

Package ‘hypothesetest’

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Type Package

Title Confidence Intervals and Tests of Statistical Hypotheses

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Description Compute the confidence interval of the population mean with one sample or of the difference of population means of two samples from normal distributions or t-distributions. Compute the confidence interval of population variance with one sample or of the difference of population variances of two samples by chi-square tests. Test for population mean or the differences of two normal samples under normality with the given null hypothesis H_0 , which depends on the user, so that he can know if he can reject H_0 or not at the significance level α . Do the chi-square tests with one or two samples which have multinomial distributions by using an approximate chi-square distribution when n is large enough.

License GPL (≥ 2)

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NeedsCompilation no

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hypothesistest-package

hypothesistest

Description

Creat a test of statistical hypothesis for the estimation of a parameter.

Details

Package: hypothesis
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The aim of the package is to build a test of statistical hypothesis.

Author(s)

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See Also

confidence interval and findroot

Examples

```
conint(m=67.53,n1=25,s1=10,side="both",alpha=0.95,method="n") #63.61 71.45
findroot(alpha = 0.05, side = "both", method = "n", n=30, mu = 0, sigma = 1) # 1.959961
hypothesis(TrnX=c(3,4,5),TrnY=c(4,5,6),m,u0=4,3,3,s1=NULL,s2=NULL,sigma1=NULL,sigma2=NULL,alpha=0.05,method="n")
# "we can not reject H0."
# "t is"
# 4.302673
# "Q is"
# 0
# "p-value is"
# 1
```

conint

Calculate the Confidence Interval

Description

Calculate the confidence interval of the mean from a population or the difference between two means from two populations.

Usage

```
conint(TrnX = NULL, TrnY = NULL, m, n1, n2, s1, s2, side = "both", alpha = 0.95, method = "n")
```

Arguments

TrnX	the observed values of a random sample from a distribution
TrnY	the observed values of a random sample from another distribution
m	the mean of the observed values of the first random sample
n1	the number of the random variables of TrnX
n2	the number of the random variables of TrnY
s1	the standard variance of TrnX
s2	the standard variance of TrnY
side	whether the confidence interval is one or two sides
alpha	the significance level of the confidence level
method	Are we going to calculate the confidence interval of the mean from a population or the difference between two means from two populations? Is the population from a normal distribution, a t distribution or a chi-square distribution?

Details

The confidence interval consists of some information such as the significance level and whether it is one or two sides. The random samples may come from normal distributions, t distributions or chi-square distributions.

Value

a	the left end point of the confidence interval
b	the right end point of the confidence interval

Note

Although we have the confidence interval of the mean or the difference between two means, we can't ensure that the mean or the difference between two means is bound to be in the confidence interval.

Author(s)

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See Also

[findroot](#)

Examples

```
conint(m=67.53,n1=25,s1=10,side="both",alpha=0.95,method="n") #63.61 71.45
```

findroot	<i>find the Z score</i>
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Description

find the Z score of normal distribution, standard normal distribution, chi-square or t-distribution

Usage

```
findroot(alpha = 0.05, side = "both", method = "n", n, mu = 0, sigma = 1)
```

Arguments

alpha	the significance level of the confidence level
side	whether the confidence interval is one or two sides
method	the distribution of the samples follow
n	the amount of the samples
mu	the average of the samples
sigma	the standard deviation of the population

Details

if necessary, please input mu and sigma when the samples don't follow the standard normal distribution

Value

the value return 'z score'(A measure of the distance in standard deviations of a sample from the mean.)

Note

this function can only be used in standard normal distribution, standard normal distribution, chi-square and t-distribution. If the samples don't have the standard normal distribution, please input mu and sigma.

Author(s)

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See Also

[hypothesis](#)

Examples

```
##find the z score
findroot(alpha = 0.05, side = "both", method = "n", n=30, mu = 0, sigma = 1)
# 1.959961
```

hypothesis

hypothesis test a claim

Description

a hypothesis test to test a claim about $\mu=H_0$ of a population.

Usage

```
hypothesis(TrnX = NULL, TrnY = NULL, m, u0, n1, n2, s1 = NULL, s2 = NULL, sigma1 = NULL, sigma2 = NULL,
```

Arguments

TrnX	the observed values of a random sample from a distribution which must be input as vectors
TrnY	the observed values of a random sample from another distribution which must be input as vectors
m	the mean of the bias of TrnX and TrnY
u0	the claim that $H_0: u=u_0$
n1	the amount of the sample TrnX
n2	the amount of the sample TrnY
s1	the standard deviation of the sample TrnX
s2	the standard deviation of the sample TrnY
sigma1	the standard deviation of the population TrnX
sigma2	the standard deviation of the population TrnY
alpha	the confident level of the hypothesis test
method	the distribution of the samples follow
H0	the claim about the population
p	p value which correspond to the z score

Details

you can either input the original data of TrnX and TrnY, or just input s1,s2,n1,n2

Value

refuse H_0 at the confident level of alpha, we choose to refuse H_0
we can not reject H_0 .
 at the confident level of alpha, we choose not to refuse H_0

Note

must input the distribution that the samples follow:normal distribution, standard normal distribution, chi-square and t-distribution.When there are two samples,please input m which is the average of $\text{TrnX}-\text{TrnY}$

Author(s)

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See Also

[conint](#)

Examples

```
## to test the claim
hypothesis(TrnX=c(3,4,5),TrnY=c(4,5,6),m,u0=4,3,3,s1=NULL,s2=NULL,sigma1=NULL,sigma2=NULL,alpha=0.05,method="t")
# "we can not reject H0."
# "t is"
# 4.302673
# "Q is"
# 0
# "p-value is"
# 1
```

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