Session4

Omotolani Ligali

10/31/2019

#QUESTION 1: One sample t-test

#Answer:

#Hypothesis

#Null Hypothesis: The mean is equal to 0.4

#Alternate Hypothesis: The mean is not equal to 0.4

#Level of Significance: The level of significance is 0.05

#Test:

dt<-read.csv("data/diamond.csv",header = T)  
carat<-t.test(dt$carat,mu = 0.4,alternative = "greater")  
carat

##   
## One Sample t-test  
##   
## data: dt$carat  
## t = 194.98, df = 53939, p-value < 2.2e-16  
## alternative hypothesis: true mean is greater than 0.4  
## 95 percent confidence interval:  
## 0.7945826 Inf  
## sample estimates:  
## mean of x   
## 0.7979397

#Conclusion: The null hypothesis is rejected because the p-value from the test is less than 0.05

#QUESTION 2: Two sample independent T-test

#Answer:

#Hypothesis

#Null Hypothesis: The difference in mean of group M and group B is equal to zero

#Alternate Hypothesis: The difference in mean of group M and group B is not equal to zero

#Level of Significance: The level of significance is 0.05

#Test:

ct<-read.csv("data/cancer.csv",header = T)  
t.test(ct$area\_worst~ct$diagnosis,alternative ="two.sided")

##   
## Welch Two Sample t-test  
##   
## data: ct$area\_worst by ct$diagnosis  
## t = -20.571, df = 229.91, p-value < 2.2e-16  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -946.0847 -780.6890  
## sample estimates:  
## mean in group B mean in group M   
## 558.8994 1422.2863

#Conclusion: The null hypothesis is rejected. Therefore the p-value from the test is less than 0.05 and the true difference in mean is not equal to zero

#QUESTION 3:Two sample paired test

#Answer:

#Hypothesis

#Null Hypothesis: The difference in mean of tumor size before treatment and tumor size after treatment is equal to zero

#Alternate Hypothesis: The difference in mean of tumor size before treatment and tumor size after treatment is not equal to zero

#Level of Significance: The level of significance is 0.05

#Test:

tumor<-c(80, 45, 78, 89, 80, 90, 91, 89, 56, 78, 89,81)

tumor1<-c(61, 71, 62, 78, 88, 71, 78, 79, 67, 66,78,79)

t.test(tumor,tumor1,paired = TRUE)

##   
## Paired t-test  
##   
## data: tumor and tumor1  
## t = 1.4164, df = 11, p-value = 0.1843  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -3.138663 14.471997  
## sample estimates:  
## mean of the differences   
## 5.666667

#Conclusion: The null hypothesis is rejected. Therefore the p-value from the test is less than 0.05 and the true difference in mean is not equal to zero