Package 'zipsae'

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Type Package

Title Small Area Estimation with Zero-Inflated Model

Version 1.0.2

Description This function produces empirical best linier unbiased predictions (EBLUPs) for Zero-Inflated data and its Relative Standard Error. Small Area Estimation with Zero-Inflated Model (SAE-ZIP) is a model developed for Zero-Inflated data that can lead us to overdispersion situation. To handle this kind of situation, this model is created. The model in this package is based on Small Area Estimation with Zero-Inflated Poisson model proposed by Dian Christien Arisona (2018)<https://repository.ipb.ac.id/handle/123456789/92308>. For the data sample itself, we use combination method between Roberto Benavent and Domingo Morales (2015)<doi:10.1016/j.csda.2015.07.013> and Sabine Krieg, Harm Jan Boonstra and Marc Smeets (2016)<doi:10.1515/jos-2016-0051>.

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Imports stats

Depends R (>= 2.10)

URL https://github.com/dheel/zipsae

BugReports https://github.com/dheel/zipsae/issues

NeedsCompilation no

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Contents

`dataSAEZIP` *Sample Data for Small Area Estimation with Zero-Inflated Poisson model*

Description

A Dataset which is generate with Zero-Inflated Poisson method for Small Area Estimation purpose

This data is generated based on Zero-Inflated Poisson with EBLUP based model

Usage

```
dataSAEZIP
```

Format

A data frame with 300 rows and 3 variables:

y Direct Estimation of y

x1 Auxiliary variable of x1

vardir Sampling Variance of y

`zipsae` *EBLUPs under Zero-Inflated Poisson Model*

Description

This function produces empirical best linier unbiased predictions (EBLUPs) for Zero-Inflated data and its Relative Standard Error. Small Area Estimation with Zero-Inflated Model (SAE-ZIP) is a model developed for Zero-Inflated data that can lead us to overdispersion situation. To handle this kind of situation, this model is created. The model in this package is based on Small Area Estimation with Zero-Inflated Poisson model proposed by Dian Christien Arisona (2018)<https://repository.ipb.ac.id/handle/123456789/
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Usage

```
zipsae(data, vardir, formula, PRECISION = 1e-04, MAXITER = 100)
```

Arguments

data	The data frame with vardir, response, and explanatory variables included with Zero-Inflated situation also.
vardir	Sampling variances of direct estimations, if it is included in data frame so it is the vector with the name of sampling variances.if it is not, it is a data frame of sampling variance in order : var1, cov12,.,cov1r,var2,cov23,.,cov2r,.,cov(r-1)(r),var(r)
formula	List of formula that describe the fitted model
PRECISION	Limit of Fisher-scoring convergence tolerance. We set the default in 1e-4
MAXITER	Maximum number of iterations in Fisher-scoring algorithm. We set the default in 100

Value

This function returns a list of the following objects:

estimate	A Vector with a list of EBLUP with Zero-Inflated Poisson model
dispersion	A list containing the following objects:

- rse : A dataframe with the values of relative square errors of estimation

coefficient	A list containing the following objects:

- lambda : The estimator of model based on Non-Zero data
- omega : The estimator of model based Complete Data

Examples

```
##load the dataset in package
data(dataSAEZIP)

##Extract the vardir (sampling error)
dataSAEZIP$vardir -> sError

##Compute the data with SAE ZIP model
formula = (y~x1)
zipsae(data = dataSAEZIP, vardir = sError, formula) -> saezip

saezip$estimate      #to see the result of Small Area Estimation with Zero-Inflated Model
saezip$dispersion$rse  #to see the relative standard error from the estimation
saezip$coefficient$lambda  #to see the estimator which is gained from the non-zero compilation data
saezip$coefficient$omega  #to see the estimator which is gained from the complete compilation data.

head(saezip)
```

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