Package 'qrfactor'

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Type Package

Title Simultaneous simulation of Q and R mode factor analyses with Spatial data

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Depends R (>= 2.10), mvoutlier,mgraph,pvclust,cluster,maptools

Suggests MASS

Description The qrfactor package simultaneously runs both Q and R mode factor analyses. The package contains only one function called qrfactor() that can perform PCA, R-mode Factor Analysis, Q-mode Factor Analysis, Simultaneous R- and Q-mode Factor Analysis, Principal Coordinate Analysis, as wells as Multidimensional Scaling (MDS). Loadings and scores can easily be computed from the simulation.The plot.qrfactor() function offers several annotated biplots for all possible combinations of eigenvectors, loadings, and scores. Input data includes shapefiles, tables and dataframe

URL http://www.openictghana.com/qrfactor

License GPL-2

NeedsCompilation no

Repository CRAN

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R topics documented:

qrfactor *Perfoming Factor Analysis with GIS data*

Description

The anovagis function performs Factor Analysis on GIS data.

Usage

```
qrfactor(source,layer='',var=NULL,type='',p="Yes",scale="sd",t='',nf=2,m=NULL,f=NULL,...)
## Default S3 method:
qrfactor(source,layer='',var=NULL,type='',p="Yes",scale="sd",t='',nf=2,m=NULL,f=NULL,...)
## S3 method for class 'qrfactor'
print(x,...)
## S3 method for class 'qrfactor'
summary(object,...)
## S3 method for class 'qrfactor'
plot(x,factors=c(1,2),type="loading",plot="",
cex="",pch=15,pos=3,main="",xlim="optimise",
ylim="optimise",abline=TRUE,legend="topright",legendvalues=c(100),
values=FALSE,nfactors=3,rowname=TRUE,par=c(1,2),...)
```

Arguments

source	Folder path of the layer. Please quote the full folder path with forward slash "/". You can use R object as a source but you must set the layer parameter to "nofile"; see below
layer	The layer qrfactor in the folder that you want to work with. It is the file name of qrfactor. This is case sensitive, please. In case you want to use non spatial data such as ".csv", ".txt", "dat" or ".tab" insert the full file name as layer. In case of using R object as a source set "layer" parameter to "nofile"
var	The attributes or variables of the layer. In case of using non spatial data such as ".csv", ".txt", "dat" or ".tab" var are variables or column names
type	Types of plots 'mds'for multidimensional scale, 'coordinate' for principal coordinate analyse. Or The type of results one wants to plot. It takes "scores", "loadings", pca or eigenvectors. The deault is loadings.
p	Determine whether prediction must be done:"Yes". The scores are appended to the GIS data
t	The list of variables that one wants to transform eg. transform=c("gold","diamond")
scale	scale the data:"sd","pca","data". The default is "sd" that is the scaled data divided by the standard deviation. It can lso take "log" or "sqrt" and use the default "sd" for normal distribution transformation
m	the the match field: the common variable on both the table and spatial data. This name must be identical to both sets of data
f	The full path of csv file and the name of csv eg. C:/Users/owusu/Documents/Rpackages/qrfactor14/inst/ex

x	an object of class "qrfactor", i.e., a fitted model.
object	an object of class "qrfactor", i.e., a fitted model.
plot	The type of plots one desires. It takes "all" for all the 3 plots or "q" for q plot or "r" for r plot or 'qr' for both q and r plots
factors	list of factors one wants to plot. The default is factors=c(1,2). Please do not forget "c" in the list.
cex	A numerical value giving the amount by which plotting text and symbols should be magnified relative to the default. It also accepts a vector of values which are recycled eg cex=c("gold")
nfactors	The number of factors to extract
pch	Either an integer specifying a symbol or a single character to be used as the default in plotting points.
pos	The position of text labels
main	Main title of the graph
xlim	x-coordinates of the axis eg xlim=c(-1.5,1.5)
ylim	y-coordinates of the axis eg ylim=c(-1.5,1.5)
abline	the intercept and slope, single values of straight lines through the current plot. eg. abline(-0.5,0.5)
legend	position of legend: it takes topright,topleft, bottomright,bottomleft, top, left, bottom, right
legendvalues	The values of the legend
values	Incase one wants to label the graph with another variables. eg. values=c("gold")
nf	The number of factors to extract
rowname	rownames of the data
par	the layout setteing in a form of list
...	any other parameter can be added

Value

Objects of the class that basically list its elements

data	Original data for the model. All records must be numeric. It also accepts continous data
gisdata	GIS data for the model incase you use shape files
x.standard	it is the scale matrix of the original data
correlation	The correlation matrix for the data
eigen.value	eigen value of correlation matrix of the data
eigen.vector	eigen vector of correlation matrix of the data
diagonal.matrix	diagonal matrix of eigen vector
pca	pca loadings

pcascores	PCA scores
r.loading	R-mode loadings
q.loading	Q-mode loadings
loadings	combined loadings of R and Q on the same axis
q.scores	computed Q-mode scores
scores	combined R-mode and Q-mode scores on the same axis
rownames	row names of the loadings
variables	variables names of the loadings, of the original data

Author(s)

George Owusu

References

Bivand, R. S., Pebesma, E. J., Gomez-Rubio, V. (2008) Applied Spatial Data Analysis with R. Springer Kabacoff, I. R. (2011) R in Action. Data Analysis and Graphics with R. Manning Publications Co

Examples

```
## Not run:
#apply qrfactor to csv data

csv= system.file("external", "Africanfreshwater.csv", package = "qrfactor") #list the csv file
var=c( "Domestic", "Industry",   "Agricultur", "Resources",  "withdrawal","perCapitaW")
mod0=qrfactor(csv,var=var)
plot(mod0,rowname="COUNTRY")

#apply qrfactor on shapefile
source<- system.file("external", package = "qrfactor")
layer="Africanfreshwater"
mod1=qrfactor(source,layer,var=var)
plot(mod1,rowname="COUNTRY")

#apply qrfactor on imported spatial data into R
gisdata <- na.omit(readOGR(source, layer))
mod2=qrfactor(gisdata,var=var)

#join CSV data and shapefile
mod3=qrfactor(source,layer,var=var,m="COUNTRY",f=csv)
mod5=qrfactor(mod3$gisdata,var=var,m="COUNTRY",f=csv) #multiple join

par(mfrow=c(1,2))
plot(mod2,rowname="COUNTRY",cex=c("means"),legend="topleft",values=c("cluster"),pch=23)
#plot(mod2,cex=c("means"),type="cluster")# cluster analyses
plot(mod2,type="map")#plots several maps
#plot(mod2,type="diagnose")#plots histograms and qqplots
```

```
## End(Not run)
```

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rq *Internal factor analayses function*

Description

It is for internal use only

Author(s)

George Owusu

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