

Exercise 12

Mohammad Imtiaz Nur

5/1/2021

Task 1 : Friedman Test

```
data <-  
  matrix(c(2, 1, 2004,  
           48, 1, 2005,  
           40, 1, 2006,  
           3, 2, 2004,  
           120, 2, 2005,  
           81, 2, 2006,  
           2, 3, 2004,  
           16, 3, 2005,  
           36, 3, 2006,  
           7, 4, 2004,  
           21, 4, 2005,  
           17, 4, 2006,  
           2, 5, 2004,  
           14, 5, 2005,  
           17, 5, 2006),  
        nrow = 15,  
        byrow = TRUE,  
        dimnames = list(1 : 15,  
                          c("Count", "Month", "Year")))  
  
friedman.test(data)
```

```
##  
## Friedman rank sum test  
##  
## data: data  
## Friedman chi-squared = 26.533, df = 2, p-value = 1.731e-06
```

From the Friedman Test, the p-value (1.731e-06) is very much less than the significance level 0.05. Hence, strong evidence against the null that all medians are equal and say the difference between some of the median count values for years are statistically significant when months are block.

Task 2: Post-hoc Test

```

count<-data[,1]
# month<-data[,2]
# year<-data[,3]

data2 <- data.frame(
  group = rep(c("2004", "2005","2006")),
  weight = c(count))

pairwise.wilcox.test(count, data2$group, p.adjust.method = "BH", exact=FALSE)

```

```

##
## Pairwise comparisons using Wilcoxon rank sum test
##
## data: count and data2$group
##
##      2004  2005
## 2005 0.017 -
## 2006 0.017 0.834
##
## P value adjustment method: BH

```

From the Pairwise Wilcox Test, the p-value is 0.017 for both yearly pair in 2004-2005 and 2004-2006 which is less than 0.05. Hence, 2004 year's median count is significantly different from 2005 and 2006's median count.