**Diet Cola and Calcium:**  A study examined the effect of diet cola consumption on calcium levels in women. A sample of 16 healthy women aged 18 to 40 were randomly assigned to drink 24 ounces of either diet cola or water. Their urine was collected for three hours after ingestion of the beverage and calcium excretion (in mg) was measured. The researchers were investigating whether diet cola leaches calcium out of the system, which would increase the amount of calcium in the urine for diet cola drinkers.

Table B.2 Do diet cola drinkers excrete more calcium?

Diet cola 50 62 48 55 58 61 58 56

Water 48 46 54 45 53 46 53 48

data=read.table("C:/data R/cola.txt",header=TRUE)

attach(data)

#Two Sample t

t.test(ex~treat,var.equal=FALSE,alternative="less",conf.level=.95)

#Two Sample t (equal variance)

t.test(ex~treat,var.equal=TRUE,alternative="less",conf.level=.95)

#Regression approach to Two Sample t with a dummie variable

model=lm(ex~treat)

summary(model)

#Randomization Test

cola=c(50,62,48,55,58,61,58,56)

water=c(48,46,54,45,53,46,53,48)

teststat=mean(cola)

sombrero=c(cola,water)

distribution=replicate(1000,mean(sample(sombrero,8,replace=FALSE)))

teststat

hist(distribution)

compare=replicate(1000,mean(sample(sombrero,8,replace=FALSE)))>=56

extreme=sum(compare)

extreme

pvalue=extreme/1000

pvalue