

# Package ‘GDAtools’

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**Type** Package

**Title** A Toolbox for the Analysis of Categorical Data in Social Sciences, and Especially Geometric Data Analysis

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**Depends** FactoMineR, nleqslv, nnet

**Suggests** cluster, WeightedCluster

**Description** Contains functions for 'specific' MCA (Multiple Correspondence Analysis), 'class specific' MCA, computing and plotting structuring factors and concentration ellipses, Multiple Factor Analysis, 'standardized' MCA, inductive tests and others tools for Geometric Data Analysis. It also provides functions for the translation of logit models coefficients into percentages, weighted contingency tables and an association measure - i.e. Percentages of Maximum Deviation from Independence (PEM).

**License** GPL (>= 2)

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burt	<i>Computes a Burt table</i>
------	------------------------------

---

**Description**

Computes a Burt table from a data frame composed of categorical variables.

**Usage**

burt(data)

**Arguments**

data                      data frame with n rows (individuals) and p columns (categorical variables)

**Details**

A Burt table is a symmetric table that is used in correspondence analysis. It shows the frequencies for all combinations of categories of pairs of variables.

**Value**

Returns a square matrix. Its dimension is equal to the total number of categories in the data frame.

**Author(s)**

Nicolas Robette

**References**

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

**See Also**

[dichotom](#)

**Examples**

```
## Burt table of variables in columns 1 to 5
## in the 'Music' example data set
data(Music)
burt(Music[,1:5])
```

---

conc.ellipse

*Adds concentration ellipses to a correspondence analysis graph.*

---

**Description**

Adds concentration ellipses to the individuals factor map of a correspondence analysis.

**Usage**

```
conc.ellipse(resmca, var, sel = 1:length(levels(varb)), col = rainbow(length(sel)),
axes = c(1, 2), cex = 0.2)
```

**Arguments**

resmca	object of class 'MCA', 'speMCA', 'csMCA', 'multiMCA' or 'stMCA'
var	supplementary variable to plot
sel	numeric vector of indexes of the categories to plot (by default, ellipses are plotted for every categories)
col	vector of colors for the ellipses of plotted categories (by default, rainbow palette is used)
axes	length 2 vector specifying the components to plot (default is c(1,2))
cex	numerical value giving the amount by which ellipse contour should be magnified (default is 0.2)

## Details

This function has to be used after the cloud of individuals has been drawn.

## Author(s)

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[plot.speMCA](#), [plot.csMCA](#), [plot.multiMCA](#), [plot.stMCA](#)

## Examples

```
## Performs specific MCA (excluding 'NA' categories) of 'Taste' example data set,
## plots the cloud of categories
## and adds concentration ellipses for gender variable
data(Taste)
mca <- speMCA(Taste[,1:11],excl=c(3,6,9,12,15,18,21,24,27,30,33))
plot(mca,type='i')
conc.ellipse(mca,Taste$Gender)

## Draws a blue concentration ellipse for men only
plot(mca,type='i')
conc.ellipse(mca,Taste$Gender,sel=1,col='blue')
```

---

contrib

*Computes contributions for a correspondence analysis*

---

## Description

From MCA results, computes contributions of categories and variables to the axes and the overall cloud.

## Usage

```
contrib(resmca)
```

## Arguments

resmca                      object of class 'MCA', 'speMCA' or 'csMCA'

## Details

The contribution of a point to an axis depends both on the distance from the point to the origin point along the axis and on the weight of the point. The contributions of points to axes are the main aid to interpretation (see Le Roux and Rouanet, 2004 and 2010).

## Value

A list of data frames:

<code>ctr</code>	Data frame with the contributions of categories to axes
<code>var.ctr</code>	Data frame with the contributions of variables to axes
<code>ctr.cloud</code>	Data frame with the contributions of categories to the overall cloud
<code>vctr.cloud</code>	Data frame with the contributions of variables to the overall cloud

## Author(s)

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[MCA](#), [speMCA](#), [csMCA](#), [varsup](#)

## Examples

```
## Performs a specific MCA on the 'Music' example data set
## and compute contributions
data(Music)
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
contrib(mca)
```

---

csMCA

*Performs a 'class specific' MCA*

---

## Description

Performs a 'class specific' Multiple Correspondence Analysis, i.e. a variant of MCA consisting in analyzing a subcloud of individuals.

**Usage**

```
csMCA(data, subcloud = rep(TRUE, times = nrow(data)), excl = NULL, ncp = 5,
row.w = rep(1, times = nrow(data)))
```

**Arguments**

<code>data</code>	data frame with <code>n</code> rows (individuals) and <code>p</code> columns (categorical variables)
<code>subcloud</code>	a vector of logical values and length <code>n</code> . The subcloud of individuals analyzed with 'class specific' MCA is made of the individuals with value <code>TRUE</code> .
<code>excl</code>	numeric vector indicating the indexes of the 'junk' categories (default is <code>NULL</code> ). See <a href="#">getindexcat</a> to identify these indexes.
<code>ncp</code>	number of dimensions kept in the results (default is 5)
<code>row.w</code>	an optional numeric vector of row weights (by default, a vector of 1 for uniform row weights)

**Details**

This variant of MCA is used to study a subset of individuals with reference to the whole set of individuals, i.e. to determine the specific features of the subset. It consists in proceeding to the search of the principal axes of the subcloud associated with the subset of individuals (see Le Roux and Rouanet, 2004 and 2010).

**Value**

Returns an object of class 'csMCA', i.e. a list including:

<code>eig</code>	a list of vectors containing all the eigenvalues, the percentage of variance, the cumulative percentage of variance, the modified rates and the cumulative modified rates
<code>call</code>	a list with informations about input data
<code>ind</code>	a list of matrices containing the results for the individuals (coordinates, contributions)
<code>var</code>	a list of matrices containing all the results for the categories and variables (weights, coordinates, square cosine, categories contributions to axes and cloud, test values ( <code>v.test</code> ), square correlation ratio ( <code>eta2</code> ), variable contributions to axes and cloud)

**Author(s)**

Nicolas Robette

**References**

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

**See Also**

[getindexcat](#), [plot.csMCA](#), [varsup](#), [contrib](#), [modif.rate](#), [dimdesc.MCA](#), [speMCA](#), [MCA](#)

**Examples**

```
## Performs a 'class specific' MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and focusing on the subset of women.
data(Music)
female <- Music$Gender=='Women'
mca <- csMCA(Music[,1:5],subcloud=female,excl=c(3,6,9,12,15))
plot(mca)
```

---

dichotom

*Dichotomizes the variables in a data frame*


---

**Description**

Dichotomizes the variables in a data frame exclusively composed of categorical variables

**Usage**

```
dichotom(data, out = "numeric")
```

**Arguments**

data	data frame of categorical variables
out	character string defining the format for dichotomized variables in the output data frame. Format may be 'numeric' or 'factor' (default is 'numeric').

**Value**

Returns a data frame with dichotomized variables. The number of columns is equal to the total number of categories in the input data.

**Author(s)**

Nicolas Robette

**Examples**

```
## Dichotomizes 'Music' example data frame
data(Music)
dic <- dichotom(Music[,1:5])
str(dic)

## with output variables in factor format
dic <- dichotom(Music[,1:5], out='factor')
str(dic)
```

---

dimcontrib

*Describes the contributions to axes for MCA and variants of MCA*


---

## Description

Identifies the categories and individuals that contribute the most to each dimension obtained by a Multiple Correspondence Analysis. It allows to analyze variants of MCA, such as 'specific' MCA or 'class specific' MCA.

## Usage

```
dimcontrib(resmca, dim = c(1,2), best = TRUE)
```

## Arguments

resmca	object of class 'MCA', 'speMCA', or 'csMCA'
dim	dimensions to describe (default is c(1,2))
best	if FALSE, displays all the categories; if TRUE (default), displays only categories and individuals with contributions higher than average

## Details

Contributions are sorted and assigned a positive or negative sign according to the corresponding categories or individuals' coordinates, so as to facilitate interpretation.

## Value

Returns a list:

var	a list of categories' contributions to axes
ind	a list of individuals' contributions to axes

## Author(s)

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[dimdesc](#), [dimdesc.MCA](#), [dimeta2](#), [condes](#), [speMCA](#), [csMCA](#)



**Examples**

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then describes the contributions to axes.
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
dimcontrib(mca)
```

dimdesc.MCA

*Describes the dimensions of MCA and variants of MCA***Description**

Identifies the variables and the categories that are the most characteristic according to each dimension obtained by a Factor Analysis. It is inspired by [dimdesc](#) function in FactoMineR package (see Husson et al, 2010), but allows to analyze variants of MCA, such as 'specific' MCA or 'class specific' MCA.

**Usage**

```
dimdesc.MCA(resmca, ncp = 3, proba = 0.05)
```

**Arguments**

resmca	object of class 'MCA', 'speMCA', 'csMCA' or 'stMCA'
ncp	number of dimensions to describe (default is 3)
proba	the significance threshold considered to characterize the dimension (default is 0.05)

**Details**

The statistical indicator used for variables is square correlation ratio (R<sup>2</sup>) and the one used for categories is test-value (v.test).

**Value**

Returns a list of ncp lists including:

quali	the description of the dimensions by the categorical variables (the variables are sorted)
category	the description of the dimensions by each category of all the categorical variables (the categories are sorted)

**Author(s)**

Nicolas Robette

## References

Husson, F., Le, S. and Pages, J. (2010). *Exploratory Multivariate Analysis by Example Using R*, Chapman and Hall.

## See Also

[dimdesc](#), [condes](#), [speMCA](#), [csMCA](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then describe the dimensions.
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
dimdesc.MCA(mca,proba=0.2)
```

---

dimeta2	<i>Describes the eta2 of a list of supplementary variables for the axes of MCA and variants of MCA</i>
---------	--

---

## Description

Computes eta2 for a list of supplementary variables. It allows to analyze variants of MCA, such as 'specific' MCA or 'class specific' MCA.

## Usage

```
dimeta2(resmca, l, n, dim = 1:resmca$call$ncp)
```

## Arguments

resmca	object of class 'MCA', 'speMCA', 'csMCA' or 'stMCA'
l	a list of supplementary variables
n	a vector of names for the supplementary variables. The vector's length must be equal to 'l's length
dim	the axes for which eta2 are computed. Default is 1:ncp

## Value

Returns a data frame with supplementary variables as rows and axes as columns.

## Author(s)

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[dimdesc](#), [dimdesc.MCA](#), [dimcontrib](#), [condes](#), [speMCA](#), [csMCA](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then describes the eta2 for Gender and Age (axes 1 and 2).
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
dimeta2(mca,list(Music$Gender,Music$Age),c('Gender','Age'),dim=1:2)
```

---

dimvtest	<i>Describes the test-values of a list of supplementary variables for the axes of MCA and variants of MCA</i>
----------	---

---

## Description

Computes test-values for a list of supplementary variables. It allows to analyze variants of MCA, such as 'specific' MCA or 'class specific' MCA.

## Usage

```
dimvtest(resmca, l, n, dim = 1:resmca$call$ncp)
```

## Arguments

resmca	object of class 'MCA', 'speMCA', 'csMCA' or 'stMCA'
l	a list of supplementary variables
n	a vector of names for the supplementary variables. The vector's length must be equal to 'l's length
dim	the axes for which eta2 are computed. Default is 1:ncp

## Details

Test-values are ordered and only those higher than 2.58 (or lower than -2.58) are kept.

**Value**

Returns a list of data frames giving the test-values of the supplementary categories for the different axes.

**Author(s)**

Nicolas Robette

**References**

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

**See Also**

[dimdesc](#), [dimdesc.MCA](#), [dimeta2](#), [dimcontrib](#), [condes](#), [speMCA](#), [csMCA](#)

**Examples**

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then describes the test-values for Gender and Age (axes 1 and 2).
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
dimvtest(mca,list(Music$Gender,Music$Age),c('Gender','Age'),dim=1:2)
```

---

getindexcat

*Returns the names of the categories in a data frame*

---

**Description**

Returns a vector of names corresponding the the categories in a data frame exclusively composed of categorical variables.

**Usage**

```
getindexcat(data)
```

**Arguments**

data                      data frame of categorical variables

**Details**

This function may be useful prior to a 'specific' MCA, to identify the indexes of the 'junk' categories to exclude.

**Value**

Returns a character vector with the names of the categories of the variables in the data frame

**Author(s)**

Nicolas Robette

**See Also**

[speMCA](#), [csMCA](#)

**Examples**

```
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
```

---

homog.test

---

*Computes a homogeneity test for a categorical supplementary variable*


---

**Description**

From MCA results, computes a homogeneity test for a categorical supplementary variable, i.e. characterizes the homogeneity of several subclouds.

**Usage**

```
homog.test(resmca, var)
```

**Arguments**

resmca	object of class 'MCA', 'speMCA', 'csMCA', 'stMCA' or 'multiMCA'
var	the categorical supplementary variable. It does not need to have been used at the MCA step.

**Value**

Returns a list of square matrices, one per MCA dimension. Each matrix gives the test statistic for any pair of categories.

**Author(s)**

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[speMCA](#), [csMCA](#), [stMCA](#), [multiMCA](#), [textvarsup](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then computes a homogeneity test for age supplementary variable.
data(Music)
getindexcat(Music)
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
homog.test(mca,Music$Age)
```

---

indsup

*Computes statistics for supplementary individuals*

---

## Description

From MCA results, computes statistics (coordinates, squared cosines) for supplementary individuals.

## Usage

```
indsup(resmca, supdata)
```

## Arguments

resmca	object of class 'MCA', 'speMCA' or 'csMCA'
supdata	data frame with the supplementary individuals. It must have the same factors as the data frame used as input for the initial MCA.

## Value

Returns a list:

coord	matrix of individuals' coordinates
cos2	matrix of individuals' square cosines

## Author(s)

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[textindsup](#), [speMCA](#), [csmCA](#), [varsup](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then computes statistics for supplementary individuals.
data(Music)
getindexcat(Music)
mca <- speMCA(Music[3:nrow(Music),1:5],excl=c(3,6,9,12,15))
indsup(mca,Music[1:2,1:5])
```

---

medoids

*Computes the medoids of clusters*

---

## Description

Computes the medoids of a cluster solution.

## Usage

```
medoids(D, cl)
```

## Arguments

D	square distance matrix (n rows * n columns, i.e. n individuals) or dist object
cl	vector with the clustering solution (its length should be n)

## Details

Medoids are representative objects of a cluster whose average dissimilarity to all the objects in the cluster is minimal. Medoids are always members of the data set (contrary to means or centroids).

## Value

Returns a numeric vector with the indexes of medoids.

## Author(s)

Nicolas Robette

## References

Kaufman, L. and Rousseeuw, P.J. (1990). *Finding Groups in Data: An Introduction to Cluster Analysis*. Wiley, New York.

Anja Struyf, Mia Hubert & Peter J. Rousseeuw (1996). "Clustering in an Object-Oriented Environment". *Journal of Statistical Software*.

## See Also

[dist](#), [cluster](#), [hclust](#), [cutree](#), [pam](#)

## Examples

```
## Performs of classification of the 'Music' example data set,
## a clustering in 3 groups
## and then computes the medoids.
data(Music)
temp <- dichotom(Music[,1:5])
d <- dist(temp)
clus <- cutree(hclust(d),3)
medoids(d,clus)
```

---

modif.rate

*Computes the modified rates of variance of a correspondence analysis*

---

## Description

Computes the modified rates of variance of a correspondence analysis.

## Usage

```
modif.rate(resmca)
```

## Arguments

resmca                      object of class 'MCA', 'speMCA' or 'csMCA'

## Details

As MCA clouds often have a high dimensionality, the variance rates of the first principle axes may be quite low, which makes them hard to interpret. Benzecri (1992, p.412) proposed to use *modified rates* to better appreciate the relative importance of the principal axes.

## Value

Returns a data frame with 2 variables:

mrate	Numeric vector of modified rates
cum.mrate	Numeric vector of cumulative modified rates



**Author(s)**

Nicolas Robette

**References**

Benzecri J.P., *Correspondence analysis handbook*, New-York: Dekker (1992).  
 Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).  
 Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

**See Also**

[MCA](#), [speMCA](#), [csMCA](#)

**Examples**

```
## Computes the modified rates of variance
## of the MCA of 'Music' example data set
data(Music)
mca <- speMCA(Music[,1:5])
modif.rate(mca)
```

---

multiMCA

---

*Performs Multiple Factor Analysis*


---

**Description**

Performs Multiple Factor Analysis, drawing on the work of Escoffier and Pages (1994). It allows the use of MCA variants (e.g. specific MCA or class specific MCA) as inputs.

**Usage**

```
multiMCA(l_mca, ncp = 5, compute.rv = FALSE)
```

**Arguments**

<code>l_mca</code>	a list of objects of class MCA, speMCA or csMCA
<code>ncp</code>	number of dimensions kept in the results (default is 5)
<code>compute.rv</code>	whether RV coefficients should be computed or not (default is FALSE, which makes the function execute faster)

**Details**

This function binds individual coordinates from every MCA in `l_mca` argument, weights them by the first eigenvalue, and the resulting data frame is used as input for Principal Component Analysis (PCA).

**Value**

Returns an object of class 'multiMCA', i.e. a list:

eig	a list of numeric vector for eigenvalues, percentage of variance and cumulative percentage of variance
var	a list of matrices with results for input MCAs components (coordinates, correlation between variables and axes, square cosine, contributions)
ind	a list of matrices with results for individuals (coordinates, square cosine, contributions)
call	a list with informations about input data
VAR	a list of matrices with results for categories and variables in the input MCAs (coordinates, square cosine, test-values, variances)
my.mca	lists the content of the objects in l_mca argument
RV	a matrix of RV coefficients

**Author(s)**

Nicolas Robette

**References**

Escofier, B. and Pages, J. (1994) "Multiple Factor Analysis (AFMULT package)". *Computational Statistics and Data Analysis*, 18, 121-140.

**See Also**

[plot.multiMCA](#), [varsup](#), [speMCA](#), [csMCA](#), [MFA](#), [PCA](#)

**Examples**

```
## Performs a specific MCA on music variables of 'Taste' example data set,
## another one on movie variables of 'Taste' example data set,
## and then a Multiple Factor Analysis.
data(Taste)
getindexcat(Taste[,1:5])
mca1 <- speMCA(Taste[,1:5],excl=c(3,6,9,12,15))
getindexcat(Taste[,6:11])
mca2 <- speMCA(Taste[,6:11],excl=c(3,6,9,12,15,18))
mfa <- multiMCA(list(mca1,mca2))
plot.multiMCA(mfa)
```

---

Music	<i>Music (data)</i>
-------	---------------------

---

## Description

The data concerns tastes for music of a set of 500 individuals. It contains 5 variables of likes for music genres (french pop, rap, rock, jazz and classical), 2 about music listening and 2 additional variables (gender and age).

## Usage

```
data(Music)
```

## Format

A data frame with 500 observations and the following 7 variables:

`FrenchPop` is a factor with levels No, Yes, NA

`Rap` is a factor with levels No, Yes, NA

`Rock` is a factor with levels No, Yes, NA

`Jazz` is a factor with levels No, Yes, NA

`Classical` is a factor with levels No, Yes, NA

`Gender` is a factor with levels Men, Women

`Age` is a factor with levels 15-24, 25-49, 50+

`OnlyMus` is a factor with levels Daily, Often, Rare, Never, indicating how often one only listens to music.

`Daily` is a factor with levels No, Yes indicating if one listens to music every day.

## Details

'NA' stands for 'not available'

## Examples

```
data(Music)
str(Music)
```

---

pem	<i>Computes the local and global Percentages of Maximum Deviation from Independance (PEM)</i>
-----	---

---

### Description

Computes the local and global Percentages of Maximum Deviation from Independance (PEM) of a contingency table.

### Usage

pem(x)

### Arguments

x                      Contingency table. Accepted formats are matrices and 'table' objects.

### Details

The Percentage of Maximum Deviation from Independance (PEM) is an association measure for contingency tables (see Cibois, 1993). It is an alternative to khi2, Cramer coefficient, etc.

### Value

Returns a list:

peml	Matrix with local percentages of maximum deviation from independance
pemg	Numeric value, i.e. the global percentage of maximum deviation from independance

### Author(s)

Nicolas Robette

### References

Cibois P., 1993, Le PEM, pourcentage de l'ecart maximum : un indice de liaison entre modalites d'un tableau de contingence, *Bulletin de methodologie sociologique*, n40, p.43-63. <http://cibois.pagesperso-orange.fr/bms93.pdf>

### See Also

[table](#), [chisq.test](#), [assocstats](#)

## Examples

```
## Computes the PEM for the contingency table
## of jazz and age variables
## from the 'Music' example data set
data(Music)
x <- table(Music$Jazz, Music$Age)
pem(x)
```

---

plot.csMCA

*Plots 'class specific' MCA results*


---

## Description

Plots a 'class specific' Multiple Correspondence Analysis (resulting from `csMCA` function), i.e. the clouds of individuals or categories.

## Usage

```
## S3 method for class 'csMCA'
plot(x, type = "v", axes = 1:2, points = "all", col = "dodgerblue4", app = 0, ...)
```

## Arguments

<code>x</code>	object of class 'csMCA'
<code>type</code>	character string: 'v' to plot the categories (default), 'i' to plot individuals' points, 'inames' to plot individuals' names
<code>axes</code>	numeric vector of length 2, specifying the components (axes) to plot (c(1,2) is default)
<code>points</code>	character string. If 'all' all points are plotted (default); if 'besth' only those who contribute most to horizontal axis are plotted; if 'bestv' only those who contribute most to vertical axis are plotted; if 'best' only those who contribute most to horizontal or vertical axis are plotted.
<code>col</code>	color for the points of the individuals or for the labels of the categories (default is 'dodgerblue4')
<code>app</code>	numerical value. If 0 (default), only the labels of the categories are plotted and their size is constant; if 1, only the labels are plotted and their size is proportional to the weights of the categories; if 2, points (triangles) and labels are plotted, and points size is proportional to the weight of the categories.
<code>...</code>	further arguments passed to or from other methods, such as <code>cex</code> , <code>cex.main</code> , ...

## Details

A category is considered to be one of the most contributing to a given axis if its contribution is higher than the average contribution, i.e. 100 divided by the total number of categories.

**Author(s)**

Nicolas Robette

**References**

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

**See Also**

[csMCA](#), [textvarsup](#), [conc.ellipse](#)

**Examples**

```
## Performs a class specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories
## and focusing on the subset of women,
## and then draws the cloud of categories.
data(Music)
female <- Music$Gender=='Women'
getindexcat(Music[,1:5])
mca <- csMCA(Music[,1:5],subcloud=female,excl=c(3,6,9,12,15))
plot(mca)
plot(mca,axes=c(2,3),points='best',col='darkred',app=1)
```

---

plot.multiMCA

*Plots Multiple Factor Analysis*

---

**Description**

Plots Multiple Factor Analysis data, resulting from [multiMCA](#) function.

**Usage**

```
## S3 method for class 'multiMCA'
plot(x, type = "v", axes = c(1, 2), points = "all", threshold = 2.58,
     groups = 1:x$call$ngroups, col = rainbow(x$call$ngroups), app = 0, ...)
```

**Arguments**

x	object of class 'multiMCA'
type	character string: 'v' to plot the categories (default), 'i' to plot individuals' points, 'inames' to plot individuals' names
axes	numeric vector of length 2, specifying the components (axes) to plot (c(1,2) is default)

points	character string. If 'all' all points are plotted (default); if 'besth' only those who are the most correlated to horizontal axis are plotted; if 'bestv' only those who are the most correlated to vertical axis are plotted; if 'best' only those who are the most coorelated to horizontal or vertical axis are plotted.
threshold	numeric value. V-test minimal value for the selection of plotted categories.
groups	numeric vector specifying the groups of categories to plot. By default, every groups of categories will be plotted
col	a color for the points of the individuals or a vector of colors for the labels of the groups of categories (by default, rainbow palette is used)
app	numerical value. If 0 (default), only the labels of the categories are plotted and their size is constant; if 1, only the labels are plotted and their size is proportional to the weights of the categories; if 2, points (triangles) and labels are plotted, and points size is proportional to the weight of the categories.
...	further arguments passed to or from other methods, such as cex, cex.main, ...

### Details

A category is considered to be one of the most correlated to a given axis if its test-value is higher then 2.58 (which corresponds to a 0.05 threshold).

### Author(s)

Nicolas Robette

### References

Escofier, B. and Pages, J. (1994) "Multiple Factor Analysis (AFMULT package)". *Computational Statistics and Data Analysis*, 18, 121-140.

### See Also

[multiMCA](#), [textvarsup](#), [speMCA](#), [csMCA](#), [MFA](#)

### Examples

```
## Performs a specific MCA on music variables of 'Taste' example data set,
## another one on movie variables of 'Taste' example data set,
## and then a Multiple Factor Analysis and plots the results.
data(Taste)
mca1 <- speMCA(Taste[,1:5],excl=c(3,6,9,12,15))
mca2 <- speMCA(Taste[,6:11],excl=c(3,6,9,12,15,18))
mfa <- multiMCA(list(mca1,mca2))
plot.multiMCA(mfa,col=c('darkred','darkblue'))
plot.multiMCA(mfa,groups=2,app=1)
```

---

plot.speMCA	<i>Plots 'specific' MCA results</i>
-------------	-------------------------------------

---

### Description

Plots a 'specific' Multiple Correspondence Analysis (resulting from [speMCA](#) function), i.e. the clouds of individuals or categories.

### Usage

```
## S3 method for class 'speMCA'
plot(x, type = "v", axes = 1:2, points = "all", col = "dodgerblue4", app = 0, ...)
```

### Arguments

x	object of class 'speMCA'
type	character string: 'v' to plot the categories (default), 'i' to plot individuals' points, 'inames' to plot individuals' names
axes	numeric vector of length 2, specifying the components (axes) to plot (c(1,2) is default)
points	character string. If 'all' all points are plotted (default); if 'besth' only those who contribute most to horizontal axis are plotted; if 'bestv' only those who contribute most to vertical axis are plotted; if 'best' only those who contribute most to horizontal or vertical axis are plotted.
col	color for the points of the individuals or for the labels of the categories (default is 'dodgerblue4')
app	numerical value. If 0 (default), only the labels of the categories are plotted and their size is constant; if 1, only the labels are plotted and their size is proportional to the weights of the categories; if 2, points (triangles) and labels are plotted, and points size is proportional to the weight of the categories.
...	further arguments passed to or from other methods, such as cex, cex.main, ...

### Details

A category is considered to be one of the most contributing to a given axis if its contribution is higher than the average contribution, i.e. 100 divided by the total number of categories.

### Author(s)

Nicolas Robette

### References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).



**See Also**

[speMCA](#), [textvarsup](#), [conc.ellipse](#)

**Examples**

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then draws the cloud of categories.
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
plot(mca)
plot(mca,axes=c(2,3),points='best',col='darkred',app=1)
```

---

plot.stMCA

*Plots 'standardized' MCA results*


---

**Description**

Plots a 'standardized' Multiple Correspondence Analysis (resulting from [stMCA](#) function), i.e. the clouds of individuals or categories.

**Usage**

```
## S3 method for class 'stMCA'
plot(x, type = "v", axes = 1:2, points = "all", threshold = 2.58, groups=NULL,
      col = "dodgerblue4", app = 0, ...)
```

**Arguments**

x	object of class 'stMCA'
type	character string: 'v' to plot the categories (default), 'i' to plot individuals' points, 'inames' to plot individuals' names
axes	numeric vector of length 2, specifying the components (axes) to plot (c(1,2) is default)
points	character string. If 'all' all points are plotted (default); if 'besth' only those who are the most correlated to horizontal axis are plotted; if 'bestv' only those who are the most correlated to vertical axis are plotted; if 'best' only those who are the most coorelated to horizontal or vertical axis are plotted.
threshold	numeric value. V-test minimal value for the selection of plotted categories.
groups	only if x\$call\$input.mca = 'multiMCA', i.e. if the MCA standardized to x object was a multiMCA object. Numeric vector specifying the groups of categories to plot. By default, every groups of categories will be plotted
col	color for the points of the individuals or for the labels of the categories (default is 'dodgerblue4')

app                    numerical value. If 0 (default), only the labels of the categories are plotted and their size is constant; if 1, only the labels are plotted and their size is proportional to the weights of the categories; if 2, points (triangles) and labels are plotted, and points size is proportional to the weight of the categories.

...                    further arguments passed to or from other methods, such as cex, cex.main, ...

### Details

A category is considered to be one of the most correlated to a given axis if its test-value is higher than 2.58 (which corresponds to a 0.05 threshold).

### Author(s)

Nicolas Robette

### References

Robette, Bry and Roueff, 2014, "Un dialogue de sourds dans le theatre statistique? Analyse geometrique des donnees et effets de structure", *forthcoming*

### See Also

[stmca](#), [textvarsup](#), [conc.ellipse](#)

### Examples

```
## Performs a standardized MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories
## and controlling for age,
## and then draws the cloud of categories.
data(Music)
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
stmca <- stmca(mca,control=list(Music$Age))
plot(stmca)
plot(stmca,axes=c(2,3),points='best',col='darkred',app=1)
```

---

prop.wtable

*Transforms a (possibly weighted) contingency table into percentages*

---

### Description

Computes a contingency table from one or two vectors, with the possibility of specifying weights, and then computes the percentages.

### Usage

```
prop.wtable(var1,var2=NULL,w=rep.int(1,length(var1)),dir=0,digits=1,mar=TRUE,na=TRUE)
```

**Arguments**

var1	an object which can be interpreted as factor
var2	an optional object which can be interpreted as factor
w	an optional numeric vector of weights (by default, a vector of 1 for uniform weights)
dir	integer: 0 for percentages, 1 for row percentages and 2 for column percentages (default is 0)
digits	integer indicating the number of decimal places (default is 1)
mar	logical. If TRUE (default), margins are computed
na	logical. If TRUE (default), 'NA' are treated as a category. If FALSE, they are ignored

**Value**

Returns a contingency table expressed in percentages in matrix format.

**Author(s)**

Nicolas Robette

**See Also**

[wtable](#), [prop.table](#)

**Examples**

```
## Computes a contingency table
## (expressed in percentages)
## of jazz and age variables
## from the 'Music' example data set
## with or without weights
data(Music)
prop.wtable(Music$Jazz)
prop.wtable(Music$Jazz, Music$Gender)
prop.wtable(Music$Jazz, Music$Gender, dir=1)
prop.wtable(Music$Jazz, Music$Gender, dir=2)

weight <- sample(0:20, nrow(Music), TRUE)/10
prop.wtable(Music$Jazz, w=weight)
prop.wtable(Music$Jazz, Music$Age, weight)
prop.wtable(Music$Jazz, Music$Age, weight, dir=1)
prop.wtable(Music$Jazz, Music$Age, weight, dir=2)
```

speMCA

*Performs a 'specific' MCA***Description**

Performs a 'specific' Multiple Correspondence Analysis, i.e. a variant of MCA that allows to treat undesirable categories as passive categories.

**Usage**

```
speMCA(data, excl = NULL, ncp = 5, row.w = rep(1, times = nrow(data)))
```

**Arguments**

<code>data</code>	data frame with <code>n</code> rows (individuals) and <code>p</code> columns (categorical variables)
<code>excl</code>	numeric vector indicating the indexes of the "junk" categories (default is <code>NULL</code> ). See "getindexcat" to identify these indexes.
<code>ncp</code>	number of dimensions kept in the results (default is 5)
<code>row.w</code>	an optional numeric vector of row weights (by default, a vector of 1 for uniform row weights)

**Details**

Undesirable categories may be of several kinds: infrequent categories (say, <5 percents), heterogeneous categories (e.g. 'others') or uninterpretable categories (e.g. 'not available'). In these cases, 'specific' MCA may be useful to ignore these categories for the determination of distances between individuals (see Le Roux and Rouanet, 2004 and 2010).

**Value**

Returns an object of class 'speMCA', i.e. a list including:

<code>eig</code>	a list of vectors containing all the eigenvalues, the percentage of variance, the cumulative percentage of variance, the modified rates and the cumulative modified rates
<code>call</code>	a list with informations about input data
<code>ind</code>	a list of matrices containing the results for the individuals (coordinates, contributions)
<code>var</code>	a list of matrices containing all the results for the categories and variables (weights, coordinates, square cosine, categories contributions to axes and cloud, test values (v.test), square correlation ratio (eta2), variable contributions to axes and cloud

**Author(s)**

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[getindexcat](#), [plot.speMCA](#), [varsup](#), [contrib](#), [modif.rate](#), [dimdesc.MCA](#), [MCA](#), [csMCA](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories.
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
str(mca)
```

---

stMCA

*Performs a 'standardized' MCA*


---

## Description

Performs a 'standardized' Multiple Correspondence Analysis, i.e it takes MCA results and forces all the dimensions to be orthogonal to a supplementary 'control' variable.

## Usage

```
stMCA(resmca, control)
```

## Arguments

resmca	an object of class 'MCA', 'speMCA', 'csMCA' or 'multiMCA'
control	a list of 'control' variables

## Details

Standardized MCA unfolds in several steps. First, for each dimension of an input MCA, individual coordinates are used as dependent variable in a linear regression model and the 'control' variable is included as covariate in the same model. The residuals from every models are retained and bound together. The resulting data frame is composed of continuous variables and its number of columns is equal to the number of dimensions in the input MCA. Lastly, this data frame is used as input in a Principal Component Analysis.

**Value**

Returns an object of class "stMCA". This object will be similar to `resmca` argument, still it does not comprehend modified rates, categories contributions and variables contributions.

**Author(s)**

Nicolas Robette

**References**

Robette, Bry and Roueff, 2014, "Un dialogue de sourds dans le theatre statistique? Analyse geometrique des donnees et effets de structure", [<http://nicolas.robette.free.fr/publis.html>], *forthcoming*.

**See Also**

`plot.stMCA`, `MCA`, `speMCA`, `csMCA`, `multiMCA`, `PCA`

**Examples**

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then performs a 'standardized' MCA controlling for age.
data(Music)
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
plot(mca)
textvarsup(mca,Music$Age,col='red')
stmca <- stMCA(mca,control=list(Music$Age))
plot(stmca)
textvarsup(stmca,Music$Age,col='red')
```

---

tabcontrib	<i>Displays the categories contributing most to axes for MCA and variants of MCA</i>
------------	--

---

**Description**

Identifies the categories that contribute the most to a given dimension of a Multiple Correspondence Analysis and organizes them into a fancy table. It allows to analyze variants of MCA, such as 'specific' MCA or 'class specific' MCA.

**Usage**

```
tabcontrib(resmca, dim = 1)
```

**Arguments**

resmca	object of class 'MCA', 'speMCA', or 'csMCA'
dim	dimension to describe (default is 1st dimension)

## Details

Best contributions - i.e. higher than average - are assigned a positive or negative sign according to the corresponding categories' coordinates, so as to facilitate interpretation. Then they are sorted and organized according to the most contributing variables.

## Value

Returns a data frame with the following columns:

var	the names of the most contributing variables
moda	the names of the most contributing cateories
ctr1	'negative' contributions, i.e. corresponding to categories with coordinates lower than zero
ctr2	'positive' contributions, i.e. corresponding to categories with coordinates higher than zero
weight	weight of the categories
ctrtot	sum of the best contributions for a given variable
cumctrtot	cumulated contributions

## Author(s)

Nicolas Robette

## References

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Stuctured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

## See Also

[dimcontrib](#), [dimdesc](#), [dimdesc.MCA](#), [dimeta2](#), [condes](#), [speMCA](#), [csMCA](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then describes the contributions to axes.
data(Music)
getindexcat(Music[,1:5])
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
tabcontrib(mca,1)
tabcontrib(mca,2)
```

---

Taste

*Taste (data)*

---

### Description

The data concerns tastes for music and movies of a set of 500 individuals. It contains 5 variables of likes for music genres (french pop, rap, rock, jazz and classical), 6 variables of likes for movie genres (comedy, crime, animation, science fiction, love, musical) and 2 additional variables (gender and age).

### Usage

```
data(Taste)
```

### Format

A data frame with 500 observations and the following 13 variables:

FrenchPop is a factor with levels No, Yes, NA

Rap is a factor with levels No, Yes, NA

Rock is a factor with levels No, Yes, NA

Jazz is a factor with levels No, Yes, NA

Classical is a factor with levels No, Yes, NA

Comedy is a factor with levels No, Yes, NA

Crime is a factor with levels No, Yes, NA

Animation is a factor with levels No, Yes, NA

SciFi is a factor with levels No, Yes, NA

Love is a factor with levels No, Yes, NA

Musical is a factor with levels No, Yes, NA

Gender is a factor with levels Men, Women

Age is a factor with levels 15-24, 25-49, 50+

### Details

'NA' stands for 'not available'

### Examples

```
data(Taste)
str(Taste)
```



---

textindsup	<i>Adds supplementary individuals to a MCA graph</i>
------------	--

---

## Description

Adds supplementary individuals to a MCA graph of the cloud of the individuals.

## Usage

```
textindsup(resmca, supdata, axes = c(1, 2), col = "darkred")
```

## Arguments

resmca	object of class 'MCA', 'speMCA', or 'csMCA'
supdata	data frame with the supplementary individuals. It must have the same factors as the data frame used as input for the initial MCA.
axes	numeric vector of length 2, specifying the dimensions (axes) to plot (default is c(1,2))
col	color for the labels of the categories (default is 'darkred')

## Author(s)

Nicolas Robette

## See Also

[indsup](#), [plot.speMCA](#), [plot.csMCA](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## plots the cloud of individuals,
## and then adds supplementary individuals.
data(Music)
getindexcat(Music)
mca <- speMCA(Music[3:nrow(Music),1:5],excl=c(3,6,9,12,15))
plot(mca,type='i')
textindsup(mca,Music[1:2,1:5])
```

---

textvarsup

*Adds a categorical supplementary variable to a MCA graph*


---

## Description

Adds a categorical supplementary variable to a MCA graph of the cloud of categories.

## Usage

```
textvarsup(resmca, var, sel = 1:nlevels(var), axes = c(1, 2),
           col = "black", app = 0, vname = NULL)
```

## Arguments

resmca	object of class 'MCA', 'speMCA', 'csMCA', 'stMCA' or 'multiMCA'
var	the categorical supplementary variable. It does not need to have been used at the MCA step.
sel	numeric vector of indexes of the categories of the supplementary variable to be added to the plot (by default, labels are plotted for every categories)
axes	numeric vector of length 2, specifying the dimensions (axes) to plot (default is c(1,2))
col	color for the labels of the categories (default is black)
app	numerical value. If 0 (default), only the labels are plotted and their size is constant; if 1, only the labels are plotted and their size is proportional to the weights of the categories; if 2, points (triangles) and labels are plotted, and points size is proportional to the weight of the categories.
vname	a character string to be used as a prefix for the labels of the categories (null by default)

## Author(s)

Nicolas Robette

## See Also

[plot.speMCA](#), [plot.csMCA](#), [plot.stMCA](#), [plot.multiMCA](#), [varsup](#)

## Examples

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## plots the cloud of categories,
## and then adds gender and age supplementary categories.
data(Music)
getindexcat(Music)
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
```

```
plot(mca,col='gray')
textvarsup(mca,Music$Gender,col='darkred')
textvarsup(mca,Music$Age,sel=c(1,3),col='orange',vname='age',app=1)
```

---

translate.logit	<i>Translate logit regression coefficients into percentages</i>
-----------------	---

---

## Description

Performs a logit regression and then computes the effects of covariates expressed in percentages (through two methods: 'pure' effects and 'experimental' effects; see Deaudeau, 2010)

## Usage

```
translate.logit(formula,data,nit=0)
```

## Arguments

formula	an object of class formula (or one that can be coerced to that class): a symbolic description of the model to be fitted. Every variables have to be factors.
data	a data frame containing the variables in the model
nit	number of bootstrap iterations for confidence interval computation. Default is 0, i.e. no confidence interval is computed.

## Details

This function works with binomial as well as multinomial regression models. If the dependant variable has two factors, `glm` is used, if it has more than two factors `multinom` function (from `nnet` package) is used. The function expresses the regression coefficients as percentages through three distinct methods: raw percentages, 'pure effects' percentages and 'experimental effects' percentages (see Deaudeau, 2010).

## Value

The function returns a list:

reg	An object of class <code>glm</code> or <code>nnet</code> (depending on the number of factors of the dependent variable)
summary	The results of <code>summary</code> function applied to <code>reg</code> element
percents	A matrix or a list of matrices (depending on the number of factors of the dependent variable) with regression coefficients expressed as percentages
boot.ci	A matrix or a list of matrices (depending on the number of factors of the dependent variable) with confidence intervals computed with bootstrap

## Author(s)

Nicolas Robette

## References

Deaueveau, J. (2010), 'Comment traduire sous forme de probabilités les résultats d'une modélisation logit ?', Bulletin of Sociological Methodology / Bulletin de Methodologie Sociologique 105(1), 5-23.

Deaueveau, J. (2011), 'Est-il possible et souhaitable traduire sous forme de probabilités un coefficient logit ? Réponse aux remarques formulées par Marion Selz à propos de mon article paru dans le BMS en 2010', Bulletin of Sociological Methodology / Bulletin de Methodologie Sociologique 112(1), 32-42.

## See Also

[glm](#), [multinom](#)

## Examples

```
## An example for binomial logit regression
data(Music)
translate.logit(Daily ~ Gender + Age, Music)
translate.logit(Daily ~ Gender + Age, Music, 100)

## An example for multinomial logit regression
translate.logit(OnlyMus ~ Gender + Age, Music)
```

---

varsup

*Computes statistics for a categorical supplementary variable*

---

## Description

From MCA results, computes statistics (weights, coordinates, contributions, test-values, variances) for a categorical supplementary variable.

## Usage

```
varsup(resmca, var)
```

## Arguments

resmca	object of class 'MCA', 'speMCA', 'csMCA', 'stMCA' or 'multiMCA'
var	the categorical supplementary variable. It does not need to have been used at the MCA step.

**Value**

Returns a list:

weight	numeric vector of categories weights
coord	data frame of categories coordinates
cos2	data frame of categories square cosine
var	data frame of categories within variances, variance between and within categories and variable square correlation ratio (eta2)
v.test	data frame of categories test-values

**Author(s)**

Nicolas Robette

**References**

Le Roux B. and Rouanet H., *Multiple Correspondence Analysis*, SAGE, Series: Quantitative Applications in the Social Sciences, Volume 163, CA:Thousand Oaks (2010).

Le Roux B. and Rouanet H., *Geometric Data Analysis: From Correspondence Analysis to Structured Data Analysis*, Kluwer Academic Publishers, Dordrecht (June 2004).

**See Also**

[speMCA](#), [csMCA](#), [multiMCA](#), [textvarsup](#)

**Examples**

```
## Performs a specific MCA on 'Music' example data set
## ignoring every 'NA' (i.e. 'not available') categories,
## and then computes statistics for age supplementary variable.
data(Music)
getindexcat(Music)
mca <- speMCA(Music[,1:5],excl=c(3,6,9,12,15))
varsup(mca,Music$Age)
```

---

wtable

---

*Computes a (possibly weighted) contingency table*


---

**Description**

Computes a contingency table from one or two vectors, with the possibility of specifying weights.

**Usage**

```
wtable(var1,var2=NULL,w=rep.int(1,length(var1)),digits=0,mar=TRUE,na=TRUE)
```

**Arguments**

var1	an object which can be interpreted as factor
var2	an optional object which can be interpreted as factor
w	an optional numeric vector of weights (by default, a vector of 1 for uniform weights)
digits	integer indicating the number of decimal places (default is 0)
mar	logical. If TRUE (default), margins are computed
na	logical. If TRUE (default), 'NA' are treated as a category. If FALSE, they are ignored

**Value**

Returns a contingency table in matrix format.

**Author(s)**

Nicolas Robette

**See Also**

[table](#), [prop.wtable](#)

**Examples**

```
## Computes a contingency table
## of jazz and age variables
## from the 'Music' example data set
## with or without weights
data(Music)
wtable(Music$Jazz)
wtable(Music$Jazz, Music$Age)

weight <- sample(0:20, nrow(Music), TRUE)/10
wtable(Music$Jazz, w=weight, digits=1)
wtable(Music$Jazz, Music$Age, weight, 1)
```

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