Package 'rbtt'

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Title Alternative Bootstrap-Based t-Test Aiming to Reduce Type-I Error in Particular Sets of Data

Version 0.0.0

Description In data sets whose data-generating distributions are non-negative with excess zero observations, it can be difficult to find general-purpose statistical tests for comparing sample means while controlling type-I error rates. This R package allows users to perform a modified bootstrap-based t-test that aims to better control type-I error rates in these particular data sets.

Depends R (>= 3.3.0)

Imports stats, data.table, parallel

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Encoding UTF-8

LazyData true

RoxygenNote 6.0.1.9000

NeedsCompilation no

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R topics documented:

`rbtt` *Perform robust bootstrapped t-tests*

Description

Perform robust bootstrapped two-sample t-tests that aim to better control type-I error rates when comparing means of non-negative distributions with excess zero observations.

Usage

```
rbtt(x, y, n.boot, n.cores = 1, method = "combined", conf.level = 0.95)
```

Arguments

x	a (non-empty) numeric vector of data values.
y	a (non-empty) numeric vector of data values.
n.boot	number of bootstrap resamples to perform
n.cores	number of cores to use for parallelization. Defaults to 1. If using Windows, set n.cores = 1.
method	Which robust bootstrapped t-test to perform. Set 'method=1' for a two-sample t-test under the equal variance assumption, 'method = 2' for a two-sample t-test without the equal variance assumption, and 'method = "both"' to perform both methods simultaneously.
conf.level	Desired confidence level for computing confidence intervals: a number between 0 and 1.

Value

A list (or two lists in the case of method = "combined") containing the following components:

statistic	the value of the t-statistic.
p.value	the p-value for the test.
conf.int	a bootstrap-based confidence interval for the difference in means.
estimate	the estimated difference in means.
null.value	the hypothesized value of the mean difference, zero.
alternative	a character string describing the alternative hypothesis.
method	a character string describing the type of two-sample bootstrapped t-test used
data.name	a character string giving the names of the data

Examples

```
x=rbinom(50,1,0.5)*rlnorm(50,0,1)
y=rbinom(150,1,0.3)*rlnorm(150,2,1)

rbtt(x, y, n.boot=999)

# Use 9999 bootstrap resamples on 2 cores
rbtt(x, y, n.boot=9999, n.cores=2)

# Use methods 1 or 2 individually
rbtt(x, y, n.boot = 999, method = 1)
rbtt(x, y, n.boot = 999, method = 2)

# Use a confidence level of 0.99
rbtt(x, y, n.boot = 999, conf.level = 0.99)
```

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