Package 'T2Qv'

October 12, 2022

Type Package

Title Control Qualitative Variables

Version 0.1.0

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Description Covers k-table control analysis using multivariate control charts for qualitative variables using fundamentals of multiple correspondence analysis and multiple factor analysis. The graphs can be shown in a flat or interactive way, in the same way all the outputs can be shown in an interactive shiny panel.

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Depends R (>= 3.5)

Imports shiny, shinydashboardPlus, shinydashboard, shinycssloaders, dplyr, ca, highcharter, stringr, tables, purrr, tidyr, htmltools (>= 0.5.1.1)

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

Date/Publication 2022-05-18 17:00:04 UTC

R topics documented:

`ACMconcatenated` *ACM Concatenated*

Description

Multiple correspondence analysis applied to a concatenated table.

Usage

```
ACMconcatenated(base, IndK, interactive = TRUE)
```

Arguments

`base`	Data set
`IndK`	Character with the name of the column that specifies the partition of the data set in k tables.
`interactive`	If it is TRUE, the graph will be shown interactively. If FALSE, the graph is displayed flat. FALSE is the default.

Value

A Multiple Correspondence Analysis graph of the concatenated table.

Examples

```
data(Datak10Contaminated)
ACMconcatenated(Datak10Contaminated,"GroupLetter", interactive = TRUE)
```

`ACMpoint` *ACM in one point*

Description

Multiple correspondence analysis applied to a specific table.

Usage

```
ACMpoint(base, IndK, PointTable, interactive = TRUE)
```

Arguments

base	Data set
IndK	Character with the name of the column that specifies the partition of the data set in k tables.
PointTable	Table indicator. A character or number that is part of the IndK registers. This argument specifies the table to which the analysis will be performed.
interactive	If it is TRUE, the graph will be shown interactively. If FALSE, the graph is displayed flat. FALSE is the default.

Value

A Multiple Correspondence Analysis graph of the table specified in PointTable.

Examples

```
data(Datak10Contaminated)
ACMpoint(Datak10Contaminated,"GroupLetter", PointTable="j", interactive=TRUE)
```

ChiSq_variable *Chi squared variable from point table.*

Description

Contains Chi square distance between the column masses of the table specified in PointTable and the concatenated table. It allows to identify which mode is responsible for the anomaly in the table in which it is located.

Usage

```
ChiSq_variable(base, IndK, PointTable, interactive = TRUE, ylim = 0.09)
```

Arguments

base	Data set
IndK	Character with the name of the column that specifies the partition of the data set in k tables.
PointTable	Table indicator. A character or number that is part of the IndK registers. This argument specifies the table to which the analysis will be performed.
interactive	If it is TRUE, the graph will be shown interactively. If FALSE, the graph is displayed flat. FALSE is the default.
ylim	y-axis limit.

Value

A table with Chi square distances between the column masses of the table specified in PointTable and the concatenated table.

Examples

```
data(Datak10Contaminated)
ChiSq_variable(Datak10Contaminated, "GroupLetter", PointTable="j", ylim=5, interactive=TRUE)
```

`Datak10Contaminated` *10 Tables Data Set*

Description

Data from 10 tables with 10 categorical variables, the data from table 10 was generated with a different distribution from the others.

Usage

```
Datak10Contaminated
```

Format

A data frame:

V01 Contains 3 modes "High", "Medium", "Low".

V02 Contains 3 modes "High", "Medium", "Low".

V03 Contains 3 modes "High", "Medium", "Low".

V04 Contains 3 modes "High", "Medium", "Low".

V05 Contains 3 modes "High", "Medium", "Low".

V06 Contains 3 modes "High", "Medium", "Low".

V07 Contains 3 modes "High", "Medium", "Low".

V08 Contains 3 modes "High", "Medium", "Low".

V09 Contains 3 modes "High", "Medium", "Low".

V10 Contains 3 modes "High", "Medium", "Low".

GroupLetter Letters from "a" to "j" identify the k tables.

Full_Panel *Full Panel T2 Qualitative*

Description

A shiny panel complete with the multivariate control chart for qualitative variables, the two ACM charts and the modality distance table. Within the dashboard, arguments such as type I error and dimensionality can be modified.

Usage

```
Full_Panel(base, IndK)
```

Arguments

base	Data set
IndK	Character with the name of the column that specifies the partition of the data set in k tables.

Value

A complete panel with the multivariate control chart for qualitative variables, the two ACM charts and the modality distance table.

Examples

```
data(Datak10Contaminated)
Full_Panel(Datak10Contaminated, "GroupLetter")
```

T2_qualitative *Multivariate control chart for qualitative variables*

Description

Multivariate control chart T2 Hotelling applicable for qualitative variables.

Usage

```
T2_qualitative(base, IndK, dim, interactive = TRUE, alpha = 0.0027)
```

Arguments

base	Data set
IndK	Character with the name of the column that specifies the partition of the data set in k tables.
dim	Dimension taken for reduction. Initial dimension - 1 is recommended.
interactive	If it is TRUE, the graph will be shown interactively. If FALSE, the graph is displayed flat. FALSE is the default.
alpha	Type I error, it is recommended to reach this value by using the ARL.

Value

A control chart made with the T2 hotelling statistic, applied to detect anomalies in any of the K tables obtained with the specification of IndK. The control limit of the graph is obtained from the number of dimensions dim and the type I error alpha.

Examples

```
data(Datak10Contaminated)
T2_qualitative(Datak10Contaminated,"GroupLetter",9, TRUE,0.0027)
```

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