Package ‘smd’

October 22, 2020

Type Package

Title Compute Standardized Mean Differences

Version 0.6.6


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

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

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

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

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Description

Computes the standardized mean difference (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 multiplied by \( \text{sign}(D) \).

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

\[ d = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s^2_1 + s^2_2)/2}} \]

where \( \bar{x}_g \) is the sample mean for group \( g \) and \( s^2_g \) 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 \( s^2_g = \hat{p}_g(1-\hat{p}_g) \).

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

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