Package: gregRy (via r-universe)

October 12, 2024

Type Package

Title GREGORY Estimation

Version 0.1.0

Description Functions which make using the Generalized Regression
Estimator(GREG) J.N.K. Rao, Isabel Molina, (2015)
<doi:10.3390/f11020244> and the Generalized Regression
Estimator Operating on Resolutions of Y (GREGORY) easier. The
functions are designed to work well within a forestry context,
and estimate multiple estimation units at once. Compared to
other survey estimation packages, this function has greater
flexibility when describing the linear model.

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Encoding UTF-8

Imports dplyr, purrr, tidyr, magrittr

RoxygenNote 7.1.1

Suggests knitr, rmarkdown

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

RemoteUrl https://github.com/olekwojcik/gregry

RemoteRef HEAD

RemoteSha 912df3fe86b606869671526401b5e6c54213facf

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Description

This function runs the Generalized Regression Operating on Resolutions of Y estimator, also know as GREGORY, on a set of data.

Usage

```
gregory_all(
  plot_df,
  resolution,
  estimation,
  pixel_estimation_means,
  proportions,
  formula,
  prop
)
```

Arguments

plot_df	A data frame containing the response variable, predictors, estimation unit, and resolution unit for each "plot"
resolution	A character specifying the resolution column name within the other dataframes
estimation	A character specifying the estimation column name within the other dataframes
pixel_estimation_means	
	A dataframe with a column for the estimation unit and a column for the mean response variable value per that estimation unit
proportions	A dataframe with three columns: one for resolution, one for estimation, and one for the proportion of a resolution area found in each estimation area
formula	Formula to be used for the model, names should be consistent with the column names in plot_df and pixel_estimation_means
prop	A character specifying the column name of the proportion found in proportions

Value

A dataframe with each row representing each estimation unit, its estimate, and its estimated variance.

Examples

```
#create plot data
planet_plot_data <- data.frame(plot_number = 1:20,
                               planet = c(rep("Kashyyyk", 5),
                                          rep("Forest Moon of Endor", 5),
```

```
                                          rep("Dagobah", 5),
                                          rep("Naboo", 5)),
                        count_of_trees = c(204, 156, 240, 286, 263,
                                           112, 167, 131, 25, 145,
                                           141, 65, 127, 15, 98,
                                           100, 12, 49, 94, 69),
                        forest_cover = c(85, 74, 89, 95, 92,
                                         70, 73, 69, 11, 68,
                                         67, 30, 62, 15, 42,
                                         59, 5, 17, 25, 22),
                    eco_province = c("forest", "swamp", "forest", "forest", "forest",
                                     "forest", "forest", "forest", "grassland", "forest",
                                     "forest", "swamp", "swamp", "grassland", "swamp",
                                     "forest", "grassland", "grassland",
                                     "swamp", "swamp"))

#create mean data
planet_means <- data.frame(planet = c("Kashyyyk",
                                      "Forest Moon of Endor",
                                      "Dagobah",
                                      "Naboo"),
                           forest_cover = c(95,
                                            85,
                                            50,
                                            30))
#create proportion data
planet_province_prop <- data.frame(planet = c(rep("Kashyyyk", 2),
                                              rep("Forest Moon of Endor", 2),
                                              rep("Dagobah", 3),
                                              rep("Naboo", 3)),
                                   eco_province = c("forest", "swamp",
                                                    "forest", "grassland",
                                                    "forest", "grassland", "swamp",
                                                    "forest", "grassland", "swamp"),
                                   prop = c(0.8, 0.2,
                                            0.75, 0.25,
                                            0.1, 0.1, 0.8,
                                            0.2, 0.4, 0.4))

x1 <- gregory_all(plot_df = planet_plot_data,
                  resolution = "eco_province",
                  estimation = "planet",
                  pixel_estimation_means = planet_means,
                  proportions = planet_province_prop,
                  formula = count_of_trees ~ forest_cover,
                  prop = "prop")
x1
```

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greg_all   *greg_all*

Description

This function runs the Generalized Regression estimator, also know as GREG, on a set of data.

Usage

```
greg_all(plot_df, estimation, pixel_estimation_means, formula)
```

Arguments

plot_df	A data frame containing the response variable, predictors, estimation unit, and resolution unit for each "plot"
estimation	A character specifying the estimation column name within the other dataframes
pixel_estimation_means	
	A dataframe with a column for the estimation unit and a column for the mean response variable value per that estimation unit
formula	Formula to be used for the model, names should be consistent with the column names in plot_df and pixel_estimation_means

Value

A dataframe with each row representing each estimation unit, its estimate, and its estimated variance.

Examples

```
#create plot data
planet_plot_data <- data.frame(plot_number = 1:20,
                               planet = c(rep("Kashyyyk", 5),
                                          rep("Forest Moon of Endor", 5),
                                          rep("Dagobah", 5),
                                          rep("Naboo", 5)),
                               count_of_trees = c(204, 156, 240, 286, 263,
                                                  112, 167, 131, 25, 145,
                                                  141, 65, 127, 15, 98,
                                                  100, 12, 49, 94, 69),
                               forest_cover = c(85, 74, 89, 95, 92,
                                                70, 73, 69, 11, 68,
                                                67, 30, 62, 15, 42,
                                                59, 5, 17, 25, 22))

#create mean data
planet_means <- data.frame(planet = c("Kashyyyk",
                                       "Forest Moon of Endor",
                                       "Dagobah",
                                       "Naboo"),
                           forest_cover = c(95,
                                            85,
                                            50,
                                            30))
```

```
x1 <- greg_all(plot_df = planet_plot_data,
               estimation = "planet",
               pixel_estimation_means = planet_means,
               formula = count_of_trees ~ forest_cover)
x1
```

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