

# Package ‘ProbMarg’

June 27, 2020

**Type** Package

**Title** Computing Logit & Probit Predicted Probabilities & Marginal Effects

**Version** 1.0.1

**Date** 2020-06-27

**Author** Tim Liao

**Maintainer** Tim Liao <tfliao@illinois.edu>

**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

**Date/Publication** 2020-06-27 15:00:06 UTC

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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 <code>glm</code> , <code>clm</code> , or <code>vglm</code> . 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"; alternative methods are "probit" and "gologit". The "logit" and "probit" method can be estimated with <b>glm</b> or <b>clm</b> of the <b>ordinal</b> package while "mlogit" and "gologit" can be estimated with <b>vglm</b> in the <b>VGAM</b> 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  $j = 1, \dots, J$  for ordinal models,  $j = 1, 0$  for binary models, and  $j = 1, \dots, \text{Ref}$  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*

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**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"; alternative 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  $j = 1, \dots, J$  for ordinal models,  $j = 1, 0$  for binary models, and  $j = 1, \dots, \text{Ref}$  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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