Package ‘wdm’

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R topics documented:

wdm-package ................................................................. 2
indep_test ................................................................. 2
wdm ................................................................. 3

Index 5

1
Description


Details

The DESCRIPTION file: This package was not yet installed at build time.

indep_test

Independence Tests for Weighted Dependence Measures

Description

Computes a (possibly weighted) dependence measure between \( x \) and \( y \) if these are vectors. If \( x \) and \( y \) are matrices then the measure between the columns of \( x \) and the columns of \( y \) are computed.

Usage

```r
indep_test(x, y, method = "pearson", weights = NULL,
            remove_missing = TRUE, alternative = "two-sided")
```

Arguments

- \( x, y \) numeric vectors of data values. \( x \) and \( y \) must have the same length.
- \( \text{method} \) the dependence measure; see Details for possible values.
- \( \text{weights} \) an optional vector of weights for the observations.
- \( \text{remove_missing} \) if TRUE, all (pairwise) incomplete observations are removed; if FALSE, the function throws an error if there are incomplete observations.
- \( \text{alternative} \) indicates the alternative hypothesis and must be one of "two-sided", "greater" or "less". You can specify just the initial letter. "greater" corresponds to positive association, "less" to negative association.
Details

Available methods:

- "pearson": Pearson correlation
- "spearman": Spearman’s \( \rho \)
- "kendall": Kendall’s \( \tau \)
- "blomqvist": Blomqvist’s \( \beta \)
- "hoeffding": Hoeffding’s \( D \)

Partial matching of method names is enabled. All methods except "hoeffding" work with discrete variables.

Examples

```r
x <- rnorm(100)
y <- rpois(100, 1)  # all but Hoeffding's D can handle ties
w <- runif(100)

indep_test(x, y, method = "kendall")  # unweighted
indep_test(x, y, method = "kendall", weights = w)  # weighted
```

Description

Computes a (possibly weighted) dependence measure between \( x \) and \( y \) if these are vectors. If \( x \) and \( y \) are matrices then the measure between the columns of \( x \) and the columns of \( y \) are computed.

Usage

```r
wdm(x, y = NULL, method = "pearson", weights = NULL,
   remove_missing = TRUE)
```

Arguments

- **x**: a numeric vector, matrix or data frame.
- **y**: NULL (default) or a vector, matrix or data frame with compatible dimensions to \( x \). The default is equivalent to ’\( y = x \)’ (but more efficient).
- **method**: the dependence measure; see Details for possible values.
- **weights**: an optional vector of weights for the observations.
- **remove_missing**: if TRUE, all (pairwise) incomplete observations are removed; if FALSE, the function throws an error if there are incomplete observations.
Details

Available methods:

- "pearson": Pearson correlation
- "spearman": Spearman's $\rho$
- "kendall": Kendall's $\tau$
- "blomqvist": Blomqvist's $\beta$
- "hoeffding": Hoeffding's $D$

Partial matching of method names is enabled.

Spearman's $\rho$ and Kendall's $\tau$ are corrected for ties if there are any.

Examples

```r
## dependence between two vectors
x <- rnorm(100)
y <- rpois(100, 1)  # all but Hoeffding's D can handle ties
w <- runif(100)
wdm(x, y, method = "kendall")  # unweighted
wdm(x, y, method = "kendall", weights = w)  # weighted

## dependence in a matrix
x <- matrix(rnorm(100 * 3), 100, 3)
wdm(x, method = "spearman")  # unweighted
wdm(x, method = "spearman", weights = w)  # weighted

## dependence between columns of two matrices
y <- matrix(rnorm(100 * 2), 100, 2)
wdm(x, y, method = "hoeffding")  # unweighted
wdm(x, y, method = "hoeffding", weights = w)  # weighted
```
Index

indep_test, 2

wdm, 3
wdm-package, 2