

Basketball-Free-Throws

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```
# Basketball Free Throw ----
```

```
# Data ----
```

```
#Seasons
```

```
Seasons <-
```

```
c("2005", "2006", "2007", "2008", "2009", "2010", "2011", "2012", "2013", "2014")
```

```
#Players
```

```
Players <-
```

```
c("KobeBryant", "JoeJohnson", "LeBronJames", "CarmeloAnthony", "DwightHoward", "ChrisBosh", "ChrisPaul", "KevinDurant", "DerrickRose", "DwayneWade")
```

```
#Games
```

```
KobeBryant_G <- c(80, 77, 82, 82, 73, 82, 58, 78, 6, 35)
```

```
JoeJohnson_G <- c(82, 57, 82, 79, 76, 72, 60, 72, 79, 80)
```

```
LeBronJames_G <- c(79, 78, 75, 81, 76, 79, 62, 76, 77, 69)
```

```
CarmeloAnthony_G <- c(80, 65, 77, 66, 69, 77, 55, 67, 77, 40)
```

```
DwightHoward_G <- c(82, 82, 82, 79, 82, 78, 54, 76, 71, 41)
```

```
ChrisBosh_G <- c(70, 69, 67, 77, 70, 77, 57, 74, 79, 44)
```

```
ChrisPaul_G <- c(78, 64, 80, 78, 45, 80, 60, 70, 62, 82)
```

```
KevinDurant_G <- c(35, 35, 80, 74, 82, 78, 66, 81, 81, 27)
```

```
DerrickRose_G <- c(40, 40, 40, 81, 78, 81, 39, 0, 10, 51)
```

```
DwayneWade_G <- c(75, 51, 51, 79, 77, 76, 49, 69, 54, 62)
```

```
#Matrix
```

```
Games <- rbind(KobeBryant_G, JoeJohnson_G, LeBronJames_G, CarmeloAnthony_G, DwightHoward_G, ChrisBosh_G, ChrisPaul_G, KevinDurant_G, DerrickRose_G, DwayneWade_G)
```

```
rm(KobeBryant_G, JoeJohnson_G, CarmeloAnthony_G, DwightHoward_G, ChrisBosh_G, LeBronJames_G, ChrisPaul_G, DerrickRose_G, DwayneWade_G, KevinDurant_G)
```

```
colnames(Games) <- Seasons
```

```
rownames(Games) <- Players
```

#Field Goals

```
KobeBryant_FG <- c(978,813,775,800,716,740,574,738,31,266)
JoeJohnson_FG <- c(632,536,647,620,635,514,423,445,462,446)
LeBronJames_FG <- c(875,772,794,789,768,758,621,765,767,624)
CarmeloAnthony_FG <- c(756,691,728,535,688,684,441,669,743,358)
DwightHoward_FG <- c(468,526,583,560,510,619,416,470,473,251)
ChrisBosh_FG <- c(549,543,507,615,600,524,393,485,492,343)
ChrisPaul_FG <- c(407,381,630,631,314,430,425,412,406,568)
KevinDurant_FG <- c(306,306,587,661,794,711,643,731,849,238)
DerrickRose_FG <- c(208,208,208,574,672,711,302,0,58,338)
DwayneWade_FG <- c(699,472,439,854,719,692,416,569,415,509)
```

#Matrix

```
FieldGoals <- rbind(KobeBryant_FG, JoeJohnson_FG, LeBronJames_FG,
CarmeloAnthony_FG, DwightHoward_FG, ChrisBosh_FG, ChrisPaul_FG,
KevinDurant_FG, DerrickRose_FG, DwayneWade_FG)
rm(KobeBryant_FG, JoeJohnson_FG, LeBronJames_FG, CarmeloAnthony_FG,
DwightHoward_FG, ChrisBosh_FG, ChrisPaul_FG, KevinDurant_FG,
DerrickRose_FG, DwayneWade_FG)
colnames(FieldGoals) <- Seasons
rownames(FieldGoals) <- Players
```

#Field Goal Attempts

```
KobeBryant_FGA <- c(2173,1757,1690,1712,1569,1639,1336,1595,73,713)
JoeJohnson_FGA <- c(1395,1139,1497,1420,1386,1161,931,1052,1018,1025)
LeBronJames_FGA <-
c(1823,1621,1642,1613,1528,1485,1169,1354,1353,1279)
CarmeloAnthony_FGA <-
c(1572,1453,1481,1207,1502,1503,1025,1489,1643,806)
DwightHoward_FGA <- c(881,873,974,979,834,1044,726,813,800,423)
ChrisBosh_FGA <- c(1087,1094,1027,1263,1158,1056,807,907,953,745)
ChrisPaul_FGA <- c(947,871,1291,1255,637,928,890,856,870,1170)
KevinDurant_FGA <- c(647,647,1366,1390,1668,1538,1297,1433,1688,467)
DerrickRose_FGA <- c(436,436,436,1208,1373,1597,695,0,164,835)
DwayneWade_FGA <- c(1413,962,937,1739,1511,1384,837,1093,761,1084)
```

#Matrix

```
FieldGoalAttempts <- rbind(KobeBryant_FGA, JoeJohnson_FGA,
LeBronJames_FGA, CarmeloAnthony_FGA, DwightHoward_FGA, ChrisBosh_FGA,
ChrisPaul_FGA, KevinDurant_FGA, DerrickRose_FGA, DwayneWade_FGA)
rm(KobeBryant_FGA, JoeJohnson_FGA, LeBronJames_FGA,
CarmeloAnthony_FGA, DwightHoward_FGA, ChrisBosh_FGA, ChrisPaul_FGA,
```

```
KevinDurant_FGA, DerrickRose_FGA, DwayneWade_FGA)
```

```
colnames(FieldGoalAttempts) <- Seasons
```

```
rownames(FieldGoalAttempts) <- Players
```

#Points

```
KobeBryant_PTS <- c(2832,2430,2323,2201,1970,2078,1616,2133,83,782)
```

```
JoeJohnson_PTS <- c(1653,1426,1779,1688,1619,1312,1129,1170,1245,1154)
```

```
LeBronJames_PTS <-
```

```
c(2478,2132,2250,2304,2258,2111,1683,2036,2089,1743)
```

```
CarmeloAnthony_PTS <-
```

```
c(2122,1881,1978,1504,1943,1970,1245,1920,2112,966)
```

```
DwightHoward_PTS <-
```

```
c(1292,1443,1695,1624,1503,1784,1113,1296,1297,646)
```

```
ChrisBosh_PTS <- c(1572,1561,1496,1746,1678,1438,1025,1232,1281,928)
```

```
ChrisPaul_PTS <- c(1258,1104,1684,1781,841,1268,1189,1186,1185,1564)
```

```
KevinDurant_PTS <- c(903,903,1624,1871,2472,2161,1850,2280,2593,686)
```

```
DerrickRose_PTS <- c(597,597,597,1361,1619,2026,852,0,159,904)
```

```
DwayneWade_PTS <- c(2040,1397,1254,2386,2045,1941,1082,1463,1028,1331)
```

#Matrix

```
Points <- rbind(KobeBryant_PTS, JoeJohnson_PTS, LeBronJames_PTS,  
CarmeloAnthony_PTS, DwightHoward_PTS, ChrisBosh_PTS, ChrisPaul_PTS,  
KevinDurant_PTS, DerrickRose_PTS, DwayneWade_PTS)
```

```
rm(KobeBryant_PTS, JoeJohnson_PTS, LeBronJames_PTS,  
CarmeloAnthony_PTS, DwightHoward_PTS, ChrisBosh_PTS, ChrisPaul_PTS,  
KevinDurant_PTS, DerrickRose_PTS, DwayneWade_PTS)
```

```
colnames(Points) <- Seasons
```

```
rownames(Points) <- Players
```

#Free Throws

```
KobeBryant_FT <- c(696,667,623,483,439,483,381,525,18,196)
```

```
JoeJohnson_FT <- c(261,235,316,299,220,195,158,132,159,141)
```

```
LeBronJames_FT <- c(601,489,549,594,593,503,387,403,439,375)
```

```
CarmeloAnthony_FT <- c(573,459,464,371,508,507,295,425,459,189)
```

```
DwightHoward_FT <- c(356,390,529,504,483,546,281,355,349,143)
```

```
ChrisBosh_FT <- c(474,463,472,504,470,384,229,241,223,179)
```

```
ChrisPaul_FT <- c(394,292,332,455,161,337,260,286,295,289)
```

```
KevinDurant_FT <- c(209,209,391,452,756,594,431,679,703,146)
```

```
DerrickRose_FT <- c(146,146,146,197,259,476,194,0,27,152)
```

```
DwayneWade_FT <- c(629,432,354,590,534,494,235,308,189,284)
```

#Matrix

```
FreeThrows <- rbind(KobeBryant_FT, JoeJohnson_FT, LeBronJames_FT,
CarmeloAnthony_FT, DwightHoward_FT,
                  ChrisBosh_FT, ChrisPaul_FT, KevinDurant_FT,
DerrickRose_FT, DwayneWade_FT)
colnames(FreeThrows) <- Seasons
rownames(FreeThrows) <- Players
```

```
print(FreeThrows)
```

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
KobeBryant	696	667	623	483	439	483	381	525	18	196
JoeJohnson	261	235	316	299	220	195	158	132	159	141
LeBronJames	601	489	549	594	593	503	387	403	439	375
CarmeloAnthony	573	459	464	371	508	507	295	425	459	189
DwightHoward	356	390	529	504	483	546	281	355	349	143
ChrisBosh	474	463	472	504	470	384	229	241	223	179
ChrisPaul	394	292	332	455	161	337	260	286	295	289
KevinDurant	209	209	391	452	756	594	431	679	703	146
DerrickRose	146	146	146	197	259	476	194	0	27	152
DwayneWade	629	432	354	590	534	494	235	308	189	284

#Free Throw Attempts

```
KobeBryant_FTA <- c(819,768,742,564,541,583,451,626,21,241)
JoeJohnson_FTA <- c(330,314,379,362,269,243,186,161,195,176)
LeBronJames_FTA <- c(814,701,771,762,773,663,502,535,585,528)
CarmeloAnthony_FTA <- c(709,568,590,468,612,605,367,512,541,237)
DwightHoward_FTA <- c(598,666,897,849,816,916,572,721,638,271)
ChrisBosh_FTA <- c(581,590,559,617,590,471,279,302,272,232)
ChrisPaul_FTA <- c(465,357,390,524,190,384,302,323,345,321)
KevinDurant_FTA <- c(256,256,448,524,840,675,501,750,805,171)
DerrickRose_FTA <- c(205,205,205,250,338,555,239,0,32,187)
DwayneWade_FTA <- c(803,535,467,771,702,652,297,425,258,370)
```

#Matrix

```
FreeThrowAttempts <- rbind(KobeBryant_FTA, JoeJohnson_FTA,
LeBronJames_FTA, CarmeloAnthony_FTA, DwightHoward_FTA,
                        ChrisBosh_FTA, ChrisPaul_FTA, KevinDurant_FTA,
DerrickRose_FTA, DwayneWade_FTA)
colnames(FreeThrowAttempts) <- Seasons
rownames(FreeThrowAttempts) <- Players
```

```
### Assignment ----
```

```
#You need to create three plots that potray the following insights:
```

```
# 1) Free throw attempts per game
```

```
# 2) Accuracy of Free Throws
```

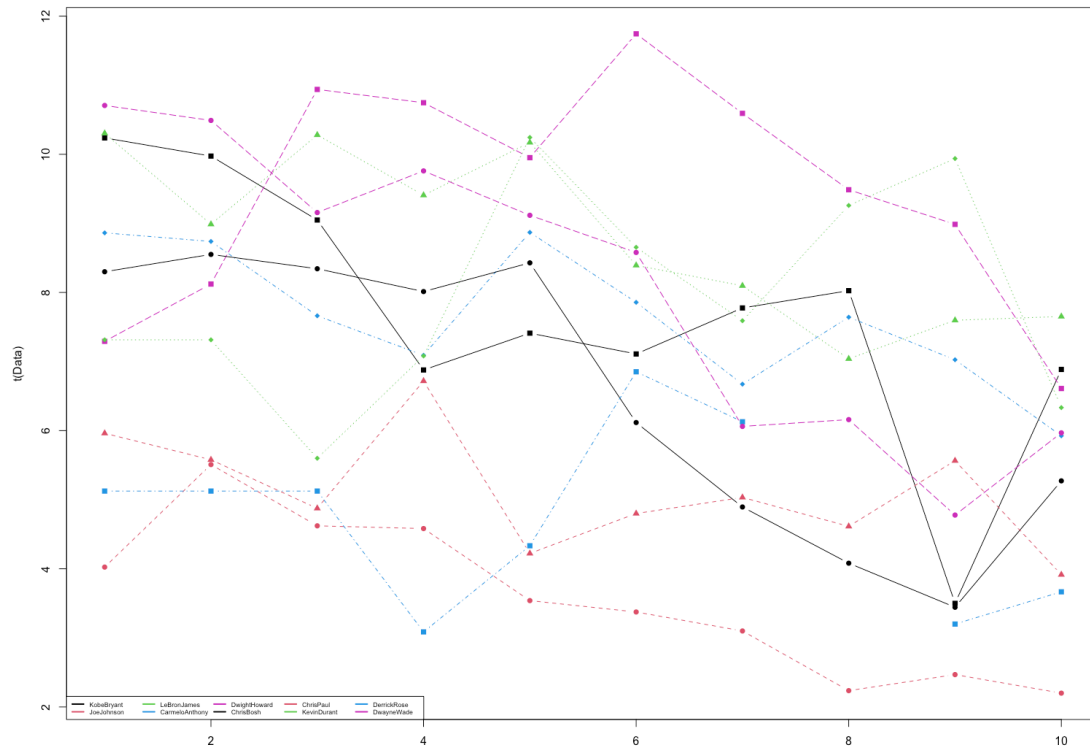
```
# 3) Player playing style (2 vs 3 point preference) excluding free  
throws
```

```
# Create a function to plot quickly ----
```

```
myplot <- function(data, rows = 1:10){  
  Data <- data[rows,,drop=F]  
  matplot(t(Data), type="b", pch=15:18, col=c(1:4,6))  
  #legend("bottomleft", inset=0.01,  
  legend=Players[rows],col=c(1:4,6),pch=15:18, horiz=F)  
  legend("bottomleft", inset = c(0,0) , cex = 0.55, col = c(1:4,6),  
         lty = 1, lwd = 2, ncol = 5, legend = Players)  
}
```

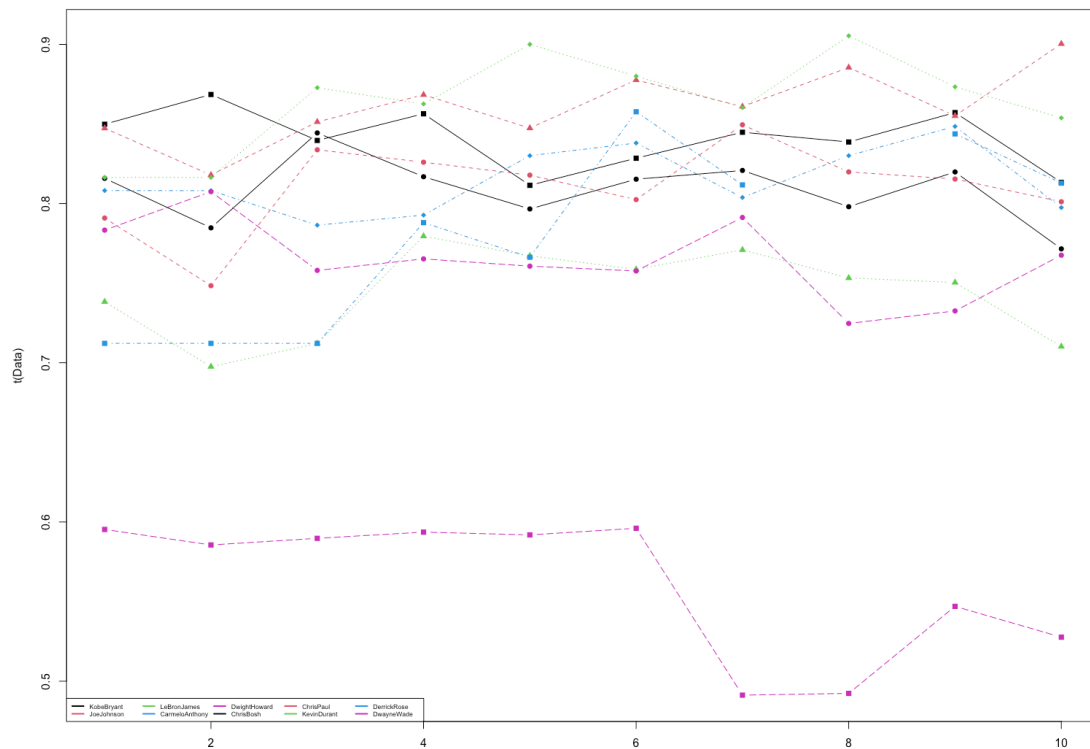
```
# 1) Free throw attempts per game ----
```

```
myplot(FreeThrowAttempts/Games)
```



2) Accuracy of Free Throws ----

`myplot(FreeThrows/FreeThrowAttempts)`



3) Player playing style (2 vs 3 point preference) excluding free throws ----

calculate ratio of points:fieldgoals. Have to subtract free throws first

```
Points.No.FreeThrows <- Points - FreeThrows
```

```
myplot(Points.No.FreeThrows/FieldGoals)
```

