Package 'smd'

October 14, 2022

Type Package

Title Compute Standardized Mean Differences

Version 0.6.6

Description Computes standardized mean differences and confidence intervals for multiple data types based on Yang, D., & Dalton, J. E. (2012) <http://www.lerner.ccf.org/qhs/software/lib/stddiff.pdf>.

Imports MASS (>= 7.3-50), methods (>= 3.5.1)

Suggests testthat, stddiff, tableone, knitr, dplyr, purrr, markdown, rmarkdown

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URL https://docs.novisci.com/smd/

BugReports https://gitlab.novisci.com/nsstat/smd/issues

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

VignetteBuilder knitr

Repository CRAN

NeedsCompilation no

Author Bradley Saul [aut, cre], Alex Breskin [ctb], Catie Wiener [ctb], Matt Phelan [ctb]

Maintainer Bradley Saul <bsaul@novisci.com>

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R topics documented:

smd *Compute Standardized Mean Difference*

Description

Computes the standardized mean differnce (SMD) between two groups.

$$d = \sqrt{D' S^{-1} D}$$

where D is a vector of differences between group 1 and 2 and S is the covariance matrix of these differences. If D is length 1, the result is multplied by $sign(D)$.

In the case of a `numeric` or `integer` variable, this is equivalent to:

$$d = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s_1^2 + s_2^2)/2}}$$

where $\bar{x}_g$ is the sample mean for group g and s_g^2 is the sample variance.

For a `logical` or `factor` with only two levels, the equation above is $\bar{x}_g = \hat{p}_g$, i.e. the sample proportion and $s_g^2 = \hat{p}_g(1 - \hat{p}_g)$.

Usage

```
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'character,ANY,missing'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'character,ANY,numeric'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'logical,ANY,missing'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'logical,ANY,numeric'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'matrix,ANY,missing'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'matrix,ANY,numeric'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'list,ANY,missing'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'list,ANY,numeric'
```

```
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'data.frame,ANY,missing'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)

## S4 method for signature 'data.frame,ANY,numeric'
smd(x, g, w, std.error = FALSE, na.rm = FALSE, gref = 1L)
```

Arguments

x	a vector or matrix of values
g	a vector of at least 2 groups to compare. This should coercable to a factor.
w	a vector of numeric weights (optional)
std.error	Logical indicator for computing standard errors using compute_smd_var. Defaults to FALSE.
na.rm	Remove NA values from x? Defaults to FALSE.
gref	an integer indicating which level of g to use as the reference group. Defaults to 1.

Value

a data.frame containing standardized mean differences between levels of g for values of x. The data.frame contains the columns:

- term: the level being comparing to the reference level
- estimate: SMD estimates
- std.error: (if std.error = TRUE) SMD standard error estimates

Examples

```
x <- rnorm(100)
g <- rep(1:2, each = 50)
smd(x, g)
```

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