.000  
## 126 0.205 202 346 0.584 120 156 0.769  
## 127 0.351 15 22 0.682 9 10 0.900  
## 128 0.353 5 8 0.625 6 7 0.857  
## 129 0.350 10 14 0.714 3 3 1.000  
## 130 0.359 273 415 0.658 85 112 0.759  
## 131 0.368 242 454 0.533 138 165 0.836  
## 132 0.371 85 167 0.509 76 86 0.884  
## 133 0.366 157 287 0.547 62 79 0.785  
## 134 0.143 26 41 0.634 11 21 0.524  
## 135 0.346 20 35 0.571 10 11 0.909  
## 136 0.000 4 11 0.364 3 5 0.600  
## 137 0.316 17 35 0.486 6 11 0.545  
## 138 0.401 294 458 0.642 120 150 0.800  
## 139 0.368 25 49 0.510 6 8 0.750  
## 140 0.375 136 311 0.437 115 139 0.827  
## 141 0.331 82 135 0.607 31 40 0.775  
## 142 0.365 60 129 0.465 11 14 0.786  
## 146 0.335 144 243 0.593 99 124 0.798  
## 147 0.346 108 184 0.587 75 94 0.798  
## 148 0.315 36 59 0.610 24 30 0.800  
## 149 0.303 27 58 0.466 10 14 0.714  
## 150 0.323 22 50 0.440 9 12 0.750  
## 151 0.231 5 8 0.625 1 2 0.500  
## 152 0.326 79 131 0.603 22 36 0.611  
## 154 0.343 91 169 0.538 97 125 0.776  
## 155 0.293 69 133 0.519 75 95 0.789  
## 156 0.445 22 36 0.611 22 30 0.733  
## 157 0.299 164 348 0.471 54 117 0.462  
## 158 0.452 139 253 0.549 80 97 0.825  
## 159 0.245 21 33 0.636 26 26 1.000  
## 160 0.348 26 54 0.481 10 16 0.625  
## 161 0.357 22 46 0.478 10 16 0.625  
## 163 0.330 479 878 0.546 444 525 0.846  
## 165 0.388 105 194 0.541 51 59 0.864  
## 166 0.206 80 148 0.541 30 36 0.833  
## 167 0.197 55 100 0.550 23 28 0.821  
## 168 0.222 25 48 0.521 7 8 0.875  
## 169 0.231 41 84 0.488 32 37 0.865  
## 170 0.257 548 1014 0.540 381 451 0.845  
## 171 0.333 91 139 0.655 34 39 0.872  
## 172 0.281 116 239 0.485 38 63 0.603  
## 173 0.355 112 212 0.528 78 101 0.772  
## 174 0.383 78 157 0.497 47 59 0.797  
## 175 0.250 34 55 0.618 31 42 0.738  
## 176 0.308 301 621 0.485 347 446 0.778  
## 177 0.336 149 263 0.567 63 86 0.733  
## 178 0.316 410 714 0.574 426 562 0.758  
## 179 0.297 56 117 0.479 42 53 0.792  
## 180 0.362 61 127 0.480 22 33 0.667  
## 181 0.286 64 138 0.464 31 46 0.674  
## 182 0.347 48 108 0.444 21 29 0.724  
## 183 0.367 195 386 0.505 191 246 0.776  
## 184 0.143 413 749 0.551 169 294 0.575  
## 185 0.048 359 658 0.546 149 255 0.584  
## 186 0.286 54 91 0.593 20 39 0.513  
## 187 0.429 6 18 0.333 2 2 1.000  
## 188 0.259 123 230 0.535 40 54 0.741  
## 189 0.316 18 52 0.346 13 19 0.684  
## 191 0.350 11 31 0.355 11 13 0.846  
## 192 0.331 325 629 0.517 351 435 0.807  
## 193 0.325 105 190 0.553 79 98 0.806  
## 194 0.349 63 120 0.525 48 61 0.787  
## 195 0.286 42 70 0.600 31 37 0.838  
## 196 1.000 42 66 0.636 20 26 0.769  
## 197 0.333 32 95 0.337 25 29 0.862  
## 198 0.342 32 95 0.337 25 29 0.862  
## 200 0.349 41 76 0.539 32 43 0.744  
## 201 0.333 8 17 0.471 2 2 1.000  
## 202 0.351 33 59 0.559 30 41 0.732  
## 204 0.143 208 332 0.627 40 71 0.563  
## 205 0.000 34 52 0.654 18 23 0.783  
## 206 0.292 29 52 0.558 15 20 0.750  
## 207 0.135 98 162 0.605 29 51 0.569  
## 208 0.304 55 109 0.505 36 42 0.857  
## 209 0.376 129 219 0.589 78 108 0.722  
## 210 0.388 94 200 0.470 75 90 0.833  
## 211 0.399 261 495 0.527 180 220 0.818  
## 212 0.292 337 630 0.535 241 342 0.705  
## 213 0.500 7 18 0.389 2 4 0.500  
## 214 0.174 3 6 0.500 9 14 0.643  
## 215 0.333 24 64 0.375 19 24 0.792  
## 216 0.267 323 637 0.507 116 159 0.730  
## 217 0.300 15 28 0.536 15 22 0.682  
## 218 0.125 5 9 0.556 6 10 0.600  
## 219 0.417 10 19 0.526 9 12 0.750  
## 221 0.405 180 378 0.476 266 298 0.893  
## 222 0.399 104 211 0.493 73 85 0.859  
## 223 0.355 175 403 0.434 63 72 0.875  
## 224 0.385 62 131 0.473 36 49 0.735  
## 225 0.336 192 376 0.511 120 136 0.882  
## 226 0.412 186 401 0.464 190 217 0.876  
## 227 0.286 163 272 0.599 41 56 0.732  
## 228 0.000 139 249 0.558 38 49 0.776  
## 229 0.347 391 764 0.512 288 357 0.807  
## 231 0.299 50 103 0.485 28 30 0.933  
## 232 0.308 262 530 0.494 151 224 0.674  
## 233 0.317 75 160 0.469 82 107 0.766  
## 234 0.373 150 378 0.397 191 233 0.820  
## 235 0.275 54 122 0.443 36 56 0.643  
## 236 0.241 42 92 0.457 27 37 0.730  
## 237 0.351 12 30 0.400 9 19 0.474  
## 238 0.389 205 382 0.537 147 196 0.750  
## 239 0.250 8 19 0.421 5 7 0.714  
## 241 0.367 77 147 0.524 33 48 0.688  
## 242 0.279 87 187 0.465 63 83 0.759  
## 243 0.387 59 114 0.518 36 48 0.750  
## 244 0.273 54 93 0.581 28 42 0.667  
## 245 0.339 97 161 0.602 73 91 0.802  
## 246 0.327 41 91 0.451 49 63 0.778  
## 247 0.354 56 70 0.800 24 28 0.857  
## 248 0.243 61 139 0.439 76 98 0.776  
## 249 0.301 37 74 0.500 24 26 0.923  
## 251 0.287 229 458 0.500 116 140 0.829  
## 252 0.235 2 13 0.154 4 8 0.500  
## 256 0.667 2 6 0.333 2 2 1.000  
## 257 0.398 180 371 0.485 149 182 0.819  
## 258 0.355 373 671 0.556 692 800 0.865  
## 259 0.347 108 185 0.584 39 66 0.591  
## 260 0.370 85 144 0.590 24 42 0.571  
## 261 0.280 23 41 0.561 15 24 0.625  
## 263 0.000 471 794 0.593 231 351 0.658  
## 264 0.333 148 309 0.479 75 92 0.815  
## 265 0.424 209 378 0.553 64 89 0.719  
## 266 0.367 422 816 0.517 174 216 0.806  
## 267 0.381 61 123 0.496 39 50 0.780  
## 268 0.342 104 178 0.584 85 115 0.739  
## 269 0.000 44 62 0.710 19 28 0.679  
## 270 0.333 3 8 0.375 3 4 0.750  
## 271 0.250 173 255 0.678 123 190 0.647  
## 272 0.383 265 478 0.554 124 145 0.855  
## 273 0.222 87 135 0.644 23 46 0.500  
## 274 0.194 55 89 0.618 17 33 0.515  
## 275 0.400 32 46 0.696 6 13 0.462  
## 276 0.500 4 12 0.333 3 5 0.600  
## 277 0.341 56 118 0.475 44 71 0.620  
## 278 0.250 23 50 0.460 16 25 0.640  
## 279 0.420 33 68 0.485 28 46 0.609  
## 280 0.227 69 117 0.590 37 59 0.627  
## 281 0.389 154 333 0.462 87 100 0.870  
## 283 0.308 68 140 0.486 48 59 0.814  
## 284 0.394 227 474 0.479 115 136 0.846  
## 285 0.460 113 200 0.565 85 101 0.842  
## 286 0.368 47 107 0.439 40 54 0.741  
## 287 0.381 40 86 0.465 26 38 0.684  
## 288 0.292 7 21 0.333 14 16 0.875  
## 289 0.000 15 29 0.517 8 13 0.615  
## 290 0.394 146 342 0.427 74 87 0.851  
## 291 0.353 336 660 0.509 129 182 0.709  
## 292 0.405 74 155 0.477 53 67 0.791  
## 293 0.130 152 306 0.497 105 143 0.734  
## 295 0.493 52 101 0.515 21 27 0.778  
## 296 0.350 220 426 0.516 61 80 0.763  
## 297 0.308 10 17 0.588 2 4 0.500  
## 298 0.363 101 184 0.549 73 90 0.811  
## 299 0.600 199 272 0.732 110 214 0.514  
## 301 0.380 125 276 0.453 53 64 0.828  
## 302 0.355 172 379 0.454 110 144 0.764  
## 303 0.316 68 137 0.496 46 78 0.590  
## 304 0.385 273 488 0.559 89 124 0.718  
## 305 0.298 24 41 0.585 6 15 0.400  
## 306 0.365 96 176 0.545 72 87 0.828  
## 307 0.399 105 200 0.525 74 94 0.787  
## 308 0.391 357 712 0.501 313 368 0.851  
## 309 0.394 143 274 0.522 94 102 0.922  
## 310 0.340 124 238 0.521 60 77 0.779  
## 311 0.341 69 151 0.457 78 97 0.804  
## 312 0.326 87 187 0.465 56 75 0.747  
## 313 0.394 208 385 0.540 139 186 0.747  
## 314 0.319 47 87 0.540 35 50 0.700  
## 315 0.294 87 178 0.489 42 50 0.840  
## 316 0.393 77 181 0.425 45 54 0.833  
## 317 0.378 45 116 0.388 26 33 0.788  
## 318 0.413 32 65 0.492 19 21 0.905  
## 319 0.310 26 55 0.473 10 21 0.476  
## 320 0.348 495 878 0.564 264 381 0.693  
## 322 0.278 15 22 0.682 5 6 0.833  
## 323 0.280 24 63 0.381 12 16 0.750  
## 324 0.375 9 21 0.429 7 10 0.700  
## 325 0.333 6 23 0.261 9 10 0.900  
## 326 0.390 70 133 0.526 46 57 0.807  
## 327 0.363 70 124 0.565 31 48 0.646  
## 328 0.356 23 42 0.548 8 14 0.571  
## 329 0.370 47 82 0.573 23 34 0.676  
## 330 0.591 40 67 0.597 35 44 0.795  
## 331 0.292 15 35 0.429 9 16 0.563  
## 332 0.319 59 131 0.450 42 50 0.840  
## 333 0.289 41 88 0.466 24 32 0.750  
## 334 0.389 18 43 0.419 18 18 1.000  
## 335 0.314 485 816 0.594 246 301 0.817  
## 336 0.222 119 169 0.704 62 84 0.738  
## 337 0.280 147 217 0.677 95 123 0.772  
## 338 0.379 150 305 0.492 43 58 0.741  
## 340 0.352 115 253 0.455 60 70 0.857  
## 341 0.450 5 12 0.417 5 5 1.000  
## 342 0.331 97 183 0.530 61 90 0.678  
## 343 0.143 198 341 0.581 70 99 0.707  
## 344 0.399 78 159 0.491 67 75 0.893  
## 346 0.250 17 46 0.370 11 14 0.786  
## 347 0.294 13 36 0.361 7 9 0.778  
## 348 0.000 4 10 0.400 4 5 0.800  
## 349 0.364 4 10 0.400 0 3 0.000  
## 350 0.373 118 195 0.605 79 93 0.849  
## 351 0.344 14 36 0.389 20 34 0.588  
## 352 0.297 9 22 0.409 4 13 0.308  
## 353 0.388 5 14 0.357 16 21 0.762  
## 354 0.327 79 202 0.391 66 101 0.653  
## 355 0.500 19 27 0.704 1 2 0.500  
## 356 0.402 99 207 0.478 77 102 0.755  
## 357 0.287 51 79 0.646 20 28 0.714  
## 358 0.418 27 56 0.482 35 41 0.854  
## 359 0.367 46 87 0.529 24 38 0.632  
## 360 0.316 205 396 0.518 114 155 0.735  
## 361 0.231 78 134 0.582 25 33 0.758  
## 362 0.335 163 321 0.508 92 110 0.836  
## 363 0.185 23 53 0.434 18 25 0.720  
## 364 0.380 355 715 0.497 268 334 0.802  
## 365 0.143 5 11 0.455 2 6 0.333  
## 366 0.333 57 107 0.533 24 32 0.750  
## 367 0.278 31 68 0.456 7 16 0.438  
## 368 0.000 4 6 0.667 2 2 1.000  
## 369 0.447 19 35 0.543 6 7 0.857  
## 370 0.356 128 272 0.471 110 126 0.873  
## 371 0.271 161 260 0.619 68 105 0.648  
## 372 0.250 128 204 0.627 51 81 0.630  
## 373 0.667 33 56 0.589 17 24 0.708  
## 374 0.378 409 808 0.506 356 402 0.886  
## 375 0.414 66 106 0.623 18 28 0.643  
## 376 0.364 231 512 0.451 140 197 0.711  
## 377 0.401 354 675 0.524 460 518 0.888  
## 378 0.237 51 92 0.554 28 44 0.636  
## 379 0.071 28 65 0.431 9 12 0.750  
## 380 0.314 190 346 0.549 127 152 0.836  
## 381 0.333 112 194 0.577 28 53 0.528  
## 382 0.374 181 337 0.537 187 219 0.854  
## 383 0.352 170 337 0.504 294 343 0.857  
## 384 0.388 55 109 0.505 69 81 0.852  
## 385 0.387 88 175 0.503 33 45 0.733  
## 388 0.250 4 11 0.364 1 2 0.500  
## 389 0.192 99 184 0.538 70 113 0.619  
## 390 0.344 71 129 0.550 73 110 0.664  
## 391 0.350 30 59 0.508 18 27 0.667  
## 392 0.235 117 194 0.603 43 57 0.754  
## 393 0.344 142 274 0.518 126 153 0.824  
## 394 0.541 17 47 0.362 17 21 0.810  
## 395 0.234 71 130 0.546 42 65 0.646  
## 396 0.278 19 35 0.543 11 14 0.786  
## 397 0.260 46 85 0.541 30 31 0.968  
## 398 0.286 17 30 0.567 10 17 0.588  
## 399 0.413 5 10 0.500 31 34 0.912  
## 400 0.364 59 125 0.472 52 68 0.765  
## 401 0.000 2 3 0.667 1 2 0.500  
## 402 0.324 44 91 0.484 13 18 0.722  
## 403 0.379 417 844 0.494 140 185 0.757  
## 404 0.294 207 394 0.525 35 42 0.833  
## 405 0.375 24 46 0.522 14 17 0.824  
## 406 0.435 139 253 0.549 48 58 0.828  
## 407 0.500 192 300 0.640 53 82 0.646  
## 408 0.270 48 92 0.522 19 34 0.559  
## 409 0.215 59 106 0.557 22 31 0.710  
## 410 0.382 58 102 0.569 26 39 0.667  
## 411 0.400 61 93 0.656 50 67 0.746  
## 412 0.357 104 240 0.433 83 109 0.761  
## 413 0.377 93 211 0.441 64 83 0.771  
## 414 0.500 0 2 0.000 3 4 0.750  
## 415 0.188 11 27 0.407 16 22 0.727  
## 416 0.335 67 117 0.573 54 73 0.740  
## 417 0.286 121 261 0.464 93 121 0.769  
## 418 0.000 24 40 0.600 10 13 0.769  
## 419 0.415 324 593 0.546 208 227 0.916  
## 421 0.314 8 24 0.333 15 20 0.750  
## 422 0.364 4 7 0.571 3 8 0.375  
## 423 0.382 104 195 0.533 97 112 0.866  
## 424 0.435 157 314 0.500 115 141 0.816  
## 425 0.430 76 142 0.535 51 65 0.785  
## 426 0.366 429 869 0.494 278 322 0.863  
## 428 0.400 6 13 0.462 2 4 0.500  
## 429 0.284 154 284 0.542 82 100 0.820  
## 431 0.377 123 270 0.456 31 45 0.689  
## 432 0.335 387 758 0.511 239 308 0.776  
## 433 0.375 12 18 0.667 3 4 0.750  
## 434 0.408 213 462 0.461 181 220 0.823  
## 435 0.439 165 372 0.444 163 198 0.823  
## 436 0.310 48 90 0.533 18 22 0.818  
## 437 0.386 115 230 0.500 66 85 0.776  
## 438 0.397 100 200 0.500 61 79 0.772  
## 439 0.333 15 30 0.500 5 6 0.833  
## 440 0.378 195 394 0.495 75 89 0.843  
## 441 1.000 10 14 0.714 5 7 0.714  
## 442 0.345 121 240 0.504 63 83 0.759  
## 443 0.308 10 15 0.667 9 12 0.750  
## 444 0.369 253 526 0.481 91 114 0.798  
## 445 0.346 296 570 0.519 163 185 0.881  
## 446 0.244 45 94 0.479 45 60 0.750  
## 447 0.378 23 46 0.500 18 22 0.818  
## 448 0.404 51 120 0.425 57 70 0.814  
## 449 0.375 75 135 0.556 51 66 0.773  
## 450 0.352 173 272 0.636 50 74 0.676  
## 451 0.317 112 216 0.519 126 153 0.824  
## 452 0.296 67 124 0.540 72 88 0.818  
## 453 0.358 45 92 0.489 54 65 0.831  
## 454 0.386 67 134 0.500 39 47 0.830  
## 455 0.000 0 1 0.000 2 2 1.000  
## 456 0.400 51 97 0.526 20 24 0.833  
## 458 0.333 183 266 0.688 80 106 0.755  
## 459 0.375 0 4 0.000 1 1 1.000  
## 461 0.375 0 3 0.000 1 1 1.000  
## 462 0.115 16 27 0.593 16 17 0.941  
## 463 0.321 87 196 0.444 51 59 0.864  
## 464 0.350 264 523 0.505 85 100 0.850  
## 465 0.200 52 99 0.525 31 35 0.886  
## 466 0.429 25 43 0.581 18 27 0.667  
## 467 0.377 66 121 0.545 42 55 0.764  
## 468 0.259 35 58 0.603 11 20 0.550  
## 469 0.378 32 69 0.464 28 32 0.875  
## 470 0.333 100 159 0.629 40 62 0.645  
## 471 0.352 47 110 0.427 50 71 0.704  
## 472 0.266 129 244 0.529 152 191 0.796  
## 473 0.000 3 4 0.750 1 2 0.500  
## 474 0.317 64 142 0.451 48 59 0.814  
## 475 0.406 89 164 0.543 86 100 0.860  
## 476 0.368 5 13 0.385 4 5 0.800  
## 477 0.383 143 288 0.497 63 94 0.670  
## 478 0.352 265 519 0.511 192 246 0.780  
## 479 0.000 1 3 0.333 2 2 1.000  
## 480 0.429 8 15 0.533 0 1 0.000  
## 481 0.269 187 310 0.603 61 81 0.753  
## 482 0.270 167 278 0.601 53 72 0.736  
## 483 0.250 20 32 0.625 8 9 0.889  
## 485 0.287 281 511 0.550 164 212 0.774  
## 486 0.000 61 113 0.540 34 58 0.586  
## 487 0.390 28 61 0.459 35 43 0.814  
## 489 0.365 323 583 0.554 253 279 0.907  
## 490 0.517 18 39 0.462 6 7 0.857  
## 491 0.203 179 371 0.482 49 86 0.570  
## 492 0.283 35 70 0.500 4 8 0.500  
## 493 0.000 25 47 0.532 7 14 0.500  
## 494 0.188 30 75 0.400 15 16 0.938  
## 495 0.000 177 283 0.625 83 155 0.535  
## 497 0.500 16 34 0.471 6 7 0.857  
## 498 0.500 2 3 0.667 2 2 1.000  
## 499 0.279 93 237 0.392 95 119 0.798  
## 500 0.335 133 263 0.506 73 101 0.723  
## 501 0.422 133 236 0.564 60 72 0.833  
## 502 0.387 38 78 0.487 19 27 0.704  
## 503 0.358 198 402 0.493 71 93 0.763  
## 504 0.352 256 529 0.484 226 283 0.799  
## 505 0.256 136 190 0.716 74 111 0.667  
## 506 0.399 187 325 0.575 129 153 0.843  
## 507 0.339 132 308 0.429 71 89 0.798  
## 508 0.000 0 2 0.000 5 6 0.833  
## 509 0.277 399 775 0.515 258 352 0.733  
## 510 0.000 3 7 0.429 2 2 1.000  
## 511 0.332 130 304 0.428 101 126 0.802  
## 512 0.453 106 234 0.453 165 185 0.892  
## 513 0.330 68 146 0.466 37 53 0.698  
## 514 0.341 193 397 0.486 114 141 0.809  
## 515 0.356 115 231 0.498 78 111 0.703  
## 516 0.214 5 15 0.333 1 2 0.500  
## 517 0.446 53 81 0.654 67 72 0.931  
## 518 0.391 211 395 0.534 74 86 0.860  
## 519 0.400 176 337 0.522 63 74 0.851  
## 520 0.333 35 58 0.603 11 12 0.917  
## 521 0.320 66 157 0.420 40 57 0.702  
## 522 0.284 27 69 0.391 11 19 0.579  
## 523 0.349 39 88 0.443 29 38 0.763  
## 527 0.328 96 203 0.473 27 41 0.659  
## 528 0.306 324 606 0.535 121 139 0.871  
## 529 0.351 164 342 0.480 157 184 0.853  
## 530 0.407 226 518 0.436 166 190 0.874  
## 531 0.361 209 476 0.439 195 226 0.863  
## 532 0.367 202 415 0.487 161 199 0.809  
## 533 0.374 153 314 0.487 113 144 0.785  
## 534 0.345 49 101 0.485 48 55 0.873  
## 535 0.254 441 781 0.565 214 296 0.723  
## 536 0.375 2 8 0.250 3 4 0.750  
## 537 0.154 66 102 0.647 18 27 0.667  
## 538 0.357 172 303 0.568 108 128 0.844  
## 539 0.322 173 352 0.491 106 121 0.876  
## 540 0.311 16 31 0.516 10 15 0.667  
## 541 0.385 328 640 0.513 198 236 0.839  
## 542 0.369 69 133 0.519 30 37 0.811  
## 543 0.278 22 37 0.595 3 8 0.375  
## 544 0.380 416 831 0.501 226 267 0.846  
## 545 0.375 47 95 0.495 65 76 0.855  
## 546 0.333 1 6 0.167 3 4 0.750  
## 547 0.242 13 31 0.419 4 7 0.571  
## 548 0.359 369 739 0.499 240 303 0.792  
## 549 0.000 48 75 0.640 37 55 0.673  
## 550 0.286 373 640 0.583 185 298 0.621  
## 551 0.332 139 310 0.448 76 92 0.826  
## 552 0.231 17 27 0.630 16 19 0.842  
## 553 0.347 119 287 0.415 127 152 0.836  
## 554 0.296 56 157 0.357 27 53 0.509  
## 555 0.367 246 520 0.473 62 86 0.721  
## 556 0.091 6 11 0.545 2 2 1.000  
## 557 0.000 3 8 0.375 2 4 0.500  
## 558 0.402 68 128 0.531 32 32 1.000  
## 559 0.391 84 185 0.454 73 92 0.793  
## 560 0.000 2 2 1.000 1 1 1.000  
## 561 0.264 47 89 0.528 16 29 0.552  
## 562 0.000 28 45 0.622 9 17 0.529  
## 564 0.000 26 41 0.634 8 15 0.533  
## 565 0.403 363 757 0.480 254 313 0.812  
## 566 0.368 170 372 0.457 172 197 0.873  
## 567 0.379 112 237 0.473 125 144 0.868  
## 568 0.333 58 135 0.430 47 53 0.887  
## 569 0.329 95 201 0.473 70 87 0.805  
## 570 0.333 209 330 0.633 87 114 0.763  
## 571 0.413 96 237 0.405 62 76 0.816  
## 572 0.357 0 3 0.000 2 4 0.500  
## 573 0.308 4 10 0.400 4 4 1.000  
## 574 0.475 26 51 0.510 9 12 0.750  
## 575 0.391 279 539 0.518 99 161 0.615  
## 576 0.500 4 7 0.571 2 4 0.500  
## 577 0.357 56 108 0.519 25 41 0.610  
## 578 0.338 16 37 0.432 21 29 0.724  
## 579 0.337 13 28 0.464 13 19 0.684  
## 580 0.133 1 2 0.500 1 2 0.500  
## 581 0.415 2 7 0.286 7 8 0.875  
## 582 0.348 21 40 0.525 3 5 0.600  
## 583 0.412 202 345 0.586 180 226 0.796  
## 584 0.418 84 173 0.486 37 45 0.822  
## 585 0.358 32 53 0.604 34 43 0.791  
## 586 0.358 70 127 0.551 39 48 0.813  
## 587 0.176 17 26 0.654 19 23 0.826  
## 588 0.000 25 62 0.403 12 14 0.857  
## 589 0.344 182 337 0.540 127 169 0.751  
## 590 0.333 4 9 0.444 2 2 1.000  
## 591 0.000 1 3 0.333 2 2 1.000  
## 593 0.352 400 648 0.617 148 200 0.740  
## 594 0.336 51 100 0.510 6 8 0.750  
## 595 0.000 5 7 0.714 2 2 1.000  
## 598 0.390 173 399 0.434 168 198 0.848  
## 600 0.200 49 77 0.636 25 32 0.781  
## 601 0.143 45 72 0.625 23 28 0.821  
## 602 1.000 4 5 0.800 2 4 0.500  
## 603 0.339 395 744 0.531 131 167 0.784  
## 604 0.500 7 9 0.778 0 1 0.000  
## 605 0.313 120 186 0.645 78 95 0.821  
## 606 0.319 26 52 0.500 14 17 0.824  
## 607 0.471 2 9 0.222 0 1 0.000  
## 608 0.233 24 43 0.558 14 16 0.875  
## 609 0.381 198 416 0.476 209 242 0.864  
## 610 0.406 111 256 0.434 44 61 0.721  
## 611 0.067 13 29 0.448 11 17 0.647  
## 612 0.417 8 15 0.533 7 9 0.778  
## 613 0.429 8 15 0.533 7 9 0.778  
## 615 0.363 125 260 0.481 126 136 0.926  
## 616 0.403 443 771 0.575 167 204 0.819  
## 617 0.374 182 359 0.507 88 136 0.647  
## 618 0.375 12 26 0.462 3 8 0.375  
## 619 0.167 10 25 0.400 8 8 1.000  
## 620 0.333 6 14 0.429 7 9 0.778  
## 622 0.444 6 10 0.600 7 9 0.778  
## 623 0.200 4 12 0.333 1 2 0.500  
## 624 0.258 549 1068 0.514 290 380 0.763  
## 625 0.354 179 416 0.430 102 129 0.791  
## 626 0.366 174 336 0.518 180 211 0.853  
## 627 0.571 432 695 0.622 164 239 0.686  
## 628 0.332 326 644 0.506 190 268 0.709  
## 629 0.331 260 515 0.505 149 207 0.720  
## 630 0.339 66 129 0.512 41 61 0.672  
## 631 0.250 63 115 0.548 39 54 0.722  
## 632 0.000 19 32 0.594 7 13 0.538  
## 633 0.258 26 50 0.520 9 26 0.346  
## 634 0.352 280 621 0.451 292 339 0.861  
## 635 0.359 63 111 0.568 49 57 0.860  
## 636 0.376 50 93 0.538 43 50 0.860  
## 637 0.308 13 18 0.722 6 7 0.857  
## 639 0.286 3 9 0.333 2 2 1.000  
## 640 0.429 204 346 0.590 114 178 0.640  
## 641 0.247 34 59 0.576 11 18 0.611  
## 642 0.222 44 102 0.431 18 27 0.667  
## 643 0.386 234 368 0.636 180 242 0.744  
## 644 0.370 143 284 0.504 77 100 0.770  
## 645 0.200 5 10 0.500 3 4 0.750  
## 646 0.356 190 379 0.501 42 72 0.583  
## 647 0.361 341 681 0.501 481 559 0.860  
## 648 0.240 233 404 0.577 122 179 0.682  
## 651 0.000 236 383 0.616 124 166 0.747

1. Generate six scatter plots. Each will have 3-point percentage (column 1) as the y-axis and the x-axis will be one of each of the other columns in dfc. Recall that the basic function for scat ter plots is plot(x, y).

#(a) (b) We will be using a for-loop to populate the plots. Each plot will have the same title:  
colours = c("dodgerblue", "firebrick1", "green3", "orange", "salmon", "slateblue1")  
cnames = c("2pt makes", "2pt attempts", "2pt %", "FT makes", "FT attempts", "FT %")  
par(mfrow = c(2,3))  
dim(dfc)

## [1] 591 7

n<-dim(dfc)[1]  
m<-dim(dfc)[2]  
#TO get 6 plots  
for(i in 2:m){  
 plot(dfc[,i],col = colours[i-1], xlab = cnames[i-1], ylab = "3pt %",  
 main = "3pt shooting correlation")  
}



#“3pt Shooting Correlation.”, and same y-axis label, “3pt %”. Each plot should be a  
#different color and each x-axis should be properly labeled with the appropriate category.  
#You may use the following code to set up vectors for different colours and labels:  
#• colours = c("dodgerblue", "firebrick1", "green3", "orange", "salmon", "slateblue1")  
#• cnames = c("2pt makes", "2pt attempts", "2pt %", "FT makes", "FT attempts", "FT %")  
#(c) Write a for-loop that produces the six necessary scatter plots. Above the for-loop code,  
#use the following to set up a grid so that your plots are presented nicely: par(mfrow = c(2, 3))

1. Use a for-loop to calculate the correlations between 3pt % and each of the other columns.

#(a) Create an empty numeric vector to store the correlations and name it cor\_vec.  
cor\_vec<- numeric()  
#(b) Write a for-loop to populate cor\_vec with the corresponding correlations.  
for(i in 1:m){  
 cor\_vec[i] = cor(dfc[,1],dfc[,i])  
}  
cor\_vec

## [1] 1.00000000 0.09377243 0.11069183 -0.04220238 0.11588018 0.09440999  
## [7] 0.13846909

#(c) Run the following code to properly name the elements in cor\_vec:   
names(cor\_vec) = c("3pt %",cnames)  
#(d) Print out cor\_vec.  
cor\_vec

## 3pt % 2pt makes 2pt attempts 2pt % FT makes FT attempts   
## 1.00000000 0.09377243 0.11069183 -0.04220238 0.11588018 0.09440999   
## FT %   
## 0.13846909