Package 'sgmean'

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Type Package

Title Proportional Trimmed Mean

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Description Computes a proportional trimmed mean that resolves the integer truncation problem of base R's mean(..., trim). When k = trim * n is non-integer, a fractional discount (1 - delta) is applied to boundary observations, where delta = k - floor(k). The resulting estimator is continuous in alpha for any fixed n, syntactically identical to mean(..., trim), and compatible with the 'Statgraphics' implementation. See Gaviria Chaverra (2026) <doi:10.32614/CRAN.package.sgmean>.

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Encoding UTF-8

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

Config/testthat/edition 3

VignetteBuilder knitr

URL https://github.com/jcarlosgaviria/sgmean

BugReports https://github.com/jcarlosgaviria/sgmean/issues

Config/roxygen2/version 8.0.0

NeedsCompilation no

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`sgmean` *Proportional Trimmed Mean*

Description

Computes a proportional trimmed mean that resolves the integer truncation problem of base R's `mean(..., trim)`. When $k = \text{trim} \times n$ is non-integer, a fractional discount $(1 - \delta)$ is applied to boundary observations, where $\delta = k - \lfloor k \rfloor$.

Usage

```
sgmean(x, trim = 0.05, na.rm = FALSE)
```

Arguments

`x`	A numeric vector.
`trim`	Fraction of observations to trim symmetrically from each end of the sorted data. Must be in $[0, 0.5)$.
`na.rm`	Logical. Should missing values be removed before computation? Default is `FALSE`; if `FALSE` and `x` contains `NA`, the result is `NA`, as in `mean()`.

Details

The proportional trimmed mean generalizes `mean(..., trim)` by treating $k = \text{trim} \times n$ as a continuous parameter. Three cases are handled:

k = 0 Returns the arithmetic mean.

0 < k < 1 (Type A) Applies a discount $(1 - k)$ to $X_{(1)}$ and $X_{(n)}$.

k exact integer Reduces to `mean(..., trim)`, producing identical results to R base.

k > 1, non-integer (Type B) Eliminates $\lfloor k \rfloor$ observations from each tail and applies a fractional discount $(1 - \delta)$ to the new boundary observations, where $\delta = k - \lfloor k \rfloor$.

Value

A single numeric scalar.

References

Gaviria Chaverra, J. C. (2026). sgmean: A Proportional Trimmed Mean for R Compatible with Statgraphics. *The R Journal*.

Examples

```
# Type A distortion: k = 0.05 * 15 = 0.75
x <- c(850, 920, 980, 1050, 1120, 1180, 1250,
       1320, 1400, 1480, 1550, 1700, 1850, 2100, 8500)
mean(x, trim = 0.05)    # 1816.667 — no trimming applied (k* = 0)
sgmean(x, trim = 0.05)  # 1499.074 — proportional discount applied

# Type B distortion: k = 0.10 * 15 = 1.50
mean(x, trim = 0.10)    # 1376.923 — effective trim 6.7%
sgmean(x, trim = 0.10)  # 1365.833 — effective trim 10% (Statgraphics)

# Control: k = 1/15 * 15 = 1 (exact integer)
mean(x, trim = 1/15)    # identical to sgmean
sgmean(x, trim = 1/15)  # identical to mean(..., trim)
```

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