Package 'equatiomatic'

August 27, 2020

Title Transform Models into 'LaTeX' Equations

Version 0.1.0

Description The goal of 'equatiomatic' is to reduce the pain associated with writing 'LaTeX' formulas from fitted models. The primary function of the package, extract_eq(), takes a fitted model object as its input and returns the corresponding 'LaTeX' code for the model.

License MIT + file LICENSE

Depends R (>= 3.3.0)

Imports broom (>= 0.7.0), stats

Suggests texPreview, testthat (>= 2.1.0), knitr, MASS, ordinal, rmarkdown, covr

URL https://github.com/datalorax/equatiomatic

BugReports https://github.com/datalorax/equatiomatic/issues

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

VignetteBuilder knitr

NeedsCompilation no

Author Daniel Anderson [aut, cre] (<https://orcid.org/0000-0003-4699-4680>), Andrew Heiss [aut] (<https://orcid.org/0000-0002-3948-3914>), Joshua Rosenberg [ctb] (<https://orcid.org/0000-0003-2170-0447>), Jonathan Sidi [ctb] (<https://orcid.org/0000-0002-4222-1819>)

Maintainer Daniel Anderson <daniela@uoregon.edu>

Repository CRAN

Date/Publication 2020-08-27 14:20:06 UTC

R topics documented:

`extract_eq` *'LaTeX' code for R models*

Description

Extract the variable names from a model to produce a 'LaTeX' equation, which is output to the screen. Supports any model supported by broom::tidy.

Usage

```
extract_eq(
  model,
  intercept = "alpha",
  greek = "beta",
  raw_tex = FALSE,
  ital_vars = FALSE,
  show_distribution = FALSE,
  wrap = FALSE,
  terms_per_line = 4,
  operator_location = "end",
  align_env = "aligned",
  use_coefs = FALSE,
  coef_digits = 2,
  fix_signs = TRUE
)
```

Arguments

`model`	A fitted model
`intercept`	How should the intercept be displayed? Default is `"alpha"`, but can also accept `"beta"`, in which case the it will be displayed as beta zero.
`greek`	What notation should be used for coefficients? Currently only accepts `"beta"` (with plans for future development). Can be used in combination with `raw_tex` to use any notation, e.g., `"\hat{\beta}"`.
`raw_tex`	Logical. Is the greek code being passed to denote coefficients raw tex code?
`ital_vars`	Logical, defaults to `FALSE`. Should the variable names not be wrapped in the `\operatorname{}` command?
`show_distribution`	Logical. When fitting a logistic or probit regression, should the binomial distribution be displayed? Defaults to `FALSE`.
`wrap`	Logical, defaults to `FALSE`. Should the terms on the right-hand side of the equation be split into multiple lines? This is helpful with models with many terms.
`terms_per_line`	Integer, defaults to 4. The number of right-hand side terms to include per line. Used only when `wrap` is `TRUE`.

`operator_location`
: Character, one of "end" (the default) or "start". When terms are split across multiple lines, they are split at mathematical operators like +. If set to "end", each line will end with a trailing operator (+ or −). If set to "start", each line will begin with an operator.

`align_env`
: TeX environment to wrap around equation. Must be one of `aligned`, `aligned*`, `align`, or `align*`. Defaults to `aligned`.

`use_coefs`
: Logical, defaults to `FALSE`. Should the actual model estimates be included in the equation instead of math symbols?

`coef_digits`
: Integer, defaults to 2. The number of decimal places to round to when displaying model estimates.

`fix_signs`
: Logical, defaults to `FALSE`. If disabled, coefficient estimates that are negative are preceded with a "+" (e.g. `5(x) + -3(z)`). If enabled, the "+ -" is replaced with a "-" (e.g. `5(x) -3(z)`).

Value

A character of class "equation".

Examples

```
# Simple model
mod1 <- lm(mpg ~ cyl + disp, mtcars)
extract_eq(mod1)

# Include all variables
mod2 <- lm(mpg ~ ., mtcars)
extract_eq(mod2)

# Works for categorical variables too, putting levels as subscripts
mod3 <- lm(body_mass_g ~ bill_length_mm + species, penguins)
extract_eq(mod3)

set.seed(8675309)
d <- data.frame(cat1 = rep(letters[1:3], 100),
                cat2 = rep(LETTERS[1:3], each = 100),
                cont1 = rnorm(300, 100, 1),
                cont2 = rnorm(300, 50, 5),
                out   = rnorm(300, 10, 0.5))
mod4 <- lm(out ~ ., d)
extract_eq(mod4)

# Don't italicize terms
extract_eq(mod1, ital_vars = FALSE)

# Wrap equations in an "aligned" environment
extract_eq(mod2, wrap = TRUE)

# Wider equation wrapping
extract_eq(mod2, wrap = TRUE, terms_per_line = 4)
```

```
# Include model estimates instead of Greek letters
extract_eq(mod2, wrap = TRUE, terms_per_line = 2, use_coefs = TRUE)

# Don't fix doubled-up "+ -" signs
extract_eq(mod2, wrap = TRUE, terms_per_line = 4, use_coefs = TRUE, fix_signs = FALSE)

# Use other model types, like glm
set.seed(8675309)
d <- data.frame(out = sample(0:1, 100, replace = TRUE),
                cat1 = rep(letters[1:3], 100),
                cat2 = rep(LETTERS[1:3], each = 100),
                cont1 = rnorm(300, 100, 1),
                cont2 = rnorm(300, 50, 5))
mod5 <- glm(out ~ ., data = d, family = binomial(link = "logit"))
extract_eq(mod5, wrap = TRUE)
```

`penguins` *Size measurements for adult foraging penguins near Palmer Station, Antarctica*

Description

Data originally from penguins. Includes measurements for penguin species, island in Palmer Archipelago, size (flipper length, body mass, bill dimensions), and sex. This is a subset of penguins_raw.

Usage

```
penguins
```

Format

A tibble with 344 rows and 8 variables:

species a factor denoting penguin species (Adélie, Chinstrap and Gentoo)

island a factor denoting island in Palmer Archipelago, Antarctica (Biscoe, Dream or Torgersen)

bill_length_mm a number denoting bill length (millimeters)

bill_depth_mm a number denoting bill depth (millimeters)

flipper_length_mm an integer denoting flipper length (millimeters)

body_mass_g an integer denoting body mass (grams)

sex a factor denoting penguin sex (female, male)

year an integer denoting the study year (2007, 2008, or 2009)

Source

Adélie penguins: Palmer Station Antarctica LTER and K. Gorman. 2020. Structural size measurements and isotopic signatures of foraging among adult male and female Adélie penguins (Pygoscelis adeliae) nesting along the Palmer Archipelago near Palmer Station, 2007-2009 ver 5. Environmental Data Initiative https://doi.org/10.6073/pasta/98b16d7d563f265cb52372c8ca99e60f

Gentoo penguins: Palmer Station Antarctica LTER and K. Gorman. 2020. Structural size measurements and isotopic signatures of foraging among adult male and female Gentoo penguin (Pygoscelis papua) nesting along the Palmer Archipelago near Palmer Station, 2007-2009 ver 5. Environmental Data Initiative https://doi.org/10.6073/pasta/7fca67fb28d56ee2ffa3d9370ebda689

Chinstrap penguins: Palmer Station Antarctica LTER and K. Gorman. 2020. Structural size measurements and isotopic signatures of foraging among adult male and female Chinstrap penguin (Pygoscelis antarcticus) nesting along the Palmer Archipelago near Palmer Station, 2007-2009 ver 6. Environmental Data Initiative https://doi.org/10.6073/pasta/c14dfcfada8ea13a17536e73eb6fbe9e

Originally published in: Gorman KB, Williams TD, Fraser WR (2014) Ecological Sexual Dimorphism and Environmental Variability within a Community of Antarctic Penguins (Genus Pygoscelis). PLoS ONE 9(3): e90081. doi:10.1371/journal.pone.0090081

`print.equation` *Print 'LaTeX' equations*

Description

Print 'LaTeX' equations built with `extract_eq`.

Usage

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

Arguments

`x`	'LaTeX' equation built with `extract_eq`
`...`	not used

Index