install.packages(c("tidyverse"), dependencies = TRUE)

install.packages(c("openxlsx"), dependencies = TRUE)

library(tidyverse)

library(readxl)

Grader1 <- read\_excel("Downloads/Baseline\_data.xlsx",sheet = "Grader 1", col\_types = c("numeric", "numeric", "numeric", "numeric", "numeric"))

Grader1 <- Grader1[-c(65), ]

Grader2 <- read\_excel("Downloads/Baseline\_data.xlsx",sheet = "Grade 2", col\_types = c("numeric", "numeric", "numeric", "numeric", "numeric"))

Grader2 <- Grader2[-c(65), ]

Grader3 <- read\_excel("Downloads/Baseline\_data.xlsx",sheet = "Grader 3", col\_types = c("numeric", "numeric", "numeric", "numeric", "numeric"))

Grader3 <- Grader3[-c(65), ]

Grader1 <- Grader1 %>% add\_column(Grader = 1, .before = "NO")

Grader2 <- Grader2 %>% add\_column(Grader = 2, .before = "NO")

Grader3 <- Grader3 %>% add\_column(Grader = 3, .before = "NO")

total <- rbind(Grader1, Grader2, Grader3)

Transformed\_Data <- tibble::rowid\_to\_column(total, "Index")

openxlsx::write.xlsx(Transformed\_Data, file = "/Users/charmchong/Downloads/Transformed\_DataCharm.xlsx", sheetName = "Transformed\_Data")

agg = aggregate(Transformed\_Data,

+ by = list(Transformed\_Data$Grader),

+ FUN = mean)

agg

agg [c("Grader", "NO", "NC")]

Transformed\_Data %>% group\_by(Grader) %>% summarise(mean\_NO = mean(NO), mean\_NC= mean (NC), median\_NO = median(NO), median\_NC = median(NC), total\_imagecount = n())

basic\_analytics <- Transformed\_Data %>% group\_by(Grader) %>% summarise(mean\_NO = mean(NO), mean\_NC= mean (NC), median\_NO = median(NO), median\_NC = median(NC), total\_imagecount = n())

ttest\_NO\_1\_2 <- t.test(Grader1["NO"], Grader2["NO"])

ttest\_NO\_2\_3 <- t.test(Grader2["NO"], Grader3["NO"])

ttest\_NO\_1\_3 <- t.test(Grader1["NO"], Grader3["NO"])

TransformedData\_Grader1 <- Transformed\_Data[ which(Transformed\_Data$Grader=='1'),]

t.test(Transformed\_Data[ which(Transformed\_Data$Grader=='1'),]["NO"], Transformed\_Data[ which(Transformed\_Data$Grader=='2'),]["NO"])

anovaresults <- aov (Grader ~ NO + NC, data = Transformed\_Data)

> summary (anovaresults)

install.packages("ggpubr")

ggboxplot(Transformed\_Data, x = "Grader", y = "NC")

ggboxplot(Transformed\_Data, x = "Grader", y = "NO")