Package 'exploreGLM'

October 6, 2013

Type Package

Title Descriptive analysis and Generalized Linear Model exploration.

Version 0.2

Date 2013-10-06

Author Patricia Ballesta and Jose Barrera-Gomez

Maintainer Jose Barrera-Gomez <jbarrera@creal.cat>

Depends R (>= 3.0.1), nnet, MASS

Description This package is meant to create basic descriptives and explore Generalized Linear Model fitting in a semi-automatically way.

License GPL (>=2)

R topics documented:

`exploreGLM-package` *Descriptive analysis and Generalized Linear Model exploration.*

Description

This package generates descriptive summaries according to the nature of the variable (numerical or factor). Different descriptive statistics can be calculated and different regression models are computed as appropriate (linear, logistic, Poisson, ordinal and multinomial).

Details

Package:	exploreGLM
Type:	Package
Version:	0.2
Date:	2013-10-06
License:	GPL (>=2)

Author(s)

Patricia Ballesta and Jose Barrera-Gomez.

Maintainer: Jose Barrera-Gomez <jbarrera@creal.cat>

References

See the vignette for more details.

`exploreglm` *Fitting models with exploreGLM function.*

Description

This function fits a Generalized Linear Model to an object returned by the `prepareData` function.

Usage

```
exploreglm(formula, object, ordinal = FALSE, count = FALSE)
## S3 method for class 'exploreglm'
print(x, ...)
## S3 method for class 'exploreglm'
summary(object, ...)
## S3 method for class 'exploreglm'
plot(x, ...)
```

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.
`object`	object created by the `prepareData` function.
`ordinal`	indicated as `TRUE` if the response variable is ordinal. Default is `FALSE`.
`count`	indicated as `TRUE` if the response variable is a count. Default is `FALSE`.
`x`	an output object from `exploreGLM` or from its summary.
`...`	further optional arguments.

Details

Depending whether the y-variable is considered as numerical (1), binomial (2), count variable (3), ordinal (4) or multinomial (5) the following models are performed:

1 - Linear regression model (`glm` family = gaussian)

2 - Logistic regression model (`glm` family = binomial)

3 - Poisson regression model (`glm` family = poisson)

4 - Logistic regression model for polytomous ordinal data (`polr`)

5 - Logistic regression model for polytomous nominal data (`multinom`)

Value

`formula`	an object of class formula that contains the variables to be explored.
`data`	data frame that contains the variables to be explored.
`mod`	fitted model.
`modtype`	type of fitted model.
`ytype`	type of response variable.

Author(s)

Patricia Ballesta and Jose Barrera-Gomez.

References

See the vignette for more detailed examples illustrating the use of this function.

See Also

`prepareData`, `glm`, `polr`, `multinom`.

Examples

```
data(flowers)
flpD <- prepareData(data = flowers, k = 4, id = idflo)
modlm <- exploreglm(EVA ~ ., flpD)
modlm
summary(modlm)
plot(modlm)
```

`flowers` *Flowers Experiment.*

Description

The flowers data frame has 120 rows and 8 columns of data from an experiment on the effect of some drugs added to water.

Usage

```
data(flowers)
```

Format

A data frame with 120 observations on the following 8 variables.

`idflo` an identifier for each flower.

`treat` treatment given to the flower: `ASA`, `Control`, `Ibuprofen` or `Paracetamol`.

`water` type of water: `Normal` or `Mineral`.

`flower` flower species: `Carnation`, `Dalmatian` or `Mum`.

`EVA` a numeric variable of flowers status at the end of follow-up. Scale 0-100 from little to very wilted.

`color` water color at the end of follow-up: `Yellow` or `White`.

`defects` defects count on the flower at the end of follow-up.

`petal` an ordered factor with levels: `Big` > `Medium` > `Small`.

Details

To test if the flowers are best preserved by adding any medication to water, 120 flowers were subjected to different combinations of treatments. The experiment was randomized, controlled and evaluator was not informed about the medication administered in the water of each bouquet.

Source

Data were obtained of an own experiment.

Examples

```
data(flowers)
summary(flowers)
plot(flowers$EVA ~ flowers$treat)
model <- lm(EVA ~ treat + flower + water + treat : flower, data = flowers)
anova(model)
```

---

prepareData *Prepare data to exploreGLM function.*

Description

This function prepares data to generate descriptive summaries or to be used by the function `exploreglm`.

Usage

```
prepareData(data, k = 5, id = NULL)
## S3 method for class 'prepareData'
print(x, lines = 10, ...)
## S3 method for class 'prepareData'
summary(object, digits = 2, ...)
```

Arguments

data	data frame containing the variables to be described by summary and/or fitted by exploreglm. See details.
k	maximum number of different values in a variable codified as a numerical to be assumed as categorical. See details.
id	name of the identifier variable, if any.
x	an output object from prepareData or from its summary.
lines	number of first records in the database to be printed. Default is 10.
object	an object of class prepareData.
digits	number of significant digits to be printed.
...	further optional arguments.

Details

This function prepares data to generate descriptive summaries through the summary function or to be modeled through the exploreglm function.

A variable codified as a numerical where the number of different values is <=k, will be assumed as a categorical.

Value

data	data frame containing the variables that will be described or modeled.
nvalues	number of different values for each variable.
type	class of each variable (numerical or categorical).
k	maximum number of different values in a variable codified as a numerical to be treated as a categorical.
smry	list containing descriptive statistics.
numvars	number of numeric variables contained in the data frame data.
digits	number of significant digits to be printed.

Author(s)

Patricia Ballesta and Jose Barrera-Gomez.

References

See the vignette for more detailed examples illustrating the use of this function.

See Also

exploreglm.

Examples

```
data(flowers)
flpD <- prepareData(data = flowers, k = 4, id = idflo)
flpD
print(flpD, lines = 5)
head(flpD$data)
summary(flpD)
```

print.summary.exploreglm

Summary of the exploreglm function.

Description

This function does the print of the summary for the model fitted by the `exploreglm` function.

Usage

```
## S3 method for class 'summary.exploreglm'
print(x, ...)
```

Arguments

`x`	object created by `summary.exploreglm` function.
`...`	further optional arguments.

Author(s)

Patricia Ballesta and Jose Barrera-Gomez.

References

See the vignette for more detailed examples.

See Also

`exploreglm`, `prepareData`.

Examples

```
data(flowers)
flpD <- prepareData(data = flowers, k = 4, id = idflo)
modlm <- exploreglm(EVA ~ ., flpD)
summary(modlm)
```

print.summary.prepareData

Summary of the prepareData function.

Description

This function does the print for the summary of the `prepareData` function.

Usage

```
## S3 method for class 'summary.prepareData'
print(x, ...)
```

Arguments

x	object created by `summary.prepareData` function.
...	further optional arguments.

Author(s)

Patricia Ballesta and Jose Barrera-Gomez.

References

See the vignette for more detailed examples.

See Also

`prepareData`, `exploreglm`.

Examples

```
data(flowers)
flpD <- prepareData(data = flowers, k = 4, id = idflo)
summary(flpD)
```

Index