

Basketball Trends and More

Abhinav Kumar

2025-09-19

```
getwd()

## [1] "/Users/abhinav/Downloads/essentials/projects/R prog/NBA records"

setwd("/Users/abhinav/Downloads/essentials/projects/R prog/NBA records")
getwd()

## [1] "/Users/abhinav/Downloads/essentials/projects/R prog/NBA records"

#Seasons
Seasons <- c("2005", "2006", "2007", "2008", "2009", "2010", "2011", "2012", "2013", "2014")

#Players
Players <- c("KobeBryant", "JoeJohnson", "LeBronJames", "CarmeloAnthony", "DwightHoward", "ChrisBosh", "ChrisPaul")

#Salaries
KobeBryant_Salary <- c(15946875, 17718750, 19490625, 21262500, 23034375, 24806250, 25244493, 27849149, 30453805, 32000000)
JoeJohnson_Salary <- c(12000000, 12744189, 13488377, 14232567, 14976754, 16324500, 18038573, 19752645, 21466718, 23000000)
LeBronJames_Salary <- c(4621800, 5828090, 13041250, 14410581, 15779912, 14500000, 16022500, 17545000, 19067500, 20000000)
CarmeloAnthony_Salary <- c(3713640, 4694041, 13041250, 14410581, 15779912, 17149243, 18518574, 19450000, 22407400, 24000000)
DwightHoward_Salary <- c(4493160, 4806720, 6061274, 13758000, 15202590, 16647180, 18091770, 19536360, 20513178, 21000000)
ChrisBosh_Salary <- c(3348000, 4235220, 12455000, 14410581, 15779912, 14500000, 16022500, 17545000, 19067500, 20000000)
ChrisPaul_Salary <- c(3144240, 3380160, 3615960, 4574189, 13520500, 14940153, 16359805, 17779458, 18668431, 20060000)
KevinDurant_Salary <- c(0, 0, 4171200, 4484040, 4796880, 6053663, 15506632, 16669630, 17832627, 18995624)
DerrickRose_Salary <- c(0, 0, 0, 4822800, 5184480, 5546160, 6993708, 16402500, 17632688, 18862875)
DwayneWade_Salary <- c(3031920, 3841443, 13041250, 14410581, 15779912, 14200000, 15691000, 17182000, 18673000, 19000000)

#Matrix
Salary <- rbind(KobeBryant_Salary, JoeJohnson_Salary, LeBronJames_Salary, CarmeloAnthony_Salary, DwightHoward_Salary, ChrisBosh_Salary, ChrisPaul_Salary, KevinDurant_Salary, DerrickRose_Salary, DwayneWade_Salary)
rm(KobeBryant_Salary, JoeJohnson_Salary, CarmeloAnthony_Salary, DwightHoward_Salary, ChrisBosh_Salary, ChrisPaul_Salary, KevinDurant_Salary, DerrickRose_Salary, DwayneWade_Salary)
colnames(Salary) <- Seasons
rownames(Salary) <- Players

#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, LeBronJames_G, ChrisPaul_G)
colnames(Games) <- Seasons
rownames(Games) <- Players

#Minutes Played
KobeBryant_MP <- c(3277,3140,3192,2960,2835,2779,2232,3013,177,1207)
JoeJohnson_MP <- c(3340,2359,3343,3124,2886,2554,2127,2642,2575,2791)
LeBronJames_MP <- c(3361,3190,3027,3054,2966,3063,2326,2877,2902,2493)
CarmeloAnthony_MP <- c(2941,2486,2806,2277,2634,2751,1876,2482,2982,1428)
DwightHoward_MP <- c(3021,3023,3088,2821,2843,2935,2070,2722,2396,1223)
ChrisBosh_MP <- c(2751,2658,2425,2928,2526,2795,2007,2454,2531,1556)
ChrisPaul_MP <- c(2808,2353,3006,3002,1712,2880,2181,2335,2171,2857)
KevinDurant_MP <- c(1255,1255,2768,2885,3239,3038,2546,3119,3122,913)
DerrickRose_MP <- c(1168,1168,1168,3000,2871,3026,1375,0,311,1530)
DwayneWade_MP <- c(2892,1931,1954,3048,2792,2823,1625,2391,1775,1971)

#Matrix
MinutesPlayed <- rbind(KobeBryant_MP, JoeJohnson_MP, LeBronJames_MP, CarmeloAnthony_MP, DwightHoward_MP,
                       ChrisBosh_MP, ChrisPaul_MP, LeBronJames_MP, ChrisPaul_MP)
colnames(MinutesPlayed) <- Seasons
rownames(MinutesPlayed) <- 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, LeBronJames_FG, ChrisPaul_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, LeBronJames_FGA, ChrisPaul_FGA)
colnames(FieldGoalAttempts) <- Seasons
rownames(FieldGoalAttempts) <- Players

```

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

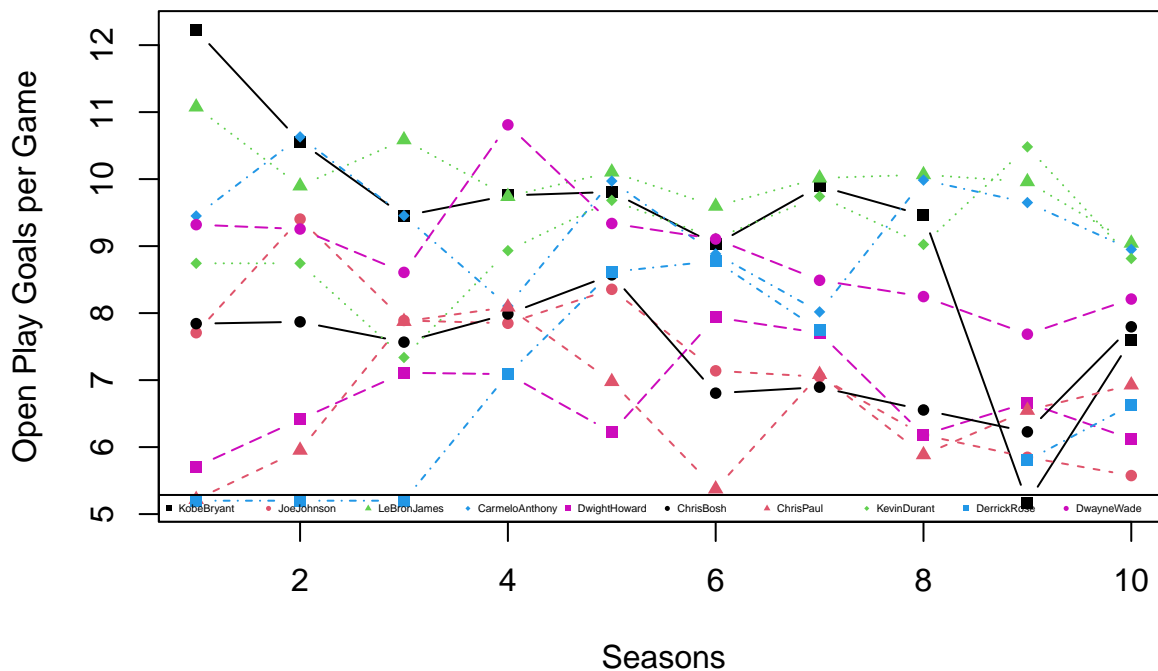
#Points

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

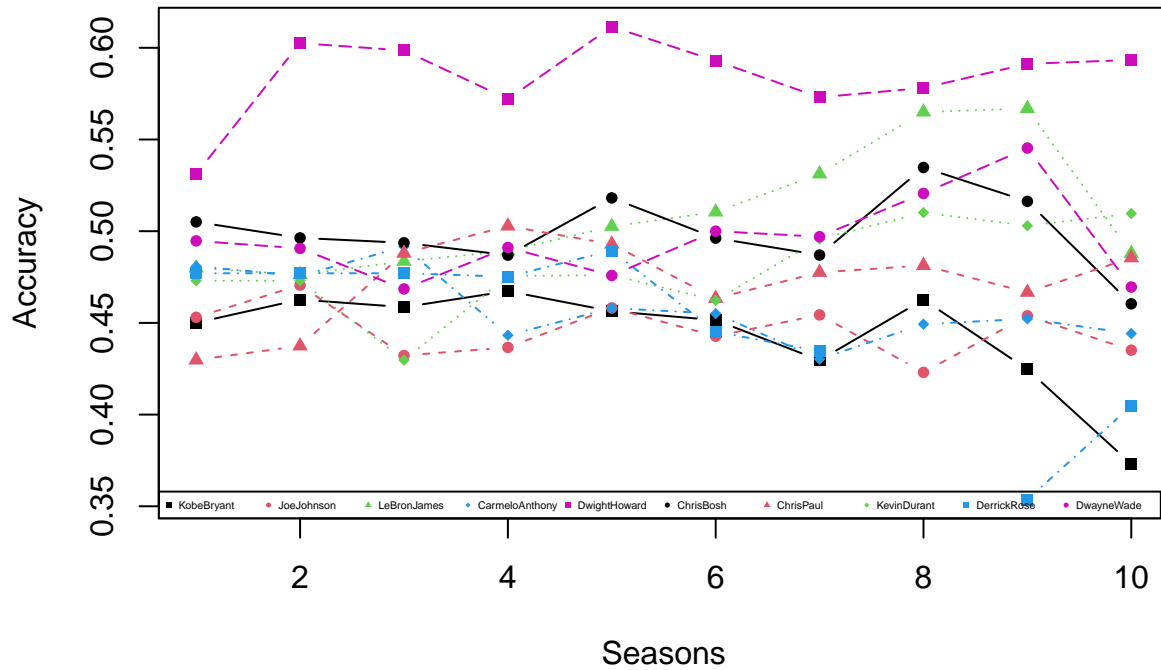
#Matrix

```
Points <- rbind(KobeBryant_PTS, JoeJohnson_PTS, LeBronJames_PTS, CarmeloAnthony_PTS, DwightHoward_PTS, ChrisBosh_PTS, ChrisPaul_PTS, KevinDurant_PTS, DerrickRose_PTS, WayneWade_PTS)
rm(KobeBryant_PTS, JoeJohnson_PTS, LeBronJames_PTS, CarmeloAnthony_PTS, DwightHoward_PTS, ChrisBosh_PTS, ChrisPaul_PTS, KevinDurant_PTS, DerrickRose_PTS, WayneWade_PTS)
colnames(Points) <- Seasons
rownames(Points) <- Players
```

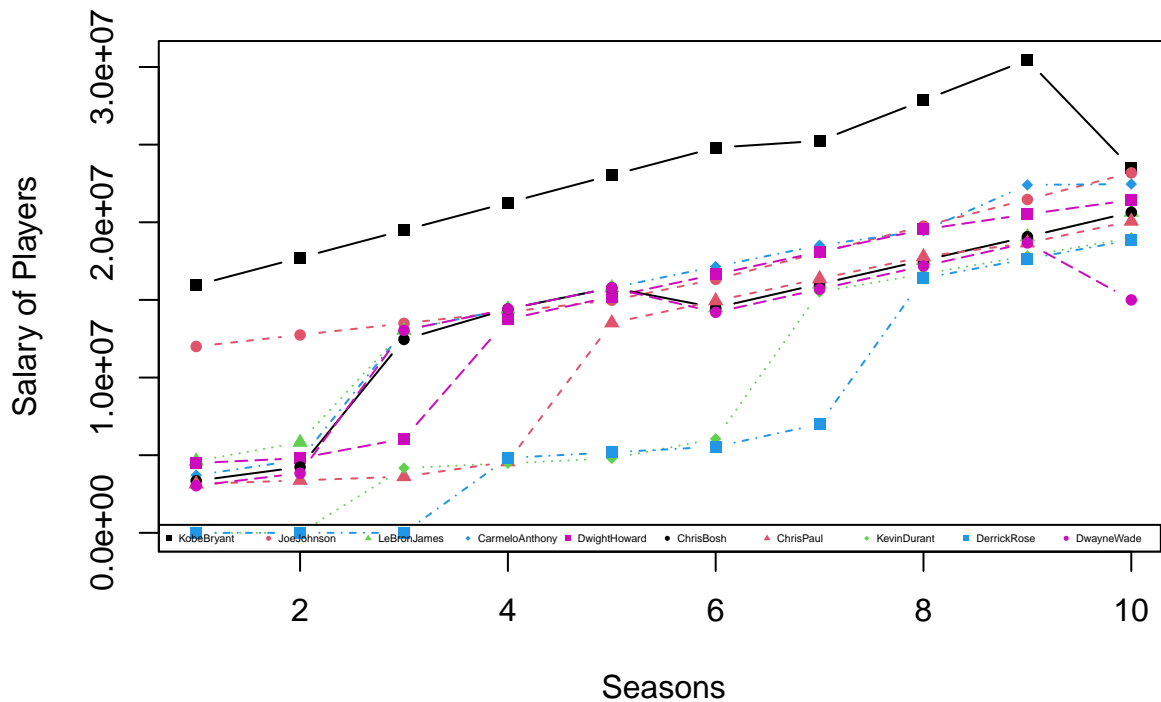
```
matplot(t(FieldGoals/Games), type = "b", pch = 15:18, col = c(1:4, 6), cex = 0.8,
        xlab = "Seasons", ylab = "Open Play Goals per Game")
legend("bottomleft", legend = Players, pch = 15:18, col = c(1:4, 6), cex = 0.35, horiz = T)
```



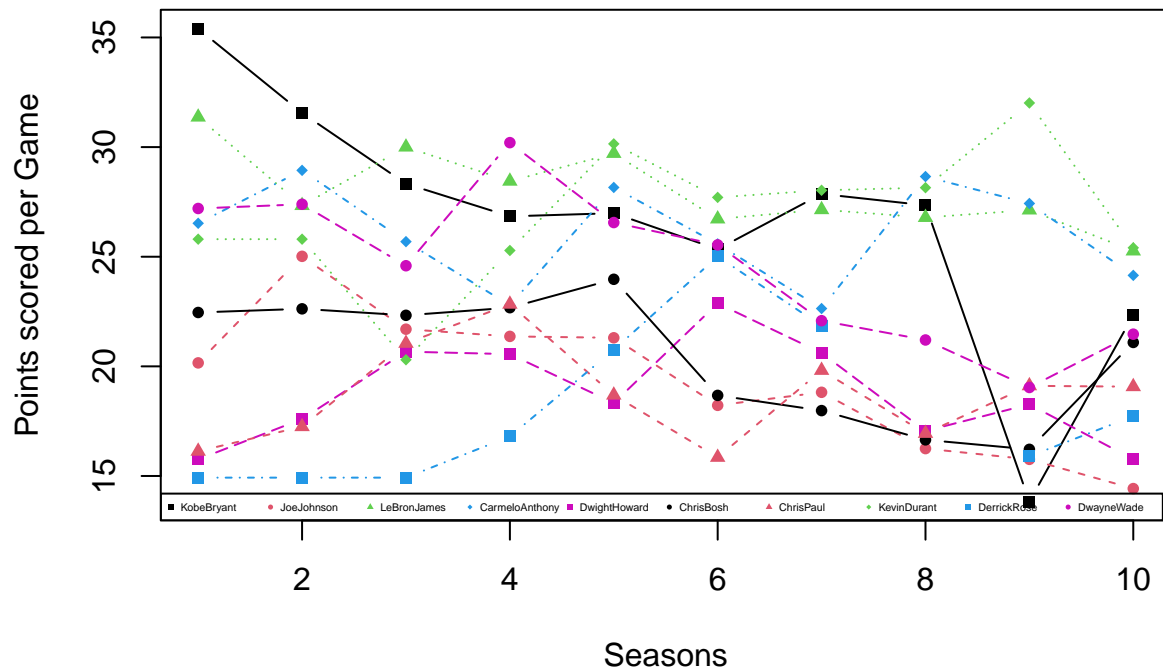
```
matplot(t(FieldGoals/FieldGoalAttempts), type = "b", pch = 15:18, col = c(1:4, 6), cex = 0.8,
        xlab = "Seasons", ylab = "Accuracy")
legend("bottomleft", legend = Players, pch = 15:18, col = c(1:4, 6), cex = 0.35, horiz = T)
```



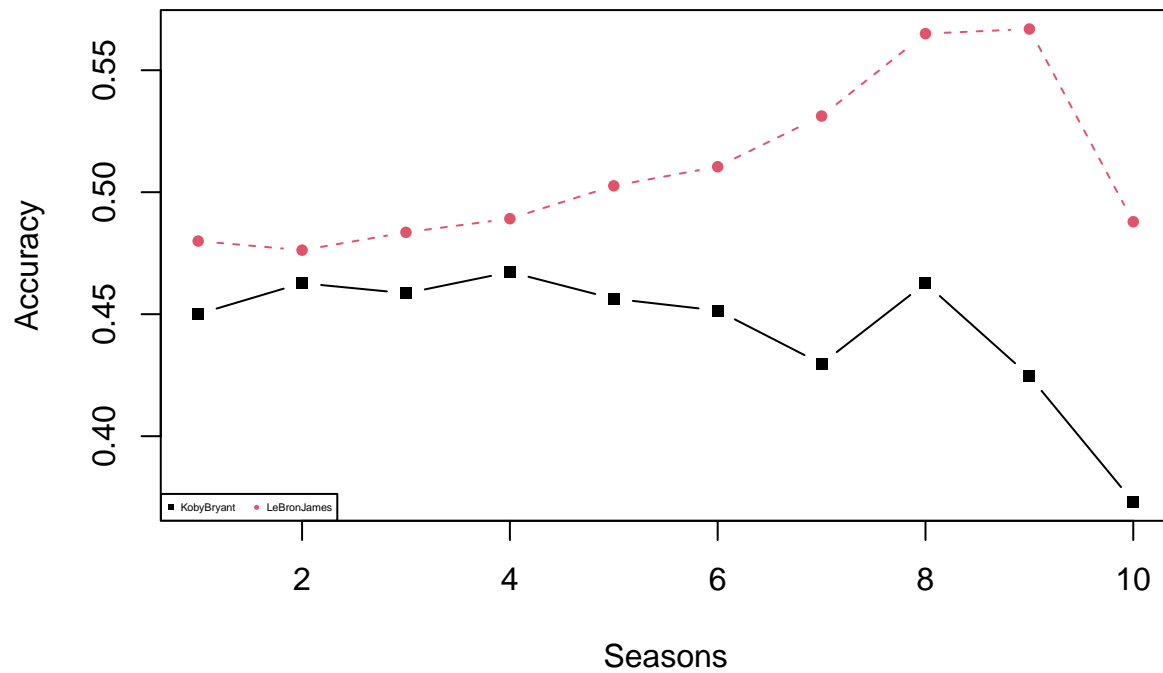
```
matplot(t(Salary), type = "b", pch = 15:18, col = c(1:4, 6), cex = 0.8,
        xlab = "Seasons", ylab = "Salary of Players")
legend("bottomleft", legend = Players, pch = 15:18, col = c(1:4, 6), cex = 0.35, horiz = T)
```



```
matplot(t(Points/Games), type = "b", pch = 15:18, col = c(1:4, 6), cex = 0.8,
        xlab = "Seasons", ylab = "Points scored per Game")
legend("bottomleft", legend = Players, pch = 15:18, col = c(1:4, 6), cex = 0.35, horiz = T)
```



```
subset1 <- FieldGoals[1,, drop=F]
subset2 <- FieldGoals[3,, drop=F]
subset3 <- rbind(subset1, subset2)
subset4 <- FieldGoalAttempts[c(1, 3),]
subset5 <- rbind(subset4)
matplot(t(subset3/subset5), type = "b", pch = 15:18, col = c(1:4, 6), cex = 0.8,
        xlab = "Seasons", ylab = "Accuracy")
legend("bottomleft", legend = c("KobyBryant", "LeBronJames"), pch = 15:18, col = c(1:4, 6), cex = 0.35,
```



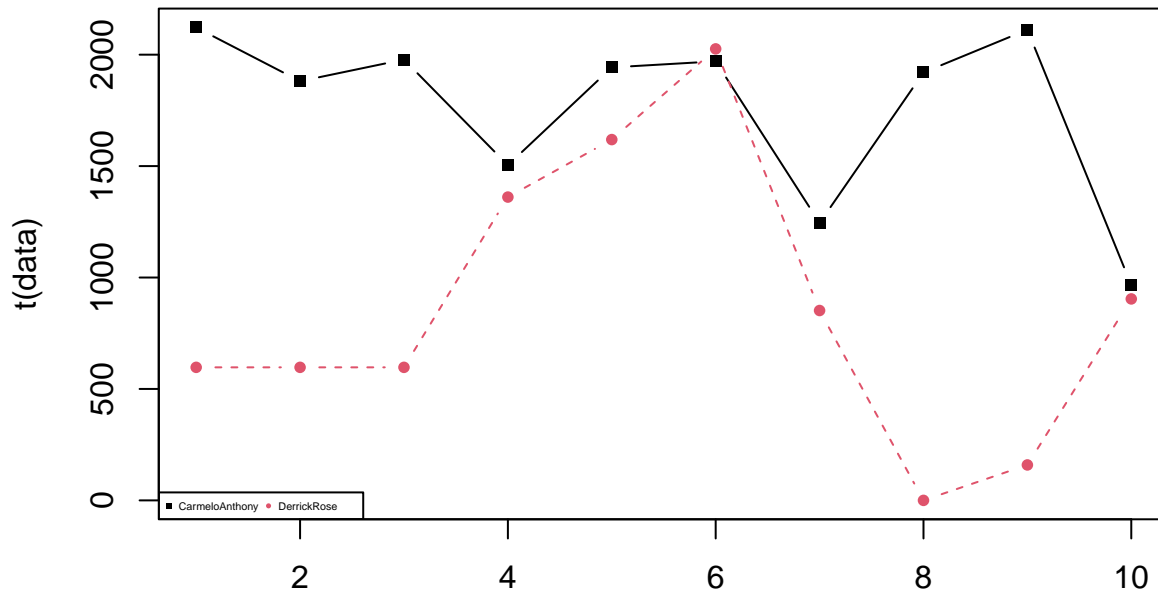
```
plt <- function(data , rows = 1:10)
{
```

```

data <- data[rows,, drop=F]
matplot(t(data), type = "b", pch = 15:18, col = c(1:4, 6), cex = 0.8)
legend("bottomleft", legend = Players[rows], pch = 15:18, col = c(1:4, 6),
      cex = 0.35, horiz = T)
}

plt(Points, c(4, 9)) #Use this function for more insights

```



```

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)

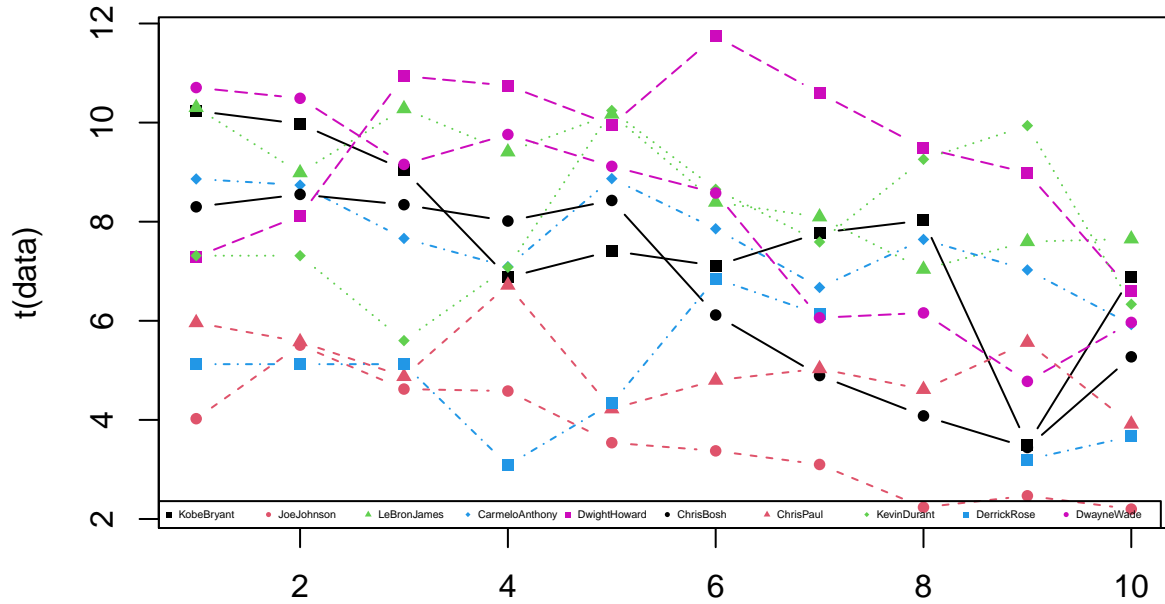
FreeThrows <- rbind(KobeBryant_FT, JoeJohnson_FT, LeBronJames_FT, CarmeloAnthony_FT, DwightHoward_FT, ChrisBosh_FT, ChrisPaul_FT, KevinDurant_FT, DerrickRose_FT, DwayneWade_FT)

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)

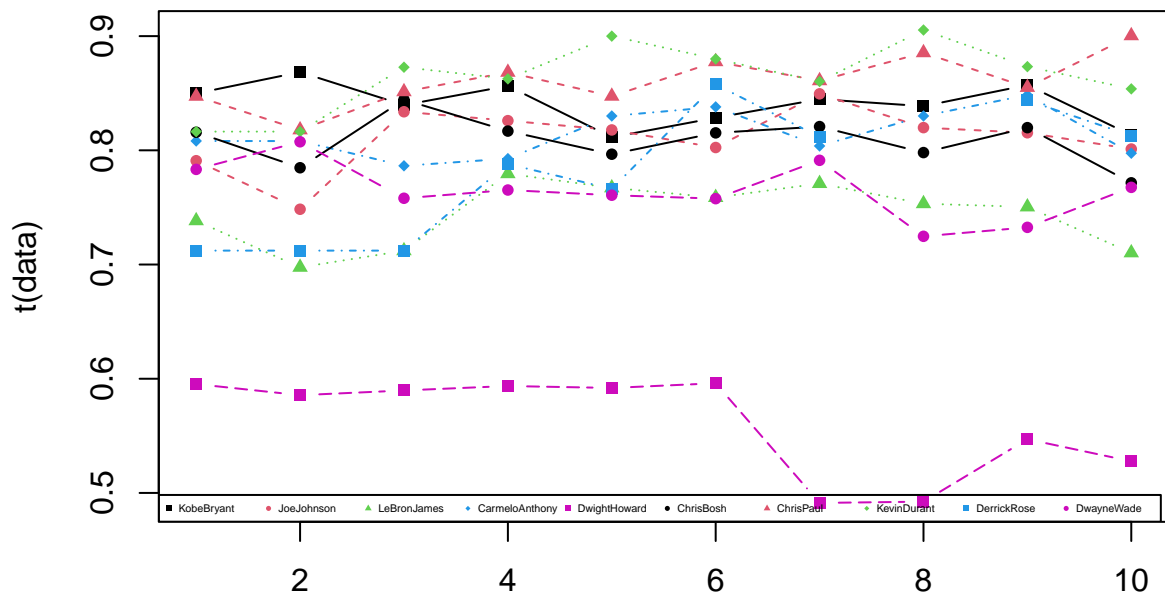
FreeThrowAttempts <- rbind(KobeBryant_FTA, JoeJohnson_FTA, LeBronJames_FTA, CarmeloAnthony_FTA, DwightHoward_FTA, ChrisBosh_FTA, ChrisPaul_FTA, KevinDurant_FTA, DerrickRose_FTA, DwayneWade_FTA)

```

```
plt(FreeThrowAttempts/Games)
```



```
plt(FreeThrows/FreeThrowAttempts)
```



```
plt((Points - FreeThrows)/FieldGoals, c(1,3))
```

