**R Code for Examples in the book**



***“Statistics: The Art and Science of Learning from Data”***

**by Agresti, Franklin and Klingenberg, 5th edition**

**Chapter 14**

**Example 6: Friends and Happiness – Tukey Test**

## Reading in data

data <- read.csv(file='https://raw.githubusercontent.com/artofstat/data/master/Chapter14/gss\_1998\_happy\_numfriends.csv')  
head(data)

## NumFriends X1.VERY.HAPPY X2.PRETTY.HAPPY X3.NOT.TOO.HAPPY  
## 1 1 8 33 10  
## 2 2 35 82 17  
## 3 3 38 79 15  
## 4 4 36 75 7  
## 5 5 28 57 10  
## 6 6 30 35 5

## To convert the data into long format, you can use the pivot\_longer() function from the tidyverse library

library(tidyverse)  
data <-   
 data %>%   
 rename\_at(2:4, ~ c('very\_happy', 'pretty\_happy', 'not\_too\_happy')) %>%   
 pivot\_longer(2:4, names\_to = 'Happiness', values\_to = 'Count') %>%   
 uncount(Count) %>%   
 relocate(Happiness)  
attach(data)  
tapply(NumFriends, Happiness, summary)

## $not\_too\_happy  
## Min. 1st Qu. Median Mean 3rd Qu. Max.   
## 1.000 2.000 4.000 6.271 6.000 50.000   
##   
## $pretty\_happy  
## Min. 1st Qu. Median Mean 3rd Qu. Max.   
## 1.000 2.500 4.000 5.667 6.000 60.000   
##   
## $very\_happy  
## Min. 1st Qu. Median Mean 3rd Qu. Max.   
## 1.000 3.000 5.000 7.577 10.000 75.000

## To perform a Tukey test

myAnova <- aov(NumFriends ~ Happiness)  
tukey.test <- TukeyHSD(myAnova)  
tukey.test

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = NumFriends ~ Happiness)  
##   
## $Happiness  
## diff lwr upr p adj  
## pretty\_happy-not\_too\_happy -0.6039216 -2.5876540 1.379811 0.7547887  
## very\_happy-not\_too\_happy 1.3061908 -0.7860212 3.398403 0.3079598  
## very\_happy-pretty\_happy 1.9101124 0.6170907 3.203134 0.0015952