R Code

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#### Problem 2b

##### Wilcoxon rank sum test

Logged = c(85.6 ,85.4 ,75.5 ,53.1 ,46.7 ,45 ,43.2 ,40.8 ,18.2)  
Notlogged = c(56.1 ,34.2 ,23.6 ,18.1 ,13.3 ,-8.1 ,-20.1)  
wilcox.test(Logged,Notlogged, correct=TRUE)

##   
## Wilcoxon rank sum test  
##   
## data: Logged and Notlogged  
## W = 55, p-value = 0.01154  
## alternative hypothesis: true location shift is not equal to 0

##### Calculate Confidence Interval

sum(rank(c(Logged,Notlogged))[1:9])

## [1] 100

sum(rank(c(Logged,Notlogged))[10:16]) #Sum ranks not Logged

## [1] 36

#### Problem 3e

library(readr)  
EducationData <- read\_csv("EducationData.csv",   
 col\_types = cols(Subject = col\_skip()))  
t.test(EducationData$Income2005 ~ EducationData$Educ, data=EducationData,   
 var.equal=FALSE,  
 conf.level=0.95)

##   
## Welch Two Sample t-test  
##   
## data: EducationData$Income2005 by EducationData$Educ  
## t = -9.9827, df = 473.85, p-value < 2.2e-16  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -39653.77 -26610.39  
## sample estimates:  
## mean in group 12 mean in group 16   
## 36864.90 69996.97

#### Problem 5e

## Two-sample test.  
## Hollander & Wolfe (1973), 69f.  
## Permeability constants of the human chorioamnion (a placental  
## membrane) at term (x) and between 12 to 26 weeks gestational  
## age (y). The alternative of interest is greater permeability  
## of the human chorioamnion for the term pregnancy.  
x <- c(85 ,70 ,40 ,65 ,80 ,75 ,55 ,20 ,70)  
y <- c(75 ,50 ,50 ,40 ,20 ,65 ,40 ,25 ,30)  
wilcox.test(x, y, alternative = "g")

## Warning in wilcox.test.default(x, y, alternative = "g"): cannot compute  
## exact p-value with ties

##   
## Wilcoxon rank sum test with continuity correction  
##   
## data: x and y  
## W = 61.5, p-value = 0.03448  
## alternative hypothesis: true location shift is greater than 0

wilcox.test(x, y, alternative = "greater",  
 exact = FALSE, correct = FALSE)

##   
## Wilcoxon rank sum test  
##   
## data: x and y  
## W = 61.5, p-value = 0.03123  
## alternative hypothesis: true location shift is greater than 0

wilcox.test(rnorm(9), rnorm(9, 2), conf.int = TRUE)

##   
## Wilcoxon rank sum test  
##   
## data: rnorm(9) and rnorm(9, 2)  
## W = 1, p-value = 8.227e-05  
## alternative hypothesis: true location shift is not equal to 0  
## 95 percent confidence interval:  
## -3.797948 -1.136325  
## sample estimates:  
## difference in location   
## -2.361511