

Package ‘conjoint’

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Title Conjoint analysis package

Description Conjoint is a simple package that implements a conjoint analysis method to measure the preferences.

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Imports AlgDesign, clusterSim

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caBTL	<i>Function caBTL estimates participation (market share) of simulation profiles</i>
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Description

Function caBTL estimates participation of simulation profiles using probabilistic model BTL (Bradley-Terry-Luce). Function returns vector of percentage participations. The sum of participation should be 100%.

Usage

```
caBTL(sym, y, x)
```

Arguments

sym	matrix of simulation profiles
y	matrix of preferences
x	matrix of profiles

Author(s)

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References

Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.

Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caLogit](#) and [caMaxUtility](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
simutil<-caBTL(hsimp,hpref,hprof)
print("Percentage participation of profiles: ", quote=FALSE)
print(simutil)

#Example 2
library(conjoint)
data(czekolada)
simutil<-caBTL(csimp,cpref,cprof)
print("Percentage participation of profiles:", quote=FALSE)
print(simutil)
```

caEncodedDesign	<i>Function caEncodedDesign encodes full or fractional factorial design</i>
-----------------	---

Description

Function caEncodedDesign encodes full or fractional factorial design. Function converts design of experiment to matrix of profiles.

Usage

```
caEncodedDesign(design)
```

Arguments

design	design of experiment returned by caFactorialDesign function
--------	---

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References

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Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also[caFactorialDesign](#)**Examples**

```
#Example 1
library(conjoint)
experiment<-expand.grid(
  price<-c("low", "medium", "high"),
  variety<-c("black", "green", "red"),
  kind<-c("bags", "granulated", "leafy"),
  aroma<-c("yes", "no"))
design<-caFactorialDesign(data=experiment, type="orthogonal")
print(design)
code<-caEncodedDesign(design)
print(code)
print(cor(code))
write.csv2(design, file="orthogonal_factorial_design.csv", row.names=FALSE)
write.csv2(code, file="encoded_orthogonal_factorial_design.csv", row.names=FALSE)
```

caFactorialDesign	<i>Function caFactorialDesign makes full or fractional factorial design</i>
-------------------	---

Description

Function caFactorialDesign makes full or fractional factorial design. Function can return orthogonal factorial design.

Usage

```
caFactorialDesign(data, type="null", cards=NA)
```

Arguments

data	experiment whose design consists of two or more factors, each with with 2 or more discrete levels
type	type of factorial design (possible values: "full", "fractional", "ca", "aca", "orthogonal"; default value: type="null")
cards	number of experimental runs

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References

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Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caEncodedDesign](#)

Examples

```
#Example 1
library(conjoint)
experiment<-expand.grid(
  price<-c("low", "medium", "high"),
  variety<-c("black", "green", "red"),
  kind<-c("bags", "granulated", "leafy"),
  aroma<-c("yes", "no"))
design<-caFactorialDesign(data=experiment, type="full")
print(design)
print(cor(caEncodedDesign(design)))
```

```
#Example 2
library(conjoint)
experiment<-expand.grid(
  price<-c("low", "medium", "high"),
  variety<-c("black", "green", "red"),
  kind<-c("bags", "granulated", "leafy"),
  aroma<-c("yes", "no"))
design<-caFactorialDesign(data=experiment)
print(design)
print(cor(caEncodedDesign(design)))
```

```
#Example 3
library(conjoint)
experiment<-expand.grid(
  price<-c("low", "medium", "high"),
  variety<-c("black", "green", "red"),
  kind<-c("bags", "granulated", "leafy"),
  aroma<-c("yes", "no"))
design<-caFactorialDesign(data=experiment, type="fractional", cards=16)
print(design)
print(cor(caEncodedDesign(design)))
```

```
#Example 4
library(conjoint)
experiment<-expand.grid(
  price<-c("low", "medium", "high"),
```

```

variety<-c("black","green","red"),
kind<-c("bags","granulated","leafy"),
aroma<-c("yes","no"))
design<-caFactorialDesign(data=experiment,type="fractional")
print(design)
print(cor(caEncodedDesign(design)))

```

```

#Example 5
library(conjoint)
experiment<-expand.grid(
price<-c("low","medium","high"),
variety<-c("black","green","red"),
kind<-c("bags","granulated","leafy"),
aroma<-c("yes","no"))
design<-caFactorialDesign(data=experiment,type="ca")
print(design)
print(cor(caEncodedDesign(design)))

```

```

#Example 6
library(conjoint)
experiment<-expand.grid(
price<-c("low","medium","high"),
variety<-c("black","green","red"),
kind<-c("bags","granulated","leafy"),
aroma<-c("yes","no"))
design<-caFactorialDesign(data=experiment,type="aca")
print(design)
print(cor(caEncodedDesign(design)))

```

```

#Example 7
library(conjoint)
experiment<-expand.grid(
price<-c("low","medium","high"),
variety<-c("black","green","red"),
kind<-c("bags","granulated","leafy"),
aroma<-c("yes","no"))
design<-caFactorialDesign(data=experiment,type="orthogonal")
print(design)
print(cor(caEncodedDesign(design)))

```

caImportance

Function caImportance calculates importance of attributes

Description

Function caImportance calculates importance of all attributes. Function returns vector of percentage attributes' importance and corresponding chart (barplot). The sum of importance should be 100%.

Usage

```
caImportance(y, x)
```

Arguments

y	matrix of preferences
x	matrix of profiles

Author(s)

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References

Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.

Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 *Categories* (1994), SPSS Inc., Chicago.

Examples

```
#Example 1
library(conjoint)
data(herbata)
imp<-caImportance(hpref,hprof)
print("Importance summary: ", quote=FALSE)
print(imp)
print(paste("Sum: ", sum(imp)), quote=FALSE)

#Example 1
library(conjoint)
data(czekolada)
imp<-caImportance(cpref,cprof)
print("Importance summary: ", quote=FALSE)
print(imp)
print(paste("Sum: ", sum(imp)), quote=FALSE)
```

caLogit

Function caLogit estimates participation (market share) of simulation profiles

Description

Function caLogit estimates participation of simulation profiles using logit model. Function returns vector of percentage participations. The sum of participation should be 100%.

Usage

```
caLogit(sym, y, x)
```

Arguments

sym	matrix of simulation profiles
y	matrix of preferences
x	matrix of profiles

Author(s)

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References

Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.

Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caBTL](#) and [caMaxUtility](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
simutil<-caLogit(hsimp,hpref,hprof)
print("Percentage participation of profiles:", quote=FALSE)
print(simutil)

#Example 2
library(conjoint)
data(czekolada)
simutil<-caLogit(csimp,cpref,cprof)
print("Percentage participation of profiles:", quote=FALSE)
print(simutil)
```

caMaxUtility	<i>Function caMaxUtility estimates participation (market share) of simulation profiles</i>
--------------	--

Description

Function caMaxUtility estimates participation of simulation profiles using model of maximum utility ("first position"). Function returns vector of percentage participations. The sum of participation should be 100%.

Usage

```
caMaxUtility(sym, y, x)
```

Arguments

sym	matrix of simulation profiles
y	matrix of preferences
x	matrix of profiles

Author(s)

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References

Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.

Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caBTL](#) and [caLogit](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
simutil<-caMaxUtility(hsimp,hpref,hprof)
print("Percentage participation of profiles:", quote=FALSE)
print(simutil)

#Example 2
library(conjoint)
data(czekolada)
simutil<-caMaxUtility(csimp,cpref,cprof)
print("Percentage participation of profiles:", quote=FALSE)
print(simutil)
```

caModel

Function caModel estimates parameters of conjoint analysis model

Description

Function caModel estimates parameters of conjoint analysis model. Function caModel returns vector of estimated parameters of traditional conjoint analysis model.

Usage

```
caModel(y, x)
```

Arguments

y	vector of preferences, vector should be like single profil of preferences
x	matrix of profiles

Author(s)

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References

Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.

Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

Examples

```
#Example 1
library(conjoint)
data(herbata)
x<-as.data.frame(hprof)
y1<-as.data.frame(hpref[1:nrow(x),1])
model<-caModel(y1, x)
print(model)

#Example 2
library(conjoint)
data(czekolada)
x<-as.data.frame(cprof)
y1<-as.data.frame(cpref[1:nrow(x),1])
model<-caModel(y1, x)
print(model)
```

caPartUtilities

Function caPartUtilities calculates matrix of individual utilities

Description

Function caPartUtilities calculates matrix of individual utilities for respondents. Function returns matrix of partial utilities (parameters of regression) for all artificial variables including parameters for reference levels for respondents (with intercept on first place).

Usage

```
caPartUtilities(y, x, z)
```

Arguments

y	matrix of preferences
x	matrix of profiles
z	vector of levels names

Author(s)

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References

- Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.
- Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.
- SPSS 6.1 Categories* (1994), SPSS Inc., Chicago.

Examples

```
#Example 1
library(conjoint)
data(herbata)
uslall<-caPartUtilities(hpref,hprof,hlevn)
print(uslall)

#Example 2
library(conjoint)
data(czekolada)
uslall<-caPartUtilities(cpref,cprof,clevn)
print(uslall)
```

caSegmentation

Function caSegmentation rates respondents on clusters

Description

Function caSegmentation rates respondents on 3 or n clusters using k-means method. Function takes n = 3 (3 clusters) when there are only two attributes used - y (matrix of preferences) and x (matrix of profiles). Otherwise function caSegmentation rates respondents on n clusters.

Usage

```
caSegmentation(y, x, c)
```

Arguments

y	matrix of preferences
x	matrix of profiles
c	number of clusters (optional), default value: c=3

Author(s)

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References

Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.

Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

Examples

```
#Example 1
library(conjoint)
data(herbata)
segments<-caSegmentation(hpref,hprof)
print(segments)

#Example 2
library(conjoint)
data(herbata)
segments<-caSegmentation(hpref,hprof, 4)
print(segments)
```

caTotalUtilities	<i>Function caTotalUtilities calculates matrix of theoreticall total utilities</i>
------------------	--

Description

Function caTotalUtilities calculates matrix of theoreticall total utilities for respondents. Function returns matrix of total utilities for n profiles and all respondents.

Usage

```
caTotalUtilities(y, x)
```

Arguments

y	matrix of preferences
x	matrix of profiles

Author(s)

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References

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- Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.
- SPSS 6.1 Categories* (1994), SPSS Inc., Chicago.

See Also

[caUtilities](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
Usi<-caTotalUtilities(hpref,hprof)
print(Usi)

#Example 1
library(conjoint)
data(czekolada)
Usi<-caTotalUtilities(hpref,hprof)
print(Usi)
```

caUtilities

Function caUtilities calculates utilities of levels of attributes

Description

Function caUtilities calculates utilities of attribute's levels. Function returns vector of utilities.

Usage

```
caUtilities(y,x,z)
```

Arguments

y	matrix of preferences
x	matrix of profiles
z	matrix of levels names

Author(s)

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References

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Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caTotalUtilities](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
ul<-caUtilities(hpref,hprof,hlevn)
print(ul)

#Example 2
library(conjoint)
data(czekolada)
ul<-caUtilities(cpref,cprof,clevn)
print(ul)
```

Conjoint

Function Conjoint sums up the main results of conjoint analysis

Description

Function Conjoint is a combination of following conjoint package's functions: [caPartUtilities](#), [caUtilities](#) and [caImportance](#). Therefore it sums up the main results of conjoint analysis. Function Conjoint returns matrix of partial utilities for levels of variables for respondents, vector of utilities for attribute's levels and vector of percentage attributes' importance with corresponding chart (barplot). The sum of importance should be 100

Usage

```
Conjoint(y, x, z)
```

Arguments

y	matrix of preferences
x	matrix of profiles
z	matrix of levels names

Author(s)

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References

Bak A. (2009), *Analiza Conjoint [Conjoint Analysis]*, [In:] Walesiak M., Gatnar E. (Eds.), *Statystyczna analiza danych z wykorzystaniem programu R [Statistical Data Analysis using R]*, Wydawnictwo Naukowe PWN, Warszawa.

Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caImportance](#), [caPartUtilities](#) and [caUtilities](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
Conjoint(hpref,hprof,hlevn)

#Example 2
library(conjoint)
data(czekolada)
Conjoint(cpref,cprof,clevn)
```

czekolada

Sample data for conjoint analysis.

Description

Data collected in the survey conducted by W. Nowak in 2000.

Usage

```
data(czekolada)
cpref
cprefm
cprof
clevn
csimp
```

Format

cpref Vector of preferences (length 1392).

cprefm Matrix of preferences (87 respondents and 16 profiles).

cprof Matrix of profiles (5 attributes and 16 profiles).

clevn Character vector of names for the attributes' levels.

csimp Matrix of simulation profiles.

Examples

```
library(conjoint)
data(czekolada)
print(cprof)
print(clevn)
print(cprefm)
print(csimp)
```

herbata

Sample data for conjoint analysis.

Description

Data collected in the survey conducted by M. Baran in 2007.

Usage

```
data(herbata)
hpref
hprefm
hprof
hlewn
hsimp
```

Format

hpref Vector of preferences (length 1300).
 hprefm Matrix of preferences (100 respondents and 13 profiles).
 hprof Matrix of profiles (4 attributes and 13 profiles).
 hlevn Character vector of names for the attributes' levels.
 hsimp Matrix of simulation profiles.

Examples

```
library(conjoint)
data(herbata)
print(hprof)
print(hlevn)
print(hprefm)
print(hsimp)
```

 plyty

Sample data for conjoint analysis.

Description

Artificial data.

Usage

```
data(plyty)
ppref
pprof
plevn
```

Format

ppref Matrix of preferences (6 respondents and 8 profiles).
 pprof Matrix of profiles (3 attributes and 8 profiles).
 plevn Character vector of names for the attributes' levels.

Examples

```
library(conjoint)
data(plyty)
print(pprof)
print(ppref)
print(plevn)
```

ShowAllSimulations	<i>Function ShowAllSimulations sums up the main results of conjoint simulations</i>
--------------------	---

Description

Function ShowAllSimulations is a combination of following conjoint package's functions: [caMaxUtility](#), [caBTL](#) and [caLogit](#). Therefore it sums up the main results of simulation using conjoint analysis method. Function ShowAllSimulations returns three vectors of percentage participations using maximum utility, BTL and logit models. The sum of importance for every vector should be 100%.

Usage

```
ShowAllSimulations(sym, y, x)
```

Arguments

sym	matrix of simulation profiles
y	matrix of preferences
x	matrix of profiles

Author(s)

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References

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Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caBTL](#), [caLogit](#) and [caMaxUtility](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
ShowAllSimulations(hsimp,hpref,hprof)

#Example 2
library(conjoint)
data(czekolada)
ShowAllSimulations(csimp,cpref,cprof)
```

ShowAllUtilities

Function ShowAllUtilities sums up all results of utility measures

Description

Function ShowAllUtilities is a combination of following conjoint package's functions: [caPartUtilities](#), [caTotalUtilities](#), [caUtilities](#) and [caImportance](#). Function ShowAllUtilities returns: matrix of partial utilities (basic matrix of utilities with the intercept), matrix of total utilities for n profiles and all respondents, vector of utilities for attribute's levels and vector of percentage attributes' importance, with sum of importance. The sum of importance should be 100%.

Usage

```
ShowAllUtilities(y, x, z)
```

Arguments

y	matrix of preferences
x	matrix of profiles
z	matrix of levles names

Author(s)

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References

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Green P.E., Srinivasan V. (1978), *Conjoint Analysis in Consumer Research: Issues and Outlook*, "Journal of Consumer Research", September, 5, 103-123.

SPSS 6.1 Categories (1994), SPSS Inc., Chicago.

See Also

[caImportance](#), [caPartUtilities](#), [caTotalUtilities](#) and [caUtilities](#)

Examples

```
#Example 1
library(conjoint)
data(herbata)
ShowAllUtilities(hpref,hprof,hlevn)
```

```
#Example 2
library(conjoint)
data(czekolada)
ShowAllUtilities(cpref,cprof,clevn)
```

tea

Sample data for conjoint analysis.

Description

Data collected in the survey conducted by M. Baran in 2007.

Usage

```
data(tea)
tpref
tprefm
tprof
tlevn
tsimp
```

Format

tpref Vector of preferences (length 1300).
tprefm Matrix of preferences (100 respondents and 13 profiles).
tprof Matrix of profiles (4 attributes and 13 profiles).
tlevn Character vector of names for the attributes' levels.
tsimp Matrix of simulation profiles.

Examples

```
library(conjoint)
data(tea)
print(tprof)
print(tlevn)
print(tprefm)
print(tsimp)
```

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