

Package ‘mziln’

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Type Package

Title Regression for Compositional Data with Zero Values

Version 1.0

Date 2026-08-21

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Depends R (>= 4.0)

Imports rangen, Rfast, stats

Suggests Compositional, Rfast2

Description A multivariate zero inflated logistic normal regression model is implemented for compositional data with zero values present. The relevant paper is Li Z., Lee K., Karagas M. R., Madan J. C., Hoen A. G., O'Malley A. J. and Li H. (2018). ``Conditional regression based on a multivariate zero-inflated logistic-normal model for microbiome relative abundance data", <[doi:10.1007/s12561-018-9219-2](https://doi.org/10.1007/s12561-018-9219-2)>.

License GPL (>= 2)

NeedsCompilation no

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mziln-package

Regression for Compositional Data with Zero Values

Description

A multivariate zero inflated logistic normal regression model is implemented for compositional data with zero values present.

Details

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Type: Package
Version: 1.0
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Maintainers

Michail Tsagris <mtsagris@uoc.gr>.

Author(s)

Michail Tsagris <mtsagris@uoc.gr>

References

Li Z., Lee K., Karagas M. R., Madan J. C., Hoen A. G., O'Malley A. J. and Li H. (2018). Conditional regression based on a multivariate zero-inflated logistic-normal model for microbiome relative abundance data. *Statistics in Biosciences*, 10(3): 587–608.

boot.mziln

Bootstrap for the MZILN regression model

Description

Bootstrap for the MZILN regression model.

Usage

```
boot.mziln(y, x, R = 1000)
```

Arguments

y	A matrix with the compositional data (dependent variable). The number of observations (vectors) with no zero values should be more than the columns of the predictor variables. Otherwise, the initial values will not be calculated.
x	The predictor variable(s), they can be either continuous or categorical or both.
R	The number of bootstrap resamples to perform.

Details

The multivariate zero inflated logistic normal regression is being fitted. The likelihood consists of two components. The contributions of the non zero compositional values and the contributions of the compositional vectors with at least one zero value. The second component may have many different sub-categories, one for each pattern of zeros.

Value

A list including:

be	The bootstrapped beta coefficients.
sigma	The bootstrap estimate of the covariance matrix of the regression parameters.

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Li Z., Lee K., Karagas M. R., Madan J. C., Hoen A. G., O'Malley A. J. and Li H. (2018). Conditional regression based on a multivariate zero-inflated logistic-normal model for microbiome relative abundance data. *Statistics in Biosciences*, 10(3): 587–608.

See Also

[mziln](#)

Examples

```
x <- as.vector(iris[, 4])
y <- as.matrix(iris[, 1:3])
y <- y / rowSums(y)
ind <- sample(150, 10)
for ( k in ind ) y[k, sample(3, 1)] <- 0
y <- y / rowSums(y)
mod <- boot.mziln(y, x, R = 100)
```

`mziln`*Multivariate zero inflated logistic normal regression*

Description

Multivariate zero inflated logistic normal regression.

Usage

```
mziln(y, x, xnew = NULL)
```

Arguments

<code>y</code>	A matrix with the compositional data (dependent variable) with zero values present.
<code>x</code>	The predictor variable(s), they can be either continuous or categorical or both.
<code>xnew</code>	If you have new data use it, otherwise leave it NULL.

Details

The conditional logistic normal regression is being fitted. The likelihood consists of two components. The contributions of the non zero compositional values and the contributions of the compositional vectors with at least one zero value. The second component may have many different sub-categories, one for each pattern of zeros.

Value

A list including:

<code>be</code>	The beta coefficients.
<code>est</code>	The fitted or the predicted values (if <code>xnew</code> is not NULL).

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

References

Li Z., Lee K., Karagas M. R., Madan J. C., Hoen A. G., O'Malley A. J. and Li H. (2018). Conditional regression based on a multivariate zero-inflated logistic-normal model for microbiome relative abundance data. *Statistics in Biosciences*, 10(3): 587–608.

See Also

[boot.mziln](#)

Examples

```
x <- as.vector(iris[, 4])
y <- as.matrix(iris[, 1:3])
y <- y / rowSums(y)
ind <- sample(150, 10)
for ( k in ind ) y[k, sample(3, 1)] <- 0
y <- y / rowSums(y)
mod <- mziln(y, x)
```

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