Package: glmm.hp (via r-universe)

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Type Package

Title Hierarchical Partitioning of Marginal R2 for Generalized Mixed-Effect Models

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Depends R (>= 3.4.0),MuMIn,ggplot2,vegan

Imports lme4

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Description Conducts hierarchical partitioning to calculate individual contributions of each predictor (fixed effects) towards marginal R2 for generalized linear mixed-effect model (including lm, glm and glmm) based on output of r.squaredGLMM() in 'MuMIn', applying the algorithm of Lai J.,Zou Y., Zhang S.,Zhang X.,Mao L.(2022)glmm.hp: an R package for computing individual effect of predictors in generalized linear mixed models.Journal of Plant Ecology,15(6)1302-1307<doi:10.1093/jpe/rtac096>.

License GPL

Encoding UTF-8

URL `https://github.com/laijiangshan/glmm.hp`

RoxygenNote 7.3.1

Repository https://laijiangshan.r-universe.dev

RemoteUrl https://github.com/laijiangshan/glmm.hp

RemoteRef HEAD

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`glmm.hp` *Hierarchical Partitioning of Marginal R2 for Generalized Mixed-Effect Models*

Description

Hierarchical Partitioning of Marginal R2 for Generalized Mixed-Effect Models

Usage

```
glmm.hp(mod, type = "adjR2", commonality = FALSE)
```

Arguments

`mod`	Fitted lme4,nlme,glmmTMB,glm or lm model objects.
`type`	The type of R-square of lm, either "R2" or "adjR2", in which "R2" is unadjusted R-square and "adjR2" is adjusted R-square, the default is "adjR2". The adjusted R-square is calculated using Ezekiel's formula (Ezekiel 1930) for lm.
`commonality`	Logical; If TRUE, the result of commonality analysis (2^N-1 fractions for N predictors) is shown, the default is FALSE.

Details

This function conducts hierarchical partitioning to calculate the individual contributions of each predictor towards total (marginal) R2 for Generalized Linear Mixed-effect Model (including lm,glm and glmm). The marginal R2 is the output of r.squaredGLMM in MuMIn package for glm and glmm.

Value

`r.squaredGLMM`	The R2 for the full model.
`hierarchical.partitioning`	A matrix containing individual effects and percentage of individual effects towards total (marginal) R2 for each predictor.

Author(s)

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References

- Lai J.,Zhu W., Cui D.,Mao L.(2023)Extension of the glmm.hp package to Zero-Inflated generalized linear mixed models and multiple regression.Journal of Plant Ecology,16(6):rtad038<DOI:10.1093/jpe/rtad038>
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- Lai J.,Zou Y., Zhang J.,Peres-Neto P.(2022) Generalizing hierarchical and variation partitioning in multiple regression and canonical analyses using the rdacca.hp R package.Methods in Ecology and Evolution,13(4):782-788<DOI:10.1111/2041-210X.13800>
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- Nakagawa, S., & Schielzeth, H. (2013). A general and simple method for obtaining R2 from generalized linear mixed-effects models. Methods in Ecology and Evolution, 4(2), 133-142.
- Nakagawa, S., Johnson, P. C., & Schielzeth, H. (2017). The coefficient of determination R2 and intra-class correlation coefficient from generalized linear mixed-effects models revisited and expanded. Journal of the Royal Society Interface, 14(134), 20170213.
- Ezekiel, M. (1930) Methods of Correlational Analysis. Wiley, New York.

Examples

```
library(MuMIn)
library(lme4)
mod1 <- lmer(Sepal.Length ~ Petal.Length + Petal.Width+(1|Species),data = iris)
r.squaredGLMM(mod1)
glmm.hp(mod1)
a <- glmm.hp(mod1)
plot(a)
mod2 <- glm(Sepal.Length ~ Petal.Length + Petal.Width, data = iris)
r.squaredGLMM(mod2)
glmm.hp(mod2)
b <- glmm.hp(mod2)
plot(b)
plot(glmm.hp(mod2))
mod3 <- lm(Sepal.Length ~ Petal.Length + Petal.Width + Petal.Length:Petal.Width, data = iris)
glmm.hp(mod3,type="R2")
glmm.hp(mod3,commonality=TRUE)
```

`plot.glmmhp` *Plot for a* `glmm.hp` *object*

Description

Plot for a `glmm.hp` object

Usage

```
## S3 method for class 'glmmhp'
plot(x, plot.perc = FALSE, color = NULL, n = 1, dig = 4, ...)
```

Arguments

`x`	A `glmm.hp` object.
`plot.perc`	Logical;if TRUE, the bar plot (based on ggplot2 package) of the percentage to individual effects of variables or groups towards total explained variation, the default is FALSE to show plot with original individual effects.
`color`	Color of variables.
`n`	Integer; which marginal R2 in output of r.squaredGLMM to plot.
`dig`	Integer; number of decimal places in Venn diagram.
`...`	unused

Value

a ggplot object

Author(s)

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Examples

```
library(MuMIn)
library(lme4)
mod1 <- lmer(Sepal.Length ~ Petal.Length + Petal.Width +(1 | Species), data = iris)
a <- glmm.hp(mod1)
plot(a)
mod3 <- lm(Sepal.Length ~ Petal.Length+Petal.Width,data = iris)
plot(glmm.hp(mod3,type="R2"))
plot(glmm.hp(mod3,commonality=TRUE),color = c("#8DD3C7", "#FFFFB3"))
```

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