Spearman Rank Correlation

When to use it
Null hypothesis
Assumption
How the test works
See the *Handbook* for information on these topics.

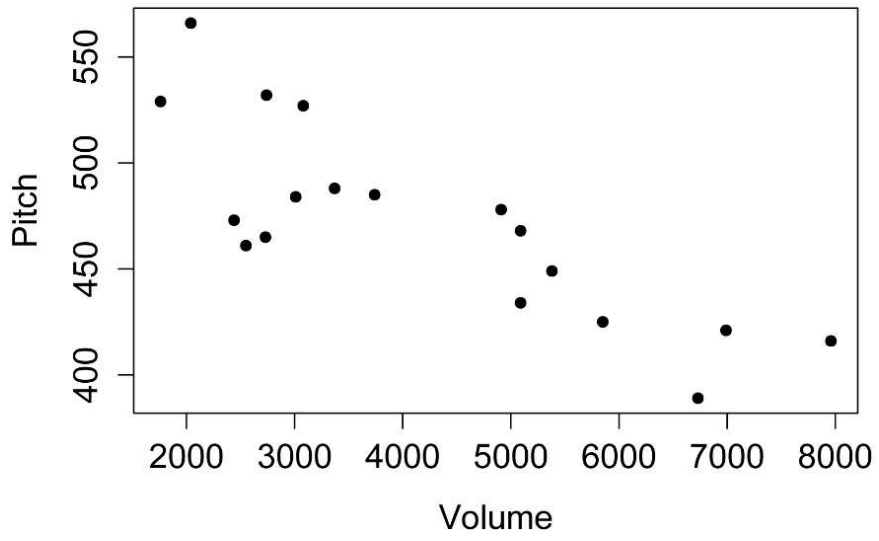
Example
Example of Spearman rank correlation

```
### ---------------------------------------------------------------
### Spearman rank correlation, frigatebird example
### p. 212
### ---------------------------------------------------------------

Input = ("
Volume   Pitch
 1760    529
 2040    566
 2440    473
 2550    461
 2730    465
 2740    532
 3010    484
 3080    527
 3370    488
 3740    485
 4910    478
 5090    434
 5090    468
 5380    449
 5850    425
 6730    389
 6990    421
 7960    416
")

Data = read.table(textConnection(Input),header=TRUE)


cor.test( ~ Pitch + Volume,
          data=Data,
          method = "spearman",
          continuity = FALSE,
          conf.level = 0.95)
```

```
    Spearman's rank correlation rho

    S = 1708.382, p-value = 0.0002302
    sample estimates:
          rho
    -0.7630357
```

Simple plot of the data

```
plot(Pitch ~ Volume,
     data=Data,
     pch=16)
```




```
                                    #      #      #
```

Graphing the results

See the *Handbook* for information on this topic.

How to do the test

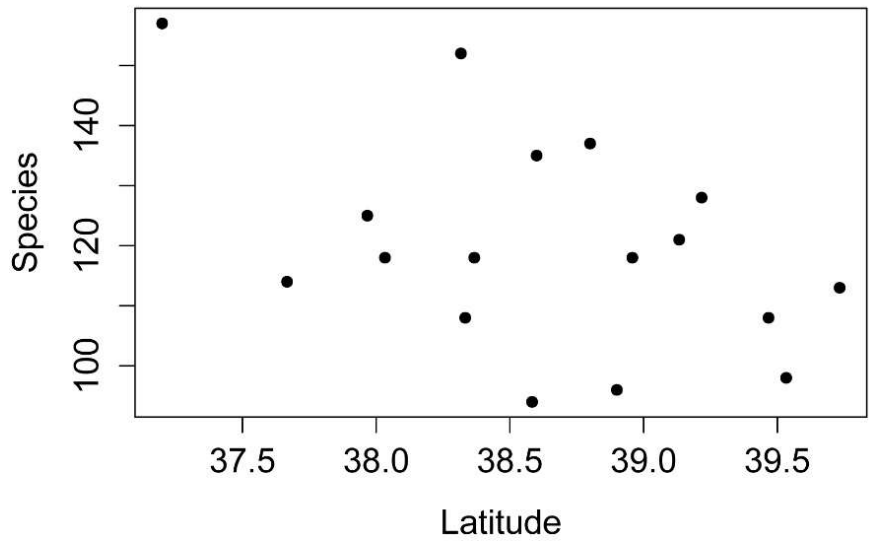
Example of Spearman rank correlation

```
### ---------------------------------------------------------------
### Spearman rank correlation, species diversity example
### p. 214
### ---------------------------------------------------------------

Input = ("
Town                  State  Latitude  Species
'Bombay Hook'          DE      39.217    128
'Cape Henlopen'        DE      38.800    137
'Middletown'           DE      39.467    108
'Milford'              DE      38.958    118
'Rehoboth'             DE      38.600    135
'Seaford-Nanticoke'    DE      38.583     94
'Wilmington'           DE      39.733    113
'Crisfield'            MD      38.033    118
'Denton'               MD      38.900     96
'Elkton'               MD      39.533     98
'Lower Kent County'    MD      39.133    121
'Ocean City'           MD      38.317    152
'Salisbury'            MD      38.333    108
'S Dorchester County'  MD      38.367    118
'Cape Charles'         VA      37.200    157
'Chincoteague'         VA      37.967    125
'Wachapreague'         VA      37.667    114
")

Data = read.table(textConnection(Input),header=TRUE)

cor.test( ~ Species + Latitude,
         data=Data,
         method = "spearman",
         continuity = FALSE,
         conf.level = 0.95)

   Spearman's rank correlation rho

   S = 1111.908, p-value = 0.1526

         rho
```

```
-0.3626323
```

Simple plot of the data

```
plot(Species ~ Latitude,
     data=Data,
     pch=16)
```




```
#      #      #
```

Citation:

Mangiafico, S.S. 2015. *An R Companion for the Handbook of Biological Statistics*, version 1.3.2. rcompanion.org/rcompanion/. (Pdf version: rcompanion.org/documents/RCompanionBioStatistics.pdf.)
