

ANA 515 week5-Visualization

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2023-06-15

##Section 1: Description of the data

The data is related to NBA Forecasts and is sourced from the <https://github.com/fivethirtyeight/data/tree/master/nba-forecasts>. It basically has 2 sets of data one from the 1946 and other is about the latest season data. The data is in CSV format and if it is converted into text file then it can be delimited.

```
##Install the following packages install.packages("dplyr") install.packages("tidyverse") install.packages("knitr")
install.packages("bslib") install.packages("utils")
```

##Section 2: Reading the data into R.

```
## get the dataset from GitHub/fivethirtyeight
url <- "https://projects.fivethirtyeight.com/nba-model/nba_elo_latest.csv"
nbaforecast <- read.csv(url)
```

##Section 3: Clean the data

```
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 4.2.3
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##   filter, lag
```

```
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
library(tidyr)
```

```
## Warning: package 'tidyr' was built under R version 4.2.3
```

```
library(knitr)
```

```
## Warning: package 'knitr' was built under R version 4.2.3
```

```
library(bslib)
```

```
## Warning: package 'bslib' was built under R version 4.2.3
```

```
##  
## Attaching package: 'bslib'
```

```
## The following object is masked from 'package:utils':  
##  
##      page
```

```
library(utils)  
nbaforecast2023<-filter(nbaforecast, season ==2023)  
nbaforecast2023 <- rename (nbaforecast2023, c(year = season, team_a=team1, team_b = team2, final  
rating = total_rating))  
bosceltics <- filter(nbaforecast2023, team_a=="BOS" | team_b=="BOS")  
bosceltics %>%  
  select(c(date, year, team_a, team_b, score1, score2, quality,importance, finalrating))
```

##		date	year	team_a	team_b	score1	score2	quality	importance	finalrating
## 1		2022-10-18	2023	BOS	PHI	126	117	96	13	55
## 2		2022-10-21	2023	MIA	BOS	104	111	96	23	60
## 3		2022-10-22	2023	ORL	BOS	120	126	35	2	19
## 4		2022-10-24	2023	CHI	BOS	120	102	80	17	49
## 5		2022-10-28	2023	BOS	CLE	123	132	84	11	48
## 6		2022-10-30	2023	BOS	WAS	112	94	70	8	39
## 7		2022-11-02	2023	CLE	BOS	114	113	89	23	56
## 8		2022-11-04	2023	BOS	CHI	123	119	78	17	48
## 9		2022-11-05	2023	NYK	BOS	118	133	81	36	59
## 10		2022-11-07	2023	MEM	BOS	106	109	92	10	51
## 11		2022-11-09	2023	BOS	DET	128	112	46	1	24
## 12		2022-11-11	2023	BOS	DEN	131	112	92	8	50
## 13		2022-11-12	2023	DET	BOS	108	117	37	3	20
## 14		2022-11-14	2023	BOS	OKC	126	122	65	3	34
## 15		2022-11-16	2023	ATL	BOS	101	126	89	21	55
## 16		2022-11-18	2023	NOP	BOS	109	117	90	27	59
## 17		2022-11-21	2023	CHI	BOS	121	107	79	27	53
## 18		2022-11-23	2023	BOS	DAL	125	112	93	17	55
## 19		2022-11-25	2023	BOS	SAC	122	104	81	16	49
## 20		2022-11-27	2023	BOS	WAS	130	121	75	15	45
## 21		2022-11-28	2023	BOS	CHO	140	105	30	5	18
## 22		2022-11-30	2023	BOS	MIA	134	121	85	13	49
## 23		2022-12-02	2023	BOS	MIA	116	120	90	18	54
## 24		2022-12-04	2023	BRK	BOS	92	103	91	32	62
## 25		2022-12-05	2023	TOR	BOS	110	116	93	26	60
## 26		2022-12-07	2023	PHO	BOS	98	125	93	17	55
## 27		2022-12-10	2023	GSW	BOS	123	107	92	27	60
## 28		2022-12-12	2023	LAC	BOS	113	93	84	38	61
## 29		2022-12-13	2023	LAL	BOS	118	122	76	20	48
## 30		2022-12-16	2023	BOS	ORL	109	117	54	2	28
## 31		2022-12-18	2023	BOS	ORL	92	95	49	2	26
## 32		2022-12-21	2023	BOS	IND	112	117	76	12	44
## 33		2022-12-23	2023	BOS	MIN	121	109	81	24	53
## 34		2022-12-25	2023	BOS	MIL	139	118	91	9	50
## 35		2022-12-27	2023	BOS	HOU	126	102	51	0	26
## 36		2022-12-29	2023	BOS	LAC	116	110	90	19	55
## 37		2023-01-01	2023	DEN	BOS	123	111	92	9	51
## 38		2023-01-03	2023	OKC	BOS	150	117	42	3	23
## 39		2023-01-05	2023	DAL	BOS	95	124	90	15	53
## 40		2023-01-07	2023	SAS	BOS	116	121	33	1	17
## 41		2023-01-09	2023	BOS	CHI	107	99	80	18	49
## 42		2023-01-11	2023	BOS	NOP	125	114	84	8	46
## 43		2023-01-12	2023	BRK	BOS	98	109	90	12	51
## 44		2023-01-14	2023	CHO	BOS	106	122	70	4	37
## 45		2023-01-16	2023	CHO	BOS	118	130	61	3	32
## 46		2023-01-19	2023	BOS	GSW	121	118	91	30	61
## 47		2023-01-21	2023	TOR	BOS	104	106	80	29	55
## 48		2023-01-23	2023	ORL	BOS	113	98	60	5	33
## 49		2023-01-24	2023	MIA	BOS	98	95	89	25	57
## 50		2023-01-26	2023	BOS	NYK	117	120	83	27	55
## 51		2023-01-28	2023	BOS	LAL	125	121	71	18	45

## 52	2023-02-01	2023	BOS	BRK	139	96	81	6	44
## 53	2023-02-03	2023	BOS	PHO	94	106	76	16	46
## 54	2023-02-06	2023	DET	BOS	99	111	41	4	23
## 55	2023-02-08	2023	BOS	PHI	106	99	91	13	52
## 56	2023-02-10	2023	BOS	CHO	127	116	50	3	27
## 57	2023-02-12	2023	BOS	MEM	119	109	89	8	49
## 58	2023-02-14	2023	MIL	BOS	131	125	82	13	48
## 59	2023-02-15	2023	BOS	DET	127	109	42	2	22
## 60	2023-02-23	2023	IND	BOS	138	142	68	7	38
## 61	2023-02-25	2023	PHI	BOS	107	110	94	12	53
## 62	2023-02-27	2023	NYK	BOS	109	94	90	16	53
## 63	2023-03-01	2023	BOS	CLE	117	113	93	7	50
## 64	2023-03-03	2023	BOS	BRK	105	115	84	14	49
## 65	2023-03-05	2023	BOS	NYK	129	131	91	5	48
## 66	2023-03-06	2023	CLE	BOS	118	114	87	6	47
## 67	2023-03-08	2023	BOS	POR	115	93	69	11	40
## 68	2023-03-11	2023	ATL	BOS	125	134	88	40	64
## 69	2023-03-13	2023	HOU	BOS	111	109	24	1	13
## 70	2023-03-15	2023	MIN	BOS	102	104	89	58	74
## 71	2023-03-17	2023	POR	BOS	112	126	72	7	40
## 72	2023-03-18	2023	UTA	BOS	118	117	59	26	43
## 73	2023-03-21	2023	SAC	BOS	109	132	83	4	44
## 74	2023-03-24	2023	BOS	IND	120	95	73	5	39
## 75	2023-03-26	2023	BOS	SAS	137	93	30	0	15
## 76	2023-03-28	2023	WAS	BOS	130	111	68	6	37
## 77	2023-03-30	2023	MIL	BOS	99	140	95	22	59
## 78	2023-03-31	2023	BOS	UTA	122	114	35	3	19
## 79	2023-04-04	2023	PHI	BOS	103	101	95	17	56
## 80	2023-04-05	2023	BOS	TOR	97	93	86	64	75
## 81	2023-04-07	2023	BOS	TOR	121	102	87	13	50
## 82	2023-04-09	2023	BOS	ATL	120	114	46	3	25
## 83	2023-04-15	2023	BOS	ATL	112	99	93	86	90
## 84	2023-04-18	2023	BOS	ATL	119	106	93	71	82
## 85	2023-04-21	2023	ATL	BOS	130	122	93	38	66
## 86	2023-04-23	2023	ATL	BOS	121	129	93	94	94
## 87	2023-04-25	2023	BOS	ATL	117	119	93	25	59
## 88	2023-04-27	2023	ATL	BOS	120	128	93	100	97
## 89	2023-05-01	2023	BOS	PHI	115	119	96	100	98
## 90	2023-05-03	2023	BOS	PHI	121	87	99	100	100
## 91	2023-05-05	2023	PHI	BOS	102	114	98	100	99
## 92	2023-05-07	2023	PHI	BOS	116	115	98	100	99
## 93	2023-05-09	2023	BOS	PHI	103	115	98	100	99
## 94	2023-05-11	2023	PHI	BOS	86	95	98	100	99
## 95	2023-05-14	2023	BOS	PHI	112	88	98	100	99
## 96	2023-05-17	2023	BOS	MIA	116	123	97	100	99
## 97	2023-05-19	2023	BOS	MIA	105	111	97	100	99
## 98	2023-05-21	2023	MIA	BOS	128	102	97	100	99
## 99	2023-05-23	2023	MIA	BOS	99	116	97	100	99
## 100	2023-05-25	2023	BOS	MIA	110	97	97	100	99

##	101	2023-05-27	2023	MIA	BOS	103	104	97	100	99
##	102	2023-05-29	2023	BOS	MIA	84	103	97	100	99

Section 4: Characterstics of the data

This data set has 102 rows and 27 columns.

Section 5: Summary Staistics

```
kable(str(bosceltics))
```

```
## 'data.frame':    102 obs. of  27 variables:
## $ date          : chr  "2022-10-18" "2022-10-21" "2022-10-22" "2022-10-24" ...
## $ year          : int   2023 2023 2023 2023 2023 2023 2023 2023 2023 2023 ...
## $ neutral       : int    0 0 0 0 0 0 0 0 0 ...
## $ playoff       : chr   "" "" "" "" ...
## $ team_a        : chr   "BOS" "MIA" "ORL" "CHI" ...
## $ team_b        : chr   "PHI" "BOS" "BOS" "BOS" ...
## $ elo1_pre      : num   1658 1599 1359 1433 1651 ...
## $ elo2_pre      : num   1582 1662 1672 1675 1524 ...
## $ elo_prob1     : num    0.733 0.553 0.228 0.307 0.787 ...
## $ elo_prob2     : num    0.267 0.447 0.772 0.693 0.213 ...
## $ elo1_post     : num   1662 1589 1356 1457 1632 ...
## $ elo2_post     : num   1578 1672 1675 1651 1543 ...
## $ carm.elo1_pre : logi   NA NA NA NA NA NA ...
## $ carm.elo2_pre : logi   NA NA NA NA NA NA ...
## $ carm.elo_prob1: logi   NA NA NA NA NA NA ...
## $ carm.elo_prob2: logi   NA NA NA NA NA NA ...
## $ carm.elo1_post: logi   NA NA NA NA NA NA ...
## $ carm.elo2_post: logi   NA NA NA NA NA NA ...
## $ raptor1_pre   : num   1693 1641 1298 1479 1699 ...
## $ raptor2_pre   : num   1642 1691 1676 1699 1505 ...
## $ raptor_prob1  : num    0.671 0.541 0.146 0.311 0.819 ...
## $ raptor_prob2  : num    0.329 0.459 0.854 0.689 0.181 ...
## $ score1       : int   126 104 120 120 123 112 114 123 118 106 ...
## $ score2       : int   117 111 126 102 132 94 113 119 133 109 ...
## $ quality      : int    96 96 35 80 84 70 89 78 81 92 ...
## $ importance   : int    13 23 2 17 11 8 23 17 36 10 ...
## $ finalrating  : int    55 60 19 49 48 39 56 48 59 51 ...
```

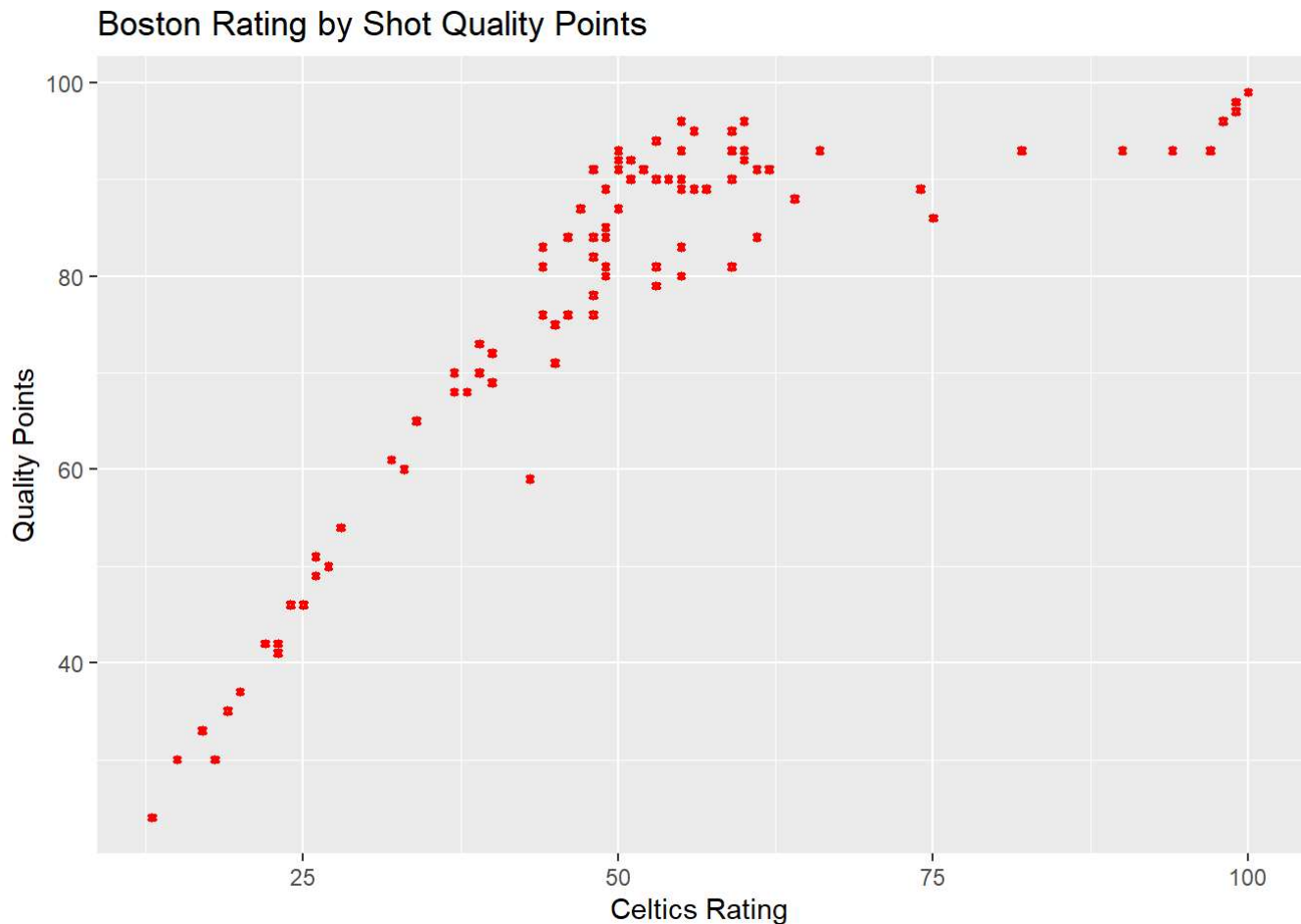
Print Scatter Plot

This scatter plot shows the rating of Boston Celtics by the shot quality. As shot quality is the key indicator in basket ball and it predicts the shot outcome by evaluating the quality of an attempt.

```
## Print ScatterPlot
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.2.3
```

```
ggplot(data = bosceltics, aes(x = finalrating, y = quality))+ geom_point(  
  color="red",shape=11,size=0.2,stroke = 1)+  
  labs(title = "Boston Rating by Shot Quality Points", x = "Celtics Rating", y="Quality Points")
```



Print Bar Chart

This bar chart shows the frequency of Celtics final rating in the whole season.

```
ggplot(data=bosceltics)+  
  geom_bar(mapping = aes(x = finalrating), color='white')+  
  labs(title = "Boston Celtics Rating in the Season", x = "Celtics Rating", y="Frequency") + sca  
le_y_discrete(limits=c("1","2", "3","4","5", "6","7","8","9","10","11","12"))
```

Boston Celtics Rating in the Season

