Package 'MarginalMediation'

October 12, 2022

Title Marginal Mediation

Version 0.7.2

Description Provides the ability to perform ``Marginal Mediation''--mediation
wherein the indirect and direct effects are in terms of the average marginal effects
(Bartus, 2005, <https://EconPapers.repec.org/RePEc:tsj:stataj:v:5:y:2005:i:3:p:
309-329>).
The style of the average marginal effects stems from Thomas Leeper's work on the ``margins'' package.
This framework allows the use of categorical mediators and outcomes with little change in interpretation
from the continuous mediators/outcomes. See <doi:10.13140/RG.2.2.18465.92001> for more details
on the method.

Imports stats, magrittr, boot, cli, crayon, rstudioapi, purrr, tibble,
furniture, stringr

Suggests testthat, knitr, rmarkdown, margins, betareg

VignetteBuilder knitr

Encoding UTF-8

License GPL-2

RoxygenNote 7.1.1

NeedsCompilation no

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Angelo Canty [ctb] (S original bootstrap method,
  http://statwww.epfl.ch/davison/BMA/library.html),
Brian D. Ripley [ctb] (R port, bootstrap method),
Thomas Leeper [ctb] (Vectorized marginal effects,
  https://thomasleeper.com/software.html)

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Repository CRAN

Date/Publication 2022-04-15 08:42:36 UTC

R **topics documented:**

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amed   *Average Marginal Effects*

Description

Internal function for `mma()`. Based on the same strategy as `margins` by T. Leeper.

Usage

```
amed(model)
```

Arguments

model   the model object

Author(s)

Tyson S. Barrett

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frames   *Average Marginal Effects*

Description

Provides the average marginal effects of a GLM model with bootstrapped confidence intervals. Similar results would be obtained from using `margins::margins()`.

Usage

```
frames(model, ci_type = "perc", boot = 100, ci = 0.95)
```

Arguments

`model`	the model object
`ci_type`	the type of boostrapped confidence interval; options are "perc", "basic", "bca"
`boot`	the number of bootstrapped samples; default is 100
`ci`	the confidence interval; the default is .975 which is the 95% confidence interval.

Details

Using the average marginal effects as discussed by Tamas Bartus (2005), the coefficients are transformed into probabilities (for binary outcomes) or remain in their original units (continuous outcomes).

Author(s)

Tyson S. Barrett

References

Bartus, T. (2005). Estimation of marginal effects using margeff. The Stata Journal, 5(3), 309–329. <https://EconPapers.repec.org/RePEc:tsj:stataj:v:5:y:2005:i:3:p:309-329>

Examples

```
library(furniture)
data(nhanes_2010)
fit = glm(marijuana ~ home_meals + gender + age + asthma,
          data = nhanes_2010,
          family = "binomial")
frames(fit)
```

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mma *Marginal Mediation*

Description

Provides the ability to perform marginal mediation. Marginal mediation is particularly useful for situations where the mediator or outcome is categorical, a count, or some other non-normally distributed variable. The results provide the average marginal effects of the models, providing simple interpretation of the indirect effects.

Usage

```
mma(..., ind_effects, ci_type = "perc", boot = 500, ci = 0.95)
```

Arguments

`...`	the glm model objects; the first is the model with the outcome while the others are the mediated effects ("a" paths)
`ind_effects`	a vector of the desired indirect effects. Has the form `"var1-var2"`.
`ci_type`	a string indicating the type of bootstrap method to use (currently "perc" and "basic" are available; "perc" is recommended). Further development will allow the Bias-Corrected bootstrap soon.
`boot`	the number of bootstrapped samples; default is 500.
`ci`	the confidence interval; the default is .95 which is the 95% confidence interval.

Details

Using the average marginal effects as discussed by Tamas Bartus (2005), the coefficients are transformed into probabilities (for binary outcomes) or remain in their original units (continuous outcomes).

Value

A list of class `mma` containing:

`ind_effects`	the indirect effects reported in the average marginal effect
`dir_effects`	the direct effects reported in the average marginal effect
`ci_level`	the confidence level
`data`	the original data frame
`reported_ind`	the indirect effects the user requested (in the . . .)
`boot`	the number of bootstrap samples
`model`	the formulas of the individual sub-models
`call`	the original function call

Author(s)

Tyson S. Barrett

References

Bartus, T. (2005). Estimation of marginal effects using margeff. The Stata Journal, 5(3), 309–329.

MacKinnon, D. (2008). Introduction to Statistical Mediation Analysis. Taylor \& Francis, LLC.

Examples

```
## A minimal example:

library(furniture)
data(nhanes_2010)
bcpath = glm(marijuana ~ home_meals + gender + age + asthma,
```

```
            data = nhanes_2010,
            family = "binomial")
apath = glm(home_meals ~ gender + age + asthma,
            data = nhanes_2010,
            family = "gaussian")
(fit = mma(bcpath, apath,
            ind_effects = c("genderFemale-home_meals",
                            "age-home_meals",
                            "asthmaNo-home_meals"),
            boot = 10))
```

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mma_check   *Uncorrelated Residual Assumption Check*

Description

Provides the correlations of the residual terms of the model

Usage

```
mma_check(model)
```

Arguments

model   The mma model object

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mma_dir_effects   *Direct Effects Extraction for MMA*

Description

Extracts the formulas from a mma object

Usage

```
mma_dir_effects(model)
```

Arguments

model   mma fit object

`mma_formulas`   *Formula Extraction for MMA*

Description

Extracts the formulas from a mma object

Usage

```
mma_formulas(model)
```

Arguments

model   mma fit object

`mma_ind_effects`   *Indirect Effects Extraction for MMA*

Description

Extracts the formulas from a mma object

Usage

```
mma_ind_effects(model)
```

Arguments

model   mma fit object

`mma_std_dir_effects`   *Standardized Direct Effects Extraction for MMA*

Description

Extracts the formulas from a mma object

Usage

```
mma_std_dir_effects(model)
```

Arguments

model   mma fit object

---

mma_std_ind_effects   *Standardized Indirect Effects Extraction for MMA*

Description

Extracts the formulas from a mma object

Usage

```
mma_std_ind_effects(model)
```

Arguments

model   mma fit object

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perc_med   *Percent Mediation*

Description

To obtain the percent of the total effect that is mediated through the specified indirect path: indirect / (total) * 100.

Usage

```
perc_med(model, effect)
```

Arguments

model   mma fit object

effect   the indirect effect to be compared to its direct path

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%>%   *re-export magrittr pipe operator*

Description

re-export magrittr pipe operator

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