adv.stats.mod5.R

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#####Question1####   
#A  
#Null hypothesis- The machine is making an average of 70 cookies   
#Alternative hypothesis- the machine is not making an average of 70 cookies  
  
#B. Is there evidence that the machine is not meeting the manufacturer's   
#specifications for average strength? Use a 0.05 level of significance \_\_\_\_\_\_\_   
  
a= 70  
s= 3.5  
n= 49  
xbar= 69.1  
z= (xbar-a)/(s/sqrt(n))  
z> 2\*pnorm(-abs(z))

## [1] FALSE

z

## [1] -1.8

#pnorm  
alpha= .05  
z.half.alpha=qnorm(1-alpha/2)  
c(-z.half.alpha, z.half.alpha)

## [1] -1.959964 1.959964

xxx= 2\*pnorm(z) #lower tail  
xxx #two tailed p value

## [1] 0.07186064

#C. Compute the p value and intrepret its meaning  
xxx= 2\*pnorm(z) #lower tail  
xxx

## [1] 0.07186064

#P-value is 0.07186064  
#This means that the probability of the above results happening   
#by chance is 0.07186064  
  
#D. What would be your answer in (B) if the standard deviation were specified as 1.75 pounds?  
a<- 70  
s<- 1.75  
n<- 49  
xbar<- 69.1  
z<- (xbar-a)/(s/sqrt(n))  
z> 2\*pnorm(-abs(z))

## [1] FALSE

z

## [1] -3.6

#pnorm  
alpha=0.05  
z.half.alpha= qnorm(1-alpha/2)  
c(-z.half.alpha, z.half.alpha)

## [1] -1.959964 1.959964

xxx= 2\*pnorm(z) #lower tail  
xxx #two tailed p-value

## [1] 0.0003182172

#E. What would be your answer in (B) if the sample mean   
#were 69 pounds and the standard deviation is 3.5 pounds?  
a <- 70  
s <- 3.5  
n <- 49  
xbar <- 69  
z <- (xbar-a)/(s/sqrt(n))  
z > 2\*pnorm(-abs(z))

## [1] FALSE

z

## [1] -2

#pnorm  
alpha= 0.05  
z.half.alpha= qnorm(1-alpha/2)  
c(-z.half.alpha, z.half.alpha)

## [1] -1.959964 1.959964

xxx= 2\*pnorm(z) #lower tail  
xxx #two tailed p-value

## [1] 0.04550026

####Question2####  
xbar<- 85  
stdev<- 8  
n<- 64  
error<- qnorm(0.995)\*(stdev/sqrt(n))  
xbar-error

## [1] 82.42417

xbar+error

## [1] 87.57583

####Question3###  
x<- c(92,108,135)  
y<- c(95.9,113,141)  
z<- NULL  
df<- data.frame(x,y)  
#a  
cor(x,y)

## [1] 0.9999681

#b  
cor(df,method = "pearson")

## x y  
## x 1.0000000 0.9999681  
## y 0.9999681 1.0000000

library(corrgram)  
#c  
corrgram(df)

