

Package: saeczi (via r-universe)

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Type Package

Title Small Area Estimation for Continuous Zero Inflated Data

Version 0.2.0.9000

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Description Provides functionality to fit a zero-inflated estimator for small area estimation. This estimator is a combines a linear mixed effects regression model and a logistic mixed effects regression model via a two-stage modeling approach. The estimator's mean squared error is estimated via a parametric bootstrap method. Chandra and others (2012, <[doi:10.1080/03610918.2011.598991](https://doi.org/10.1080/03610918.2011.598991)>) introduce and describe this estimator and mean squared error estimator. White and others (2024+, <[doi:10.48550/arXiv.2402.03263](https://doi.org/10.48550/arXiv.2402.03263)>) describe the applicability of this estimator to estimation of forest attributes and further assess the estimator's properties.

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Encoding UTF-8

LazyData true

Imports dplyr, lme4, purrr, progressr, furrr, future, rlang, Rcpp

RoxygenNote 7.3.1

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

Depends R (>= 4.1.0)

LinkingTo Rcpp, RcppEigen

URL <https://harvard-ufds.github.io/saeczi/>

Repository <https://harvard-ufds.r-universe.dev>

RemoteUrl <https://github.com/harvard-ufds/saeczi>

RemoteRef HEAD

RemoteSha 11c22394fe6ea78e4c75a20790293598f32783ee

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| | |
|-----|---|
| pop | <i>FIA Population Level Auxiliary Data for Oregon</i> |
|-----|---|

Description

FIA Population Level Auxiliary Data for Oregon

Usage

pop

Format

An object of class `data.frame` with 10060 rows and 10 columns.

| | |
|--------|--|
| saeczi | <i>Fit a zero-inflation estimator.</i> |
|--------|--|

Description

Fit a zero-inflation estimator.

Usage

```
saeczi(
  samp_dat,
  pop_dat,
  lin_formula,
  log_formula = lin_formula,
  domain_level,
  B = 100L,
  mse_est = FALSE,
  estimand = "means",
  parallel = FALSE
)
```

Arguments

| | |
|--------------|---|
| samp_dat | A data.frame with domains, auxiliary variables, and the response variable of a sample |
| pop_dat | A data.frame with domains and auxiliary variables of a population. |
| lin_formula | Formula. Specification of the response and fixed effects of the linear regression model |
| log_formula | Formula. Specification of the response and fixed effects of the logistic regression model |
| domain_level | String. The column name in samp_dat and pop_dat that encodes the domain level |
| B | Integer. The number of bootstraps to be used in MSE estimation. |
| mse_est | Logical. Whether or not MSE estimation should happen. |
| estimand | String. Whether the estimates should be 'totals' or 'means'. |
| parallel | Logical. Should the MSE estimation be computed in parallel |

Value

An object of class 'zi_mod' with defined 'print()' and 'summary()' methods. The object is structured like a list and contains the following elements:

- * call: The original function call
- * res: A data.frame containing the estimates and mse estimates
- * lin_mod: The modeling object used to fit the original linear model
- * log_mod: The modeling object used to fit the original logistic model

Examples

```
data(pop)
data(samp)

lin_formula <- DRYBIO_AG_TPA_live_ADJ ~ tcc16 + elev

result <- saeczi(samp_dat = samp,
                pop_dat = pop,
                lin_formula = lin_formula,
                log_formula = lin_formula,
                domain_level = "COUNTYFIPS",
                mse_est = FALSE)
```

samp

FIA sample data for Oregon

Description

FIA sample data for Oregon

Usage

samp

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 1494 rows and 11 columns.

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