Package 'inteli'

October 25, 2025

Title Interval Estimation by Likelihoodist (LI) Compared to
Frequentist (CI)

Version 0.1.0

Description Parameter estimation via likelihood interval (LI) compared to tradi-
tional method (CI). This is the expanded version for 'LBI'- and 'wnl'-package, formu-
lated by Kyun-Seop Bae <k@acr.kr>.

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RoxygenNote 7.3.3

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

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varE   *varE: Calculate Variance Estimate*

Description

This function computes the interval estimation for a single group variance by both LI and CI method.

Usage

```
varE(data, conf.level = 0.95, df = 1.2, lower = 1e-08, upper = 1e+06, k)
```

Arguments

data	A numeric vector functioning as a sample data.
conf.level	A confidence level for CI method.
df	A degree of freedom for LI method in terms of the denominator degree of freedom of F-test, as (n-df) of LRT, where n is the sample size of input data. For a variance estimation, it is suggested to be 1.2.
lower	A lower bound of "uniroot" for lower limit (LL) calculation. 1e-08 is a default.
upper	A upper bound of "uniroot" for upper limit (UL) calculation. 1e+06 is a default.
k	A cutoff value for LI method. Unless specified, F-test is used.

Value

Point Estimate (PE), lower limit/bound (LL/LB), upper limit/bound (UL/UB), width, sample size, cutoff value k and maximum log-likelihood function value are calculated.

Examples

```
x <- rnorm(20, 0, 1)
varE(x)

y <- rnorm(40, 0, 1)
varE(y)
```

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varEplot   *varEplot: Plot of Variance Estimate by Likelihood Method*

Description

This function plots a graph of interval estimation for a single group variance by LI method, either in the log-likelihood function or the normalized log-likelihood value.

Usage

```
varEplot(
  data,
  logLRT = FALSE,
  conf.level = 0.95,
  df = 1.2,
  low.scale = 3,
  up.scale = 5,
  k
)
```

Arguments

data	A numeric vector functioning as a sample data.
logLRT	A function type to be plotted. A default value "FALSE" refers to the log-likelihood function plot, while "TRUE" refers to the normalized log-likelihood ratio plot, or maxLL-LL.
conf.level	A confidence level for CI method.
df	A degree of freedom for LI method in terms of the denominator degree of freedom of F-test, as (n-df) of LRT, where n is the sample size of input data. For a variance estimation, it is suggested to be 1.2.
low.scale	A scaling factor for plotting the minimum value of x-axis, or a parameter value. The plot starts from "PE/low.scale". 3 is a default.
up.scale	A scaling factor for plotting the maximum value of x-axis, or a parameter value. The plot starts from "PE*up.scale". 5 is a default.
k	A cutoff value for LI method. Unless specified, F-test is used.

Value

Plotted graph, either in the log-likelihood function or the normalized log-likelihood value.

Examples

```
x <- rnorm(20, 0, 1)
varEplot(x, FALSE)
varEplot(x, TRUE)
```

```
y <- rnorm(40, 0, 1)
varEplot(y, FALSE)
varEplot(y, TRUE)
```

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varR   *varR: Calculate Variance Ratio Estimate*

Description

This function computes the interval estimation for a two group variance ratio by both LI and CI method.

Usage

```
varR(
  num.data,
  denom.data,
  conf.level = 0.95,
  df = 2.4,
  lower = 1e-08,
  upper = 1e+06,
  k
)
```

Arguments

num.data	A numeric vector functioning as a sample data, in a numerator position.
denom.data	A numeric vector functioning as a sample data, in a denominator position.
conf.level	A confidence level for CI method.
df	A degree of freedom for LI method in terms of the denominator degree of freedom of F-test, as (n-df) of LRT, where n is the sum of sample sizes of input datum. For a variance ratio estimation, it is suggested to be 2.4.
lower	A lower bound of "uniroot" for lower limit (LL) calculation. 1e-08 is a default.
upper	A upper bound of "uniroot" for upper limit (UL) calculation. 1e+06 is a default.
k	A cutoff value for LI method. Unless specified, F-test is used.

Value

Point Estimate (PE), lower limit/bound (LL/LB), upper limit/bound (UL/UB), width, sample size, cutoff value k and maximum log-likelihood function value are calculated.

Examples

```
x <- rnorm(20, 0, 1)
y <- rnorm(40, 0, 1)
varR(x, y)
```

| varRplot | *varRplot: Plot of Variance Ratio Estimate by Likelihood Method* |

Description

This function plots a graph of interval estimation for a two group variance ratio by LI method, either in the log-likelihood function or the normalized log-likelihood value.

Usage

```
varRplot(
  num.data,
  denom.data,
  logLRT = FALSE,
  conf.level = 0.95,
  df = 2.4,
  low.scale = 5,
  up.scale = 5,
  k
)
```

Arguments

num.data	A numeric vector functioning as a sample data, in a numerator position.
denom.data	A numeric vector functioning as a sample data, in a denominator position.
logLRT	A function type to be plotted. A default value "FALSE" refers to the log-likelihood function plot, while "TRUE" refers to the normalized log-likelihood ratio plot, or maxLL-LL.
conf.level	A confidence level for CI method.
df	A degree of freedom for LI method in terms of the denominator degree of freedom of F-test, as (n-df) of LRT, where n is the sum of sample sizes of input datum. For a variance ratio estimation, it is suggested to be 2.4.
low.scale	A scaling factor for plotting the minimum value of x-axis, or a parameter value. The plot starts from "PE/low.scale". 5 is a default.
up.scale	A scaling factor for plotting the maximum value of x-axis, or a parameter value. The plot starts from "PE*up.scale". 5 is a default.
k	A cutoff value for LI method. Unless specified, F-test is used.

Value

Plotted graph, either in the log-likelihood function or the normalized log-likelihood value

Examples

```
x <- rnorm(20, 0, 1)
y <- rnorm(40, 0, 1)
varRplot(x, y, FALSE)
varRplot(x, y, TRUE)
```

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