

An R Companion for the Handbook of Biological Statistics

Salvatore S. Mangiafico

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

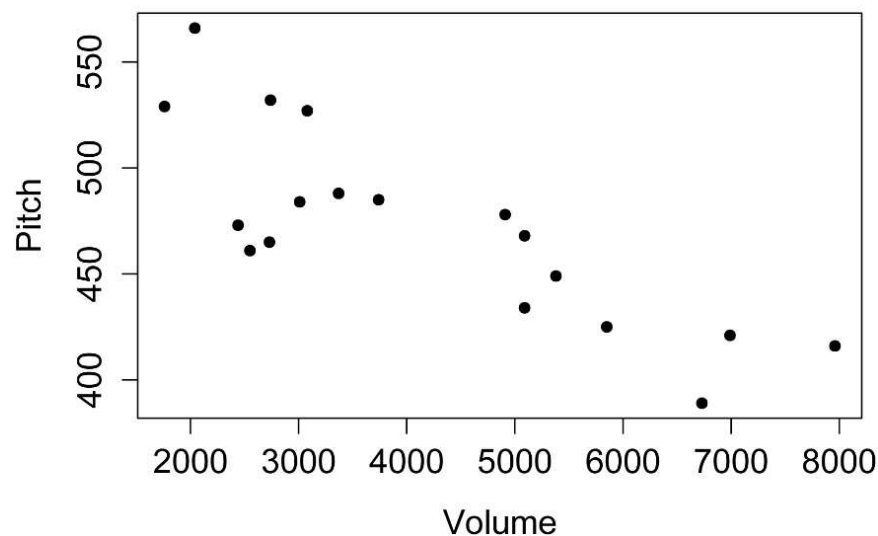
S = 1708.382, p-value = 0.0002302

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
'Seafood-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

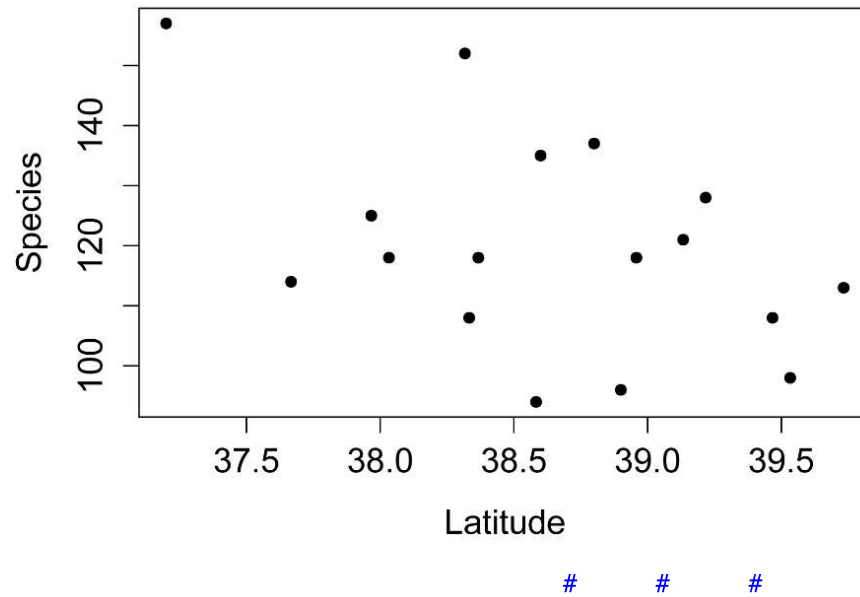
S = 1111.908, p-value = 0.1526

rho

-0.3626323

Simple plot of the data

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



©2015 by Salvatore S. Mangiafico.
Rutgers Cooperative Extension, New Brunswick, NJ.

Organization of statistical tests and selection of examples for these tests ©2014 by John H. McDonald. Used with permission.

Non-commercial reproduction of this content, with attribution, is permitted. For-profit reproduction without permission is prohibited.

If you use the code or information in this site in a published work, please cite it as a source. Also, if you are an instructor and use this book in your course, please let me know. My contact information is on the [About the Author](#) page.

This site uses advertising from Media.net. For more information, visit our [privacy policy page](#). Proceeds from these ads go to support education and research activities, including the improvement of this site.

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.)
