

Package ‘clusEvol’

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Type Package

Title A Procedure for Cluster Evolution Analytics

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Description Cluster Evolution Analytics allows us to use exploratory what if questions in the sense that the present information of an object is plugged-in a dataset in a previous time frame so that we can explore its evolution (and of its neighbors) to the present. See the URL for the papers associated with this package, as for instance, Morales-Oñate and Morales-Oñate (2024) <doi:10.1016/j.softx.2024.101921>.

Depends R (>= 4.1.0)

License GPL (>= 3)

Encoding UTF-8

Imports ggplot2,plotly,cluster,fpc,viridis,clusterSim,dplyr

Repository CRAN

URL <https://github.com/vmoprojs/clusEvol>

BugReports <https://github.com/vmoprojs/clusEvol/issues>

LazyData true

NeedsCompilation no

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Contents

actpas	2
clusEvol	2
plot.clusEvol	4
pwt1001	5

Index**6**

actpas	<i>Assets and liabilities operations</i>
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Description

Ecuador's amount of Assets and Liabilities Operations of the National Financial System: <https://contenido.bce.fin.ec/home1/e>

Usage

```
actpas
```

Format

A dataframe containing 358 observations and 25 columns.

References

Morales-Oñate, V., and Morales-Oñate, B. (2024). *Cluster Evolution Analytics*. [doi:10.1016/j.softx.2024.101921](https://doi.org/10.1016/j.softx.2024.101921)

clusEvol	<i>clusEvol</i>
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Description

clusEvol is a function that allows us to use exploratory what if questions in the sense that the present information of an object is plugged-in a dataset in a previous time frame so that we can explore its evolution (and of its neighbours) to the present.

Usage

```
clusEvol(x=NULL,objects=NULL, time = NULL,target.vars = NULL,
         time.base=NULL,sel.obj=NULL,init = NULL,logscale = FALSE,
         ng = NULL,clm = "pam",scale=TRUE,clstats = FALSE,...)
```

Arguments

x	Dataframe. panel data input.
objects	Character; variable name of objects.
time	Character; variable name of time .
target.vars	Character; selected variables for Cluster Evolution Analytics (CEA).
time.base	Numeric; selected time for CEA.
sel.obj	Character; selected object for CEA.

init	Numeric; initiation time.
logscale	Logical; TRUE if data should be logscaled.
ng	Numeric; number of desired clusters.
clm	Character; (pam,kmeans,choose).
scale	Logical; TRUE if data is scaled in clm.
clstats	Logical; TRUE if cluster statistics should be returned.
...	Parameters used in 'clm' method.

Details

clusEvol can be synthesized has the following steps

- Identify clusters to which sel.obj is similar in time.base - The data of sel.obj in time.base is plugged-in in each time period. - Clusters are generated in each time period with data from sel.obj in time.base.

Value

Returns an object of class clusEvol. An object of class clusEvol is a list containing at most the following components:

datos	clean input data;
target.vars	selected variables;
results	data frame of neighbours of sel.obj;
ECK	clusters that sel.obj belongs to;
ECKTot	all clusters that sel.obj belongs to;
Clus	dataframe objects, cluster and time.
sumdat	summary statistics of datos.
kmodesol	output of clustering algorithm in each iteration.
clusterStats	cluster statistics in each clustering.
s1	evolution in time with target.vars included (subset of Clus but only for sel.obj).
sel	input variable names of objects in time.
sel.obj	input character of selected object.

Author(s)

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References

Morales-Oñate, V., and Morales-Oñate, B. (2024). *Cluster Evolution Analytics*. doi:10.1016/j.softx.2024.101921

Examples

```
library(clusEvol)
data(actpas)

solclusEvol <- clusEvol(x=actpas,objects="razon_social",
  time = "fecha",target.vars = c("montoAct","operAct"),
  time.base=max(actpas$fecha),
  sel.obj="BANCO SOLIDARIO S.A.",init = min(actpas$fecha),
  logscale = TRUE,ng = 5,c1m = "pam")

print(solclusEvol)
```

plot.clusEvol

Plot output results from clusEvol

Description

Plot density or empirical cumulative distribution from Bvals in [clusEvol](#) output.

Usage

```
## S3 method for class 'clusEvol'
plot(x,target,type = "heat",plotly=FALSE,...)
```

Arguments

x	an object of the class "clusEvol"
target	Numeric; 1 if density, 2 if ecdf plot is returned
type	Character; heat (default), line, boxplot are the options
plotly	Logical; if FALSE, a ggplotly plot is returned
...	other arguments to be passed to the function ggplot

Details

This function plots outputs from clusEvol taking into account its panel data structure.

Value

Produces a plot. No values are returned.

See Also

[clusEvol](#) for procedure and examples.

pwt1001

Penn World Table (Version 10.01)

Description

Relative levels of income, output, input, and productivity for 183 countries between 1950 and 2019 (base year: 2017).

Usage

pwt1001

Format

A data frame with 12,810 observations of 52 variables.

Details

The Penn World Table 10.01 (<<https://www.rug.nl/ggdc/productivity/pwt/>>) provides information on relative levels of income, output, input, and productivity for 183 countries between 1950 and 2019.

References

Morales-Oñate, V., and Morales-Oñate, B. (2024). *Cluster Evolution Analytics*. doi:10.1016/j.softx.2024.101921

Index

- * **Cluster Evolution Analytics**

- clusEvol, [2](#)

- * **clusEvol**

- plot.clusEvol, [4](#)

- * **datasets**

- actpas, [2](#)

- pwt1001, [5](#)

actpas, [2](#)

clusEvol, [2](#), [4](#)

ggplot, [4](#)

plot.clusEvol, [4](#)

pwt1001, [5](#)