

```
R version 4.3.1 (2023-06-16 ucrt) -- "Beagle Scouts"
Copyright (C) 2023 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)
```

```
R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.
```

```
Natural language support but running in an English locale
```

```
R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.
```

```
Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
```

```
[Previously saved workspace restored]
```

```
> rm(list = ls())
> x0 <- c(8,6,5,1,4,9,4,7,7,3,5,9,5,1,6,9,2,1,9,4,1,4,9,5,1,5,9,1,1,1,4,7,1,4,4,5,3,7,5,5,8,7,9,8,
,6,8,7,8,7,9,9,6,6,9,7,9,8,7,5,8,9,6,7,6,7,5,7,5,8,8,5,5,5,8,5,7,6,8,1,6,8,4,2,8,9,2,3,9,9,3,3,9,
8,4,5,8,8,1,5,8,1,1,8,4,9,8,3,2,2,1,2,1,1,1,1,1,1,1,1,1,1,1,5,6,6,4,9,7,5,7,9,8,4,9,9,6,7,8,6,9,8,6,
,7,8,7,7,5,7,4,6,8,3,4,2,1,1,1,1,1,1,1,1,1,1,1,1,1,1,5,1,5,1,1,1,1,1,1,1,6,1,4,1,1,1,2,3,1,1,1,1,1,1,1,1,
4,3,1,3,1,3,4,4,5,5,9,7,9,9,7,8,6,9,8,4,5,5,9,5,4,6,4,5,6,6,3,4,6,4,3,7,4,3,7,8,4,5,7,8,5,7,6,8,5,
,5,8,3,3,6,6,4,6,8,9,4,9,8,4,8,9,8,7,4,9,7,6,6,8,3,7,3,1,1,5,5,3,6,8,5,5,9,6,1,9,9,4,1,9,9,1,7,9,
4,1,3,5,8,9,1,5,5,4,1,1,8,7)
> x1 <- c(7,9,9,4,1,5,5,1,7,5,4,8,8,5,4,9,9,6,7,9,8,9,9,9,9,8,9,9,6,9,5,5,9,7,9,7,7,8,1,5,8,6,8,8,
,7,8,9,8,7,9,7,9,9,9,8,9,9,9,9,9,8,8,9,7,8,8,9,9,9,7,8,3,1,1,8,5,1,6,5,7,5,7,7,9,6,9,9,9,
6,8,9,8,9,9,9,8,8,9,8,8,9,7,8,9,7,7,8,9,9,7,8,7,8,9,9,6,4,7,7,7,7,8,5,7,8,9,8,5,9,9,9,4,9,9,6,6,9,
,9,5,9,9,6,3,8,7,6,7,8,4,5,6,9,8)
> x <- c(x0,x1)
> y0 <- c(14.91072849,12.03576423,12.25671657,10.29005402,4.525819237,4.401251607,4.168002488,3.9
91694841,3.79464676,3.133050324,2.978055911,2.914779398,2.584141408,2.174058447,2.133309189,2.187
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89711083,0.724498694,1.470340648,1.677328176,0.746818657,0.385026298,0.776497601,1.601870923,0.83
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008,2.083085052,2.084137678,1.280639806,1.297000105,1.726628056,2.233951761,1.391748157,1.2372849
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82852348,3.736143296,5.20197521,7.165627947,7.215710447,6.642037731,7.783625673,6.475557652,7.300
88061,7.116837369,4.723175484,6.255816464,7.253754916,5.678315224,3.784207803,3.932641466,3.72502
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62,12.37425792,12.5546298,15.87605768,14.17839336,11.50750527,14.05678736,12.67477701,10.56969705
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6223162,1.029847214,0.589752973,1.019027142,0.841031962,1.520702438,1.862131667,1.97534879,2.2774
94445,3.745477015,3.62966391,2.036100158,2.721453244,3.392522258,3.166777992,2.479896725,2.311084
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2.517444997,3.079913923,2.134359205,2.091895938,1.994806941,1.643069001,1.373176638,1.474249067,1
.414154823,0.926273973,0.781650318,1.359053595,1.340528761,0.706379106,0.368962954,0.742727632,0.
841275298,0.551162814,0.384074933,1.191473391,1.407858929,1.387623472,1.189553304,1.095631287,1.0
```

```

72683512,0.983182225,0.817689001,0.764630096,0.703410309,1.198180501,0.693634492,0.255971555)
> y1 <- c(1.054700064,0.666836322,0.587968959,1.268811142,1.475562167,0.843988958,0.568683676,0.4
77815505,0.555165282,0.33944396,0.564721816,0.703692367,0.746887292,0.950998081,1.282079962,0.844
271698,0.883206353,0.883515949,1.012828175,0.530124573,1.167199413,0.818167498,0.772918368,0.5379
73763,0.801639382,0.904963861,0.930724583,0.89823939,0.958365253,0.384076613,0.462360867,0.334706
072,0.520258071,0.910297353,1.461823289,1.064878385,1.03217899,0.73817743,1.156863042,0.505431815
,0.274733211,0.858933792,0.86394552,0.536939212,0.323193897,0.507249973,0.59300094,0.558401144,0.
627972934,0.920608112,0.590802711,1.222744159,1.695151223,2.05237514,2.278707124,1.687021758,1.38
7690388,1.751614995,1.068642867,0.412861016,0.406560597,0.921663729,0.699075716,1.005997288,1.160
09729,0.963315219,1.190093644,1.841315574,1.885670587,1.659526365,2.38233965,2.866145933,2.159457
467,1.814164176,3.337825117,3.250647225,4.954486871,5.124318464,4.563807781,5.514033085,5.4294234
98,5.585974603,4.600452284,3.250004693,3.470968471,3.437493052,1.979059779,1.405929754,2.29324272
7,2.448262484,1.373955709,1.258417832,2.142745046,2.664403306,2.07081263,2.20700279,1.273788198,0
.762415281,1.138366551,3.53664743,3.358634884,3.903659817,3.441968766,2.828338623,2.172024386,3.9
40321356,2.952591659,2.974339857,3.238371335,4.316741138,3.425938645,2.416711714,3.309003524,4.93
5653222,4.721499559,4.672715551,5.512695067,5.217525986,6.054057667,6.102435297,5.771790801,3.249
071713,3.731705689,3.801378052,2.542997054,2.458029312,3.870563348,4.444823772,3.249040671,2.0518
13815,1.920895103,2.492383742,1.410624249,0.891283613,0.667065833,0.939205217,0.4702612,0.0914958
52,0.103690429,0.636329914,0.78480679,0.411623189,0.755529766,0.887617752,1.022873578,0.775946882
,0.428848016,0.486897236,0.488939848,0.287288816,0.362630181,0.829653277,0.5885087,0.80364845,1.3
25425253,1.239591879,3.47161992)

```

```

> y <- c(y0,y1)
> cor.test(x, y, alternative = "two.sided", method = "spearman", exact=FALSE )

```

Spearman's rank correlation rho

```

data: x and y
S = 21820963, p-value < 2.2e-16
alternative hypothesis: true rho is not equal to 0
sample estimates:
      rho
-0.3717616

```

```

> # ---- Confidence interval ----
> if(!"RVAideMemoire" %in% installed.packages()){install.packages("RVAideMemoire")}
> library(RVAideMemoire)
*** Package RVAideMemoire v 0.9-83-3 ***
> spearman.ci(x,y)

```

Spearman's rank correlation

```

data: x and y
1000 replicates

```

```

95 percent confidence interval:
-0.4534568 -0.2883453
sample estimates:
      rho
-0.3717616

```

```

>

```