Package 'ProbMarg'

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Type Package

Title Computing Logit & Probit Predicted Probabilities & Marginal Effects

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Description Computes predicted probabilities and marginal effects for binary & ordinal logit and probit, (partial) generalized ordinal & multinomial logit models estimated with the glm(), clm() (in the 'ordinal' package), and vglm() (in the 'VGAM' package) functions.

Depends R (>= 3.5.0)

License GPL-3

Encoding UTF-8

LazyData true

NeedsCompilation no

Repository CRAN

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Contents

adm *Graduate School Admissions Data of University Students*

Description

This data set gives the graduate school admission status and university academic information of 400 students. "major" UCLA Institute for Digital Research and Education example data.

Usage

```
adm
```

Format

A dataframe containing 400 observations.

Source

read.csv("https://stats.idre.ucla.edu/stat/data/binary.csv")

margEffects *Marginal Effects for a Variety of Logit and Probit Models*

Description

This an R function for computing marginal effects for binary & ordinal logit and probit, (partial) generalized ordinal & multinomial logit models estimated with glm, clm (in **ordinal**), and vglm (in **VGAM**) commands. It returns a data frame with each column containing the predicted probabilities for a specific response y value given a set of chosen independent variable settings.

Usage

```
margEffects(model, specs, effect=1, method="logit")
```

Arguments

model	An input model object estimated with glm, clm, or vglm. The order of the right-hand variables must be the same as that of the "specs" argument.
specs	A data frame with each row specifying the chosen values of all the independent variables in the model.
effect	default 1; an integer specifying the location of the marginal effects for an independent variable, with 1 being the one located in the first position.
method	Default "logit"; altenative methods are "probit" and "gologit". The "logit" and "probit" method can be estimated with **glm** or **clm** of the **ordinal** package while "mlogit" and "gologit" can be estimated with **vglm** in the **VGAM** package. For multinomial logit models, use the last choice as the reference category.

Value

The function outputs a data frame of J number of columns, with each column containing the marginal effects on p(y=j) with j = 1, ..., J for ordinal models, j = 1, 0 for binary models, and j = 1, ..., Ref for multinomial models.. The rows are defined the same as in the input "specs" argument.

References

Tim F. Liao, 1994. *Interpreting Probability Models: Logit, Probit, and Other Generalized Linear Models*. Thousand Oaks, CA: Sage.

J. Scott Long, 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA: Sage.

Examples

```
data(adm)
adm$hRank[adm$rank==1 | adm$rank==2] <- 1
adm$hRank[adm$rank==3 | adm$rank==4] <- 0
logit1 <- glm(admit ~ gre + hRank + gpa, data=adm, binomial)
setval1 <- expand.grid(gre=seq(250,800,50), hRank=0:1, gpa=mean(adm$gpa))
margins1 <- margEffects(logit1, setval1)
probit1 <- glm(admit ~ gre + hRank + gpa, data=adm, binomial(link=probit))
margins2 <- margEffects(probit1, setval1, method="probit")
```

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predProbs *Predicted Probabilities for a Variety of Logit and Probit Models*

Description

This an R function for computing predicted probabilities for binary & ordinal logit and probit, (partial) generalized ordinal & multinomial logit models estimated with glm, clm (in **ordinal**), and vglm (in **VGAM**) commands. It returns a data frame with each column containing the predicted probabilities for a specific response y value given a set of chosen independent variable settings.

Usage

```
predProbs(model, specs, method="logit")
```

Arguments

`model`	An input model object estimated with glm, clm, or vglm. The order of the right-hand variables must be the same as that of the "specs" argument.
`specs`	A data frame with each row specifying the chosen values of all the independent variables in the model.

`method` Default "logit"; altenative methods are "probit," "mlogit," and "gologit".The "logit" and "probit" method can be estimated with **glm** or **clm** of the **ordinal** package while "mlogit" and "gologit" can be estimated with **vglm** in the **VGAM** package. For multinomial logit models, use the last choice as the reference category.

Value

The function outputs a data frame of J number of columns, with each column containing the predicted probabilities p(y=j) with j = 1, ..., J for ordinal models, j = 1, 0 for binary models, and j = 1, ..., Ref for multinomial models. The rows are defined the same as in the input "specs" argument.

References

Tim F. Liao, 1994. *Interpreting Probability Models: Logit, Probit, and Other Generalized Linear Models*. Thousand Oaks, CA: Sage.

J. Scott Long, 1997. *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA: Sage.

Examples

```
data(adm)
adm$hRank[adm$rank==1 | adm$rank==2] <- 1
adm$hRank[adm$rank==3 | adm$rank==4] <- 0
logit1 <- glm(admit ~ gre + hRank + gpa, data=adm, binomial)
setval1 <- expand.grid(gre=seq(250,800,50), hRank=0:1, gpa=mean(adm$gpa))
predprobs1 <- predProbs(logit1, setval1)
probit1 <- glm(admit ~ gre + hRank + gpa, data=adm, binomial(link=probit))
predprobs2 <- predProbs(probit1, setval1, method="probit")
```

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