

Package ‘IPSUR’

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Type Package

Title Introduction to Probability and Statistics Using R

Version 1.5

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Depends R (>= 2.10)

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Description This package contains the Sweave source code used to generate IPSUR, an introductory probability and statistics textbook, alongside other supplementary materials such as the parsed R code for the book and data for the examples and exercises. The book is released under the GNU Free Documentation License.

License GPL (>= 3)

LazyLoad yes

NeedsCompilation no

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IPSUR-package

Introduction to Probability and Statistics Using R

Description

This package contains the Sweave source code used to generate IPSUR, an introductory probability and statistics textbook, alongside other supplementary materials such as the parsed R code for the book and data for the examples and exercises. The book is released under the GNU Free Documentation License.

Details

Package: IPSUR
Type: Package
Version: 1.5
Date: 2013-10-27
License: GPL (>= 3)
LazyLoad: yes

This package is a textbook written at the introductory level to introduce students to probability and statistics using R. After loading the package with `library(IPSUR)`, the book may be read by issuing the command `read(IPSUR)` at the command line.

Author(s)

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IPSUR.Utilities

IPSUR Utility Functions

Description

These functions support using the IPSUR package.

Usage

`read(x)`

Arguments

`x` the name of a vignette, quoted or not.

Details

These are convenience functions designed to make the use of IPSUR easier for novices.

Author(s)

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plot

Plotting Hypothesis Tests

Description

This function allows the user to plot a saved hypothesis test object, including normal curves, critical values, shading, and p-values. It requires the HH package and the `normal.and.t.dist` function written by Dr. Richard Heiberger. Please note that a much better version of this function is currently under development.

Usage

```
## S3 method for class 'htest'  
plot(x, hypoth.or.conf = 'Hypoth', ...)
```

Arguments

`x` an `htest` object that is the result of a hypothesis test.
`hypoth.or.conf` a switch to choose between plots for hypothesis tests or confidence intervals
`...` further arguments to be passed to or from other methods.

Details

This is a plot method for hypothesis tests or confidence intervals which uses the `normal.and.t.dist` function in the HH package.

Value

A plot of the normal or Student's t distribution associated with the hypothesis test or confidence interval. Critical values and p-values are displayed.

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See Also

[normal.and.t.dist](#)

The Central Limit Theorem*Investigating the Central Limit Theorem*

Description

These functions were written for students to investigate the Central Limit Theorem. For more information, see the exercises at the end of the chapter "Sampling Distributions" in IPSUR.

Usage

```
clt1(population = "rt", r = 3, sample.size = 2, N.iter = 100000)
clt2(population = "runif", a = 0, b = 10, sample.size = 2, N.iter = 100000)
clt3(population = "rgamma", alpha = 1.21, theta = 2.37, sample.size = 2, N.iter = 100000)
```

Arguments

| | |
|-------------|--|
| population | the name of a population distribution, in its random generator form. |
| sample.size | the sample size. |
| N.iter | the number of samples desired. |
| r | the degrees of freedom for Student's t distribution. |
| a | the minimum value of a continuous uniform distribution. |
| b | the maximum value of a continuous uniform distribution. |
| alpha | the shape parameter of a gamma distribution. |
| theta | the scale parameter of a gamma distribution. |

Details

When the functions are called a plot window opens to show a graph of the PDF of the population distribution. On the display are shown numerical values of the population mean and variance. The computer simulates random samples of size `sample.size` from the distribution a total of `N.iter` times, and sample means are calculated for each sample. Next follows a histogram of the simulated sample means, which closely approximates the sampling distribution of the sample mean. Also shown are the sample mean and sample variance of all of the simulated sample means. As a final step, when the user clicks the second plot, a normal curve with the same mean and variance as the simulated sample means is superimposed over the histogram.

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