



R Code for Examples in the book

*"Statistics: The Art and Science of Learning from Data"*

by Agresti, Franklin and Klingenberg, 5<sup>th</sup> edition

## Chapter 14

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

#### Reading in data

```
gss <-
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)
gss <-
  gss %>%
    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(gss)
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)
tukeyTest <- TukeyHSD(myAnova)
tukeyTest

##      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
```