Package ‘gginference’

Type Package
Title Visualise the Results of Inferential Statistics using ‘ggplot2’
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Description Visualise the results of F test to compare two variances, Student’s t-test, test of equal or given proportions, Pearson’s chi-squared test for count data and test for association/correlation between paired samples.
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R topics documented:

accidentsData ............................................................... 2
BirthDeath ................................................................. 3
BirthDeath2000 ........................................................... 3
accidentsData

Car accident data

Description

A data frame showing the use of seat belt and the driver status after a car accident in Greece.

Usage

accidentsData

Format

A data frame with 383 observations of 2 columns:

record  factor representing the driver status
seatBelt  factor indicating whether the driver wore a seatbelt

Source

The original data are available at Hellenic Statistical Authority
Description
A data frame containing the number of births and deaths along with their rates from 1932 to 2016.

Usage
BirthDeath

Format
A data frame with 71 observations of 5 columns:
Year  years 1932-2016
Deaths number of deaths
DeathsRate number of deaths per 1000 citizen
Births number of births
BirthRate number of births per 1000 citizen

Source
The original data are available at Hellenic Statistical Authority

Description
A data frame containing samples with the number of births and deaths before and after 2000.

Usage
BirthDeath2000

Format
A data frame with 30 observations of 3 columns:
deaths number of deaths
births number of births
type factor indicating if the number of births and deaths correspond before 2000 or after 2000

Source
The original data are available at Hellenic Statistical Authority
**Births**

*Births in Greece, 1976-1989*

**Description**

A data frame giving the number of births per 1000 people in Greece from 1976 to 1989.

**Usage**

births

**Format**

A data frame with 14 observations of 2 columns:

- **year**: years from 1976 to 1989
- **rate**: number of births per 1000 people

**Source**

The original data are available at Hellenic Statistical Authority

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**DieselbioRon95**

*Bio diesel and RON 95 consumption*

**Description**

A data frame including a sample of bio diesel and RON 95 consumption in Greece.

**Usage**

DieselbioRon95

**Format**

A data frame with 24 observations of 5 columns:

- **region**: factor of Greek regions
- **DieselBio_consumption2006**: metric tons of bio-diesel consumption in 2006
- **DieselBio_consumption2016**: metric tons of bio-diesel consumption in 2016
- **RON95_consumption2006**: metric tons of ron 95 consumption in 2006
- **RON95_consumption2016**: metric tons of ron 95 consumption in 2016

**Source**

The original data are available at Hellenic Statistical Authority
Description

A data frame containing the fuel consumption in Greece.

Usage

FuelConsumption

Format

A data frame with 50 observations of 8 columns:

Geographic.area  factor with geographic area of Greece
Regions   factor with regions of Greece
Runits   factor with regional units of Greece
RON95  metric tons of ron 95 consumption
RON98_100  metric tons of ron 98 consumption
DieselBio  metric tons of bio diesel consumption
LPG  metric tons of liquefied petroleum gas consumption
DieselC  metric tons of heating oil consumption

Source

The original data are available at Hellenic Statistical Authority

ggaov

Description

Visualise anova F-test to determine whether group means are equal

Usage

ggaov(t, alpha=0.05, colaccept="lightsteelblue1", colreject="grey84", colstat="navyblue")
Arguments

- **t**: an object of class aov
- **alpha**: alpha level for finding critical F value
- **colaccept**: color for the acceptance region of the test
- **colreject**: color for the area of rejection of the test
- **colstat**: color of the statistic of the test line

Examples

```r
# 21-th day
chick21 <- ChickWeight[ChickWeight$Time == 21,]
chickaov <- aov(weight~Diet, data = chick21)
summary(chickaov)

ggchisqtest(chickaov, colaccept = "grey89", colreject = "black")
```

---

### Description

Visualise chi-squared contingency table tests and goodness-of-fit tests.

### Usage

```r
ggchisqtest(t, colaccept="lightsteelblue1", colreject="gray84", colstat="navyblue", alpha=0.05)
```

### Arguments

- **t**: a list result of `chisq.test` of "htest" class
- **colaccept**: color the acceptance area of the test
- **colreject**: color for the rejection area of the test
- **colstat**: color for the test statistic vline
- **alpha**: default set to 0.05, choose confidence level for the plot as it is not stated in `chisqtest`
Examples

```r
## Chi-squared test for given probabilities

x <- c(A = 20, B = 15, C = 25)
chisq_test <- chisq.test(x)
chisq_test
ggchisqtest(chisq_test)

x <- c(10, 86, 45, 38, 10)
p <- c(0.10, 0.40, 0.20, 0.20, 0.10)
chisq_test2 <- chisq.test(x, p = p)
chisq_test2
ggchisqtest(chisq_test2)

## Pearson's Chi-squared test

library(MASS)
sex_smoke <- table(survey$Sex, survey$Smoke)
chisq_test3 <- chisq.test(sex_smoke)
chisq_test3
ggchisqtest(chisq_test3)
```

### ggcortest

**Plot test for association between paired samples**

#### Description

Visualise test for association between paired samples, using Pearson’s product moment correlation coefficient.

#### Usage

```r
ggcortest(t, colaccept="lightskyblue1", colreject="grey94", colstat="navy")
```

#### Arguments

- **t**: a list result of `cor.test` of "htest" class
- **colaccept**: color the acceptance area of the test
- **colreject**: color for the rejection area of the test
- **colstat**: color for the test statistic vline
Examples

corr_test <- cor.test(iris$Sepal.Length, iris$Sepal.Width)
corr_test
ggcortest(corr_test)

ggproptest

Plot test of Equal or Given Proportions

Description

Visualise \texttt{prop.test} for testing the null that the proportions (probabilities of success) in several groups are the same, or that they equal certain given values.

Usage

\begin{verbatim}
ggproptest(t, alpha=0.05, colaccept="lightsteelblue1",
colreject="gray84", colstat="navyblue")
\end{verbatim}

Arguments

\begin{itemize}
  \item \texttt{t} \hspace{1cm} a list result of \texttt{prop.test} of "htest" class
  \item \texttt{alpha} \hspace{1cm} alpha level for plotting distribution, when \texttt{prop.test} is used on more than 2 samples
  \item \texttt{colaccept} \hspace{1cm} color the acceptance area of the test
  \item \texttt{colreject} \hspace{1cm} color for the rejection area of the test
  \item \texttt{colstat} \hspace{1cm} color for the test statistic vline
\end{itemize}

Examples

\begin{verbatim}
x <- c(5, 8, 12)
y <- c(8, 9, 13)
pr_test <- prop.test(x, y)
pr_test
ggproptest(pr_test)
\end{verbatim}
**ggttest**

*Student's t-test plot*

**Description**

Visualise one and/or two sample t-tests on vectors of data.

**Usage**

```r
ggttest(t, colaccept="lightsteelblue1", colreject="grey84", colstat="navyblue")
```

**Arguments**

- **t**: a list result of `t.test` of "htest" class
- **colaccept**: color the acceptance area of the test
- **colreject**: color for the rejection area of the test
- **colstat**: color for the test statistic vline

**Examples**

```r
t_test <- t.test(sleep$extra ~ sleep$group)
t_test
ggttest(t_test)
```

```r
t_test2 <- t.test(x = 1:10, y = c(7:20))
t_test2
ggttest(t_test2)
```

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**ggvartest**

*F test plot*

**Description**

Visualise F test to compare two variances

**Usage**

```r
ggvartest(t, colaccept = "lightsteelblue1", colreject = "gray84", colstat = "navyblue")
```
Arguments

t a list result of \texttt{var.test} of "htest" class

\texttt{colaccept} color the acceptance area of the test, see \texttt{colors}

\texttt{colreject} color for the rejection area of the test

\texttt{colstat} color for the test statistic vline

Examples

\begin{verbatim}
x <- rnorm(50, mean = 0, sd = 2)
y <- rnorm(30, mean = 1, sd = 1)
var_test <- var.test(x, y)
var_test

\end{verbatim}

Description

A data frame that contains sample ratings of 18 laptops, by three experts.

Usage

LaptopRates

Format

A data frame with 54 observations of 3 columns:

\begin{verbatim}
laptop laptop id, 1-18
expert a character of expert1,expert2,expert3 values
rating ratings-5 likert scale, 5 indicates a very good rate
\end{verbatim}
LivLab

Description
A data frame containing a sample with the results of neuropsychological assessment before and after serious game intervention in the living lab, Thess-AHALL (Thessaloniki Active and Healthy Aging Living Lab) of Medical Physics Laboratory of Aristotle University of Thessaloniki.

Usage
LivLab

Format
A data frame with 10 observations of 2 columns:

- before  score in a neuropsychological test before serious game intervention
- after   score in a neuropsychological test after serious game intervention

Source
<http://aha-livinglabs.com/>

MilkConsumption

Description
A data frame containing a sample of the number of cow, sheep and goat milk bottles sold.

Usage
MilkConsumption

Format
A data frame with 13 observations of 3 columns:

- Cow.Milk  number of cow milk bottles
- Sheep.Milk number of sheep milk bottles
- Goat.Milk  number of goat milk bottles

Source
The original data are available at Hellenic Statistical Authority
Description

A data frame with the volume of new stores by category for urban, suburban and rural areas.

Usage

m_anova

Format

A data frame with 54 observations of 4 columns:
- Categories: integer representing three categories
- UrbanAreas: coding for urban, suburban and rural areas
- Month: integer representing three months
- Volume: volume in cubic meters

Source

The original data are available at Hellenic Statistical Authority

Description

A data frame with the profits of some companies for 5 months, constructed for teaching purposes.

Usage

profits_df

Format

A data frame with 26 companies (rows) of 5 months (columns).
**questionnaire**

**Description**

A data frame containing a sample with the answers of students.

**Usage**

`questionnaire`

**Format**

A data frame with 50 observations of 8 columns:

- `gender` A factor with the student gender
- `writing.hand` A factor with the writing hand of the students (left, right)
- `fold.arm` A factor with the top hand when the students fold their arms
- `pulse` Integer with the pulse rate of students (beats per minute)
- `exercise` A factor with the frequency the students exercises (none, some, frequently)
- `smoke` A factor with the frequency the students smokes (heavy, regularly, occasionally, never)
- `height` Integer with the height of the students (in centimeters)
- `age` Integer with the age of the students

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**randexperiment**

**Description**

A data frame with 128 sample results of a repeated experiment. Success is noted with 1 and failure with 0.

**Usage**

`randexperiment`

**Format**

A data frame with 128 observations of 1 column.
Salary_Gender

| Salary_Gender | Female and male salaries |

**Description**

A sample data frame with female and male salaries of a company.

**Usage**

Salary_Gender

**Format**

A data frame with 100 observations of 2 columns:

- **Male_sal** male salaries
- **Female_sal** female salaries
Index

accidentsData, 2
BirthDeath, 3
BirthDeath2000, 3
births, 4
chisq.test, 6
colors, 10
cor.test, 7
DieselbioRon95, 4
FuelConsumption, 5
ggaov, 5
ggchisqtest, 6
ggcortest, 7
ggproptest, 8
ggttest, 9
ggvartest, 9
LaptopRates, 10
LivLab, 11
m_anova, 12
MilkConsumption, 11
profits_df, 12
prop.test, 8
questionnaire, 13
randexperiment, 13
Salary_Gender, 14
t.test, 9
var.test, 10