

# Package ‘gregRy’

September 6, 2021

**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](https://doi.org/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.

**License** MIT + file LICENSE

**Encoding** UTF-8

**Imports** dplyr, purrr, tidyr, magrittr

**RoxygenNote** 7.1.1

**Suggests** knitr, rmarkdown

**NeedsCompilation** no

**Author** Olek Wojcik [cre, aut],  
Sam Olson [aut]

**Maintainer** Olek Wojcik <[olkowaty@gmail.com](mailto:olkowaty@gmail.com)>

**Repository** CRAN

**Date/Publication** 2021-09-06 09:00:08 UTC

## R topics documented:

gregory_all . . . . .	2
greg_all . . . . .	3
<b>Index</b>	<b>6</b>



```

        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

```

**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
```

# Index

\* **forest**

greg\_all, 3

gregory\_all, 2

greg\_all, 3

gregory\_all, 2