

VAS DATA

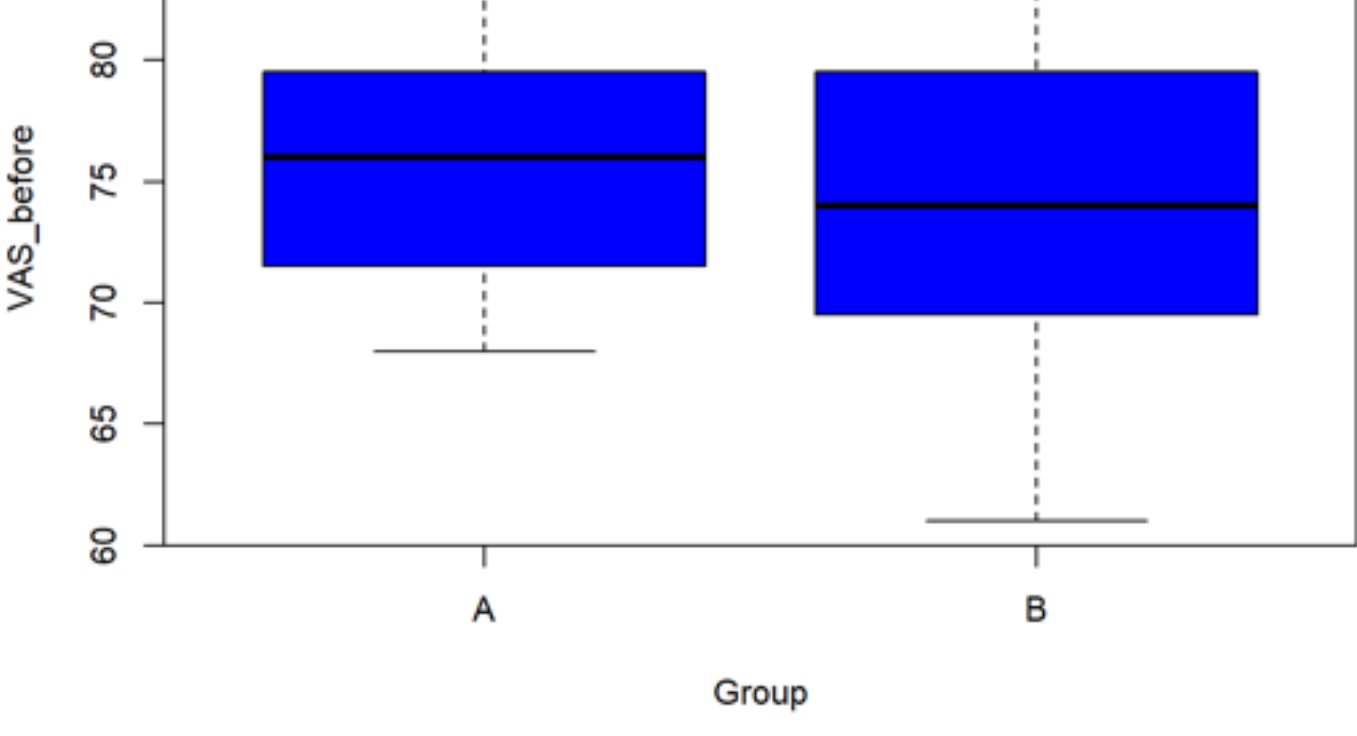
1. Import data and check top 6 rows.

```
data<-read.csv( "VAS DATA.csv",header=T)
head(data,6)
```

	Group	VAS_before	VAS_after
1	A	86	71
2	A	77	59
3	A	75	44
4	A	83	49
5	A	72	32
6	A	70	42

2. Visualize baseline VAS score (VAS_before) by treatment group.

```
boxplot(VAS_before~Group,data = data,col="blue")
```



3. Obtain measures of central tendency and variation for VAS_before by treatment group.

Using base R aggregate function

```
f <- function(x) {
  c(
    n = round(length(x),2),
    mean = round(mean(x),2),
    median = round(median(x),2),
    sd = round(sd(x),2)
  )
}

summary_stats_VAS_before <- aggregate(VAS_before ~ Group, data=data,
, FUN=f)
summary_stats_VAS_before
```

	Group	VAS_before.n	VAS_before.mean	VAS_before.median	VAS_before.s
1	A	16.00	76.00	76.00	5.5
6					
2	B	16.00	74.31	74.00	6.6
8					

Using dplyr package group_by and summarise functions

```
library(dplyr)
data %>%
  group_by(Group) %>%
  summarise(n=round(length(VAS_before),2),
            mean = round(mean(VAS_before),2),
            median = round(median(VAS_before),2),
            sd = round(sd(VAS_before),2)) %>%
  as.data.frame()
```

	Group	n	mean	median	sd
1	A	16	76.00	76	5.56
2	B	16	74.31	74	6.68

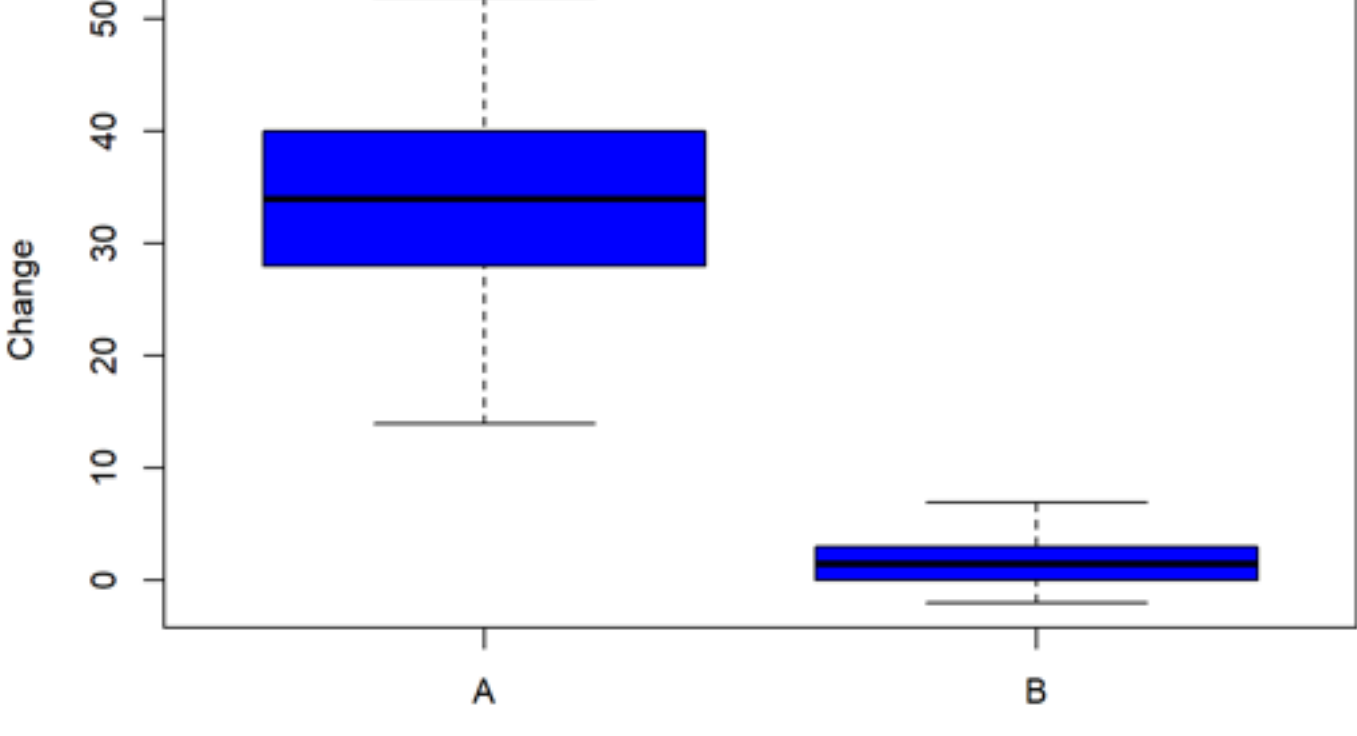
4. Derive a new variable- Change from baseline after 3 days of treatment

```
data$Change<-data$VAS_before-data$VAS_after
head(data)
```

	Group	VAS_before	VAS_after	Change
1	A	86	71	15
2	A	77	59	18
3	A	75	44	31
4	A	83	49	34
5	A	72	32	40
6	A	70	42	28

5. Visualize the change from baseline by treatment group

```
boxplot(Change~Group,data = data,col="blue")
```



6. Derive a new variable indicating 20 points drop in VAS score from baseline

```
data$Change_20<-ifelse(data$Change > 20,"Yes", "No")
head(data)
```

	Group	VAS_before	VAS_after	Change	Change_20
1	A	86	71	15	No
2	A	77	59	18	No
3	A	75	44	31	Yes
4	A	83	49	34	Yes
5	A	72	32	40	Yes
6	A	70	42	28	Yes

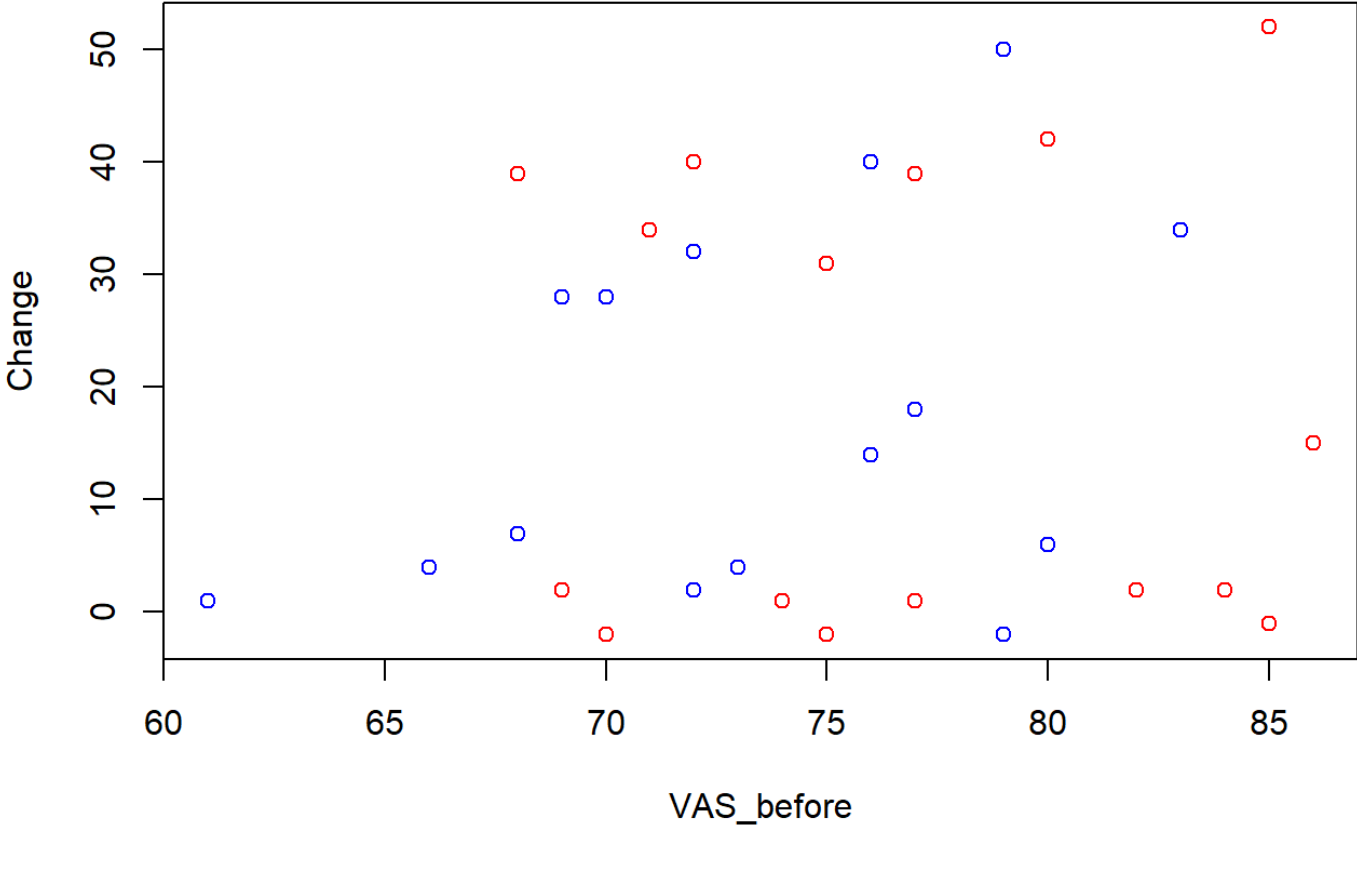
7. Obtain cross table of above indicator variable with treatment group

```
table(data$Change_20,data$Group)
```

	A	B
No	3	16
Yes	13	0

8. Visualize the relationship between Change from baseline and baseline score

```
plot(data$VAS_before,data$Change,col=c("red","blue"),main = "Scatter Plot of VAS_before vs. Change",
      xlab = "VAS_before", ylab = "Change")
```



9. Obtain correlation coefficient between Change from baseline and baseline score

```
cor(data$VAS_before,data$Change)
```

```
[1] 0.1296909
```