9-3-23

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z.onemean =function(xbar,mu,sd,n){  
 z\_one =(xbar - mu) /(sd/sqrt(n))  
 return(z\_one)  
}  
z1<-z.onemean(160,165,10,100)  
print(z1)

## [1] -5

z\_cri=qnorm(1-(0.01/2),0,1)  
print(z\_cri)

## [1] 2.575829

#conclusion :abs(z1)>abs(z\_cri),reject H\_0  
  
z.twotest = function(x1bar,x2bar,mu1,mu2,sd1,sd2,n1,n2){  
 z\_2=((x1bar-x2bar)-(mu1-mu2))/  
 (sqrt((sd1^2/n1)+(sd2^2/n2)))  
 return(z\_2)  
}  
  
z2<-z.twotest(170,172,0,0,6.4,6.3,6400,1600)  
print(z2)

## [1] -11.32164

#t-test  
#a random sample of 10 boys had the following i.q's :  
#70,120,110,101,88,83,95,98,107,100.  
  
data<-c(70,120,110,101,88,83,95,98,107,100)  
t.test(data,alternative ="two.sided",mu=100,conf.level=0.95)

##   
## One Sample t-test  
##   
## data: data  
## t = -0.62034, df = 9, p-value = 0.5504  
## alternative hypothesis: true mean is not equal to 100  
## 95 percent confidence interval:  
## 86.98934 107.41066  
## sample estimates:  
## mean of x   
## 97.2

qt(1-0.025,9)

## [1] 2.262157

#two sample t-test  
#in a certain experiment to compare two types of pig foods a and b . the following   
#results of increase in weights were observed in pigs:  
#food a: 49 53 51 52 47 50 52 53  
#food b: 52 55 52 53 50 54 54 53  
#assuming that the two samples of pigs are independent,can we conplude that food b   
# is better than food a  
#case-1  
Fa<-c(49,53,51,52,47,50,52,53)  
Fb<-c(52,55,52,53,50,54,54,53)  
t.test(Fa,Fb,var.equal=TRUE,alternative="less",conf.level=0.95)

##   
## Two Sample t-test  
##   
## data: Fa and Fb  
## t = -2.1659, df = 14, p-value = 0.02404  
## alternative hypothesis: true difference in means is less than 0  
## 95 percent confidence interval:  
## -Inf -0.3735957  
## sample estimates:  
## mean of x mean of y   
## 50.875 52.875

qt(1-0.05,14)

## [1] 1.76131

#case-2  
t.test(Fa,Fb,var.equal=TRUE,alternative="less",conf.level = 0.95)

##   
## Two Sample t-test  
##   
## data: Fa and Fb  
## t = -2.1659, df = 14, p-value = 0.02404  
## alternative hypothesis: true difference in means is less than 0  
## 95 percent confidence interval:  
## -Inf -0.3735957  
## sample estimates:  
## mean of x mean of y   
## 50.875 52.875

qt(1-0.05,7)

## [1] 1.894579

#conclusion: reject H0,