Package ‘smd’

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**smd**

Compute Standardized Mean Difference

**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:

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

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**

```r
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

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

w          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. De-

na.rm      Remove NA values from x? Defaults to FALSE.

args       an integer indicating which level of g to use as the reference group. Defaults to

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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