

Package ‘spearmanCI’

July 23, 2025

Version 1.1
Date 2024-06-02
Title Jackknife Euclidean / Empirical Likelihood Inference for Spearman's Rho
Description Functions for conducting jackknife Euclidean / empirical likelihood inference for Spearman's rho (de Carvalho and Marques (2012) <[doi:10.1080/10920277.2012.10597644](https://doi.org/10.1080/10920277.2012.10597644)>).
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License GPL (>= 3)
Repository CRAN
Imports emplik, MASS
NeedsCompilation no
Date/Publication 2024-06-02 15:20:02 UTC

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fire	<i>Danish Fire Insurance Claims Database</i>
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Description

Danish Fire Insurance Claims Database includes 2167 industrial fire losses gathered from the Copenhagen Reinsurance Company over the period 1980–1990.

Usage

```
data(fire)
```

Format

A dataframe with 2167 observations on five variables. The object is of class `data.frame`.

Examples

```
data(fire)
attach(fire)
plot(building, contents, pch = 20, xlim = c(0,95), ylim = c(0,133),
      xlab = "Loss of Building", ylab = "Loss of Contents",
      main = "Danish Fire Insurance Claims")
```

spearmanCI	<i>Jackknife Euclidean / Empirical Likelihood Inference for Spearman's Correlation</i>
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Description

Computes jackknife Euclidean / empirical likelihood confidence intervals for Spearman's correlation.

Usage

```
spearmanCI(x, y, level = 0.95, method = "Euclidean", plot = FALSE)
```

Arguments

<code>x</code>	vector with data.
<code>y</code>	vector with data.
<code>level</code>	the confidence level required.
<code>method</code>	this must be one of the strings "Euclidean" or "empirical"; see references below for details.
<code>plot</code>	logical; if TRUE, it plots log-likelihood ratio function.

Author(s)

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References

de Carvalho, M. and Marques, F. J. (2012). Jackknife Euclidean likelihood-based inference for Spearman's rho. *North American Actuarial Journal*, **16**, 487–492.

Wang, R., and Peng, L. (2011). Jackknife empirical likelihood intervals for Spearman's rho. *North American Actuarial Journal*, **15**, 475–486.

Examples

```
## Real data example
data(fire)
attach(fire)
spearmanCI(building, contents)

## The intervals in de Carvalho and Marques (2012, Section 3.2)
## differ slightly as they are based on the estimate
## spearman <- function(x, y) {
##   n <- length(x)
##   F <- ecdf(x); G <- ecdf(y)
##   return(12 / n * sum((F(x) - 1 / 2) * (G(y) - 1 / 2)))
## }

## Simulated data example
library(MASS)
pearson <- .7
Sigma <- matrix(c(1, pearson, pearson, 1), 2, 2)
xy <- mvrnorm(n = 1000, rep(0, 2), Sigma)
spearmanCI(xy[, 1], xy[, 2])
abline(v = 6 / pi * asin(pearson / 2), col = "grey", lty = 3)
```

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