Package 'metaVAR'

July 3, 2024

Title Multivariate Meta-Analysis of Vector Autoregressive Model Coefficients

Version 0.9.1

Description Estimates the mean vector and covariance matrix of the multivariate meta-analysis of vector autoregressive model coefficients.

URL https://github.com/jeksterslab/metaVAR, https://jeksterslab.github.io/metaVAR/

BugReports https://github.com/jeksterslab/metaVAR/issues

License MIT + file LICENSE

Encoding UTF-8

Roxygen list(markdown = TRUE)

Depends R (>= 3.5.0), OpenMx

Imports numDeriv, Matrix

Suggests knitr, rmarkdown, testthat, simStateSpace

RoxygenNote 7.3.2

NeedsCompilation no

Author Ivan Jacob Agaloos Pesigan [aut, cre, cph] (<https://orcid.org/0000-0003-4818-8420>)

Maintainer Ivan Jacob Agaloos Pesigan <r.jeksterslab@gmail.com>

Contents

coef.metavarmeta *Estimated Parameter Method for an Object of Class* metavarmeta

Description

Estimated Parameter Method for an Object of Class metavarmeta

Usage

```
## S3 method for class 'metavarmeta'
coef(object, ...)
```

Arguments

object	an object of class metavarmeta.
...	further arguments.

Value

Returns a vector of the mean estimated parameters.

Author(s)

Ivan Jacob Agaloos Pesigan

Meta *Fit Multivariate Meta-Analysis*

Description

This function estimates the mean and covariance matrix of a vector of coefficients using the estimated coefficients and sampling variance-covariance matrix from each individual.

Usage

```
Meta(y, v, mu_start = NULL, sigma_l_start = NULL, try = 1000, ncores = NULL)
```

Arguments

y	A list. Each element of the list is a numeric vector of estimated coefficients.
v	A list. Each element of the list is a sampling variance-covariance matrix of y.
mu_start	Numeric matrix. Matrix of starting values of mu.
sigma_l_start	Numeric matrix. Matrix of starting values of t(chol(sigma)).
try	Positive integer. Number of extra tries for OpenMx::mxTryHard().
ncores	Positive integer. Number of cores to use.

Details

For $i = \{1, \cdots, n\}$, the objective function used to estimate the mean $\boldsymbol{\mu}$ and covariance matrix $\boldsymbol{\Sigma}$ of the random coefficients $\mathbf{y}_i$ is given by

$$\ell\left(\boldsymbol{\mu}, \boldsymbol{\Sigma} \mid \mathbf{y}_i, \mathbb{V}\left(\mathbf{y}_i\right)\right) = -\frac{1}{2}\left[q \log\left(2\pi\right) + \log\left(\left|\mathbb{V}\left(\mathbf{y}_i\right) - \boldsymbol{\Sigma}\right|\right) + \left(\mathbf{y}_i - \boldsymbol{\mu}\right)' \left(\mathbb{V}\left(\mathbf{y}_i\right) - \boldsymbol{\Sigma}\right)^{-1} \left(\mathbf{y}_i - \boldsymbol{\mu}\right)\right]$$

where q is the number of unique elements in $\boldsymbol{\mu}$ and $\boldsymbol{\Sigma}$, and $\mathbb{V}\left(\mathbf{y}_i\right)$ is the sampling variance-covariance matrix of $\mathbf{y}_i$.

Author(s)

Ivan Jacob Agaloos Pesigan

`print.metavarmeta` *Print Method for Object of Class* `metavarmeta`

Description

Print Method for Object of Class `metavarmeta`

Usage

```
## S3 method for class 'metavarmeta'
print(x, alpha = 0.05, digits = 4, ...)
```

Arguments

`x`	an object of class `metavarmeta`.
`alpha`	Numeric vector. Significance level α.
`digits`	Integer indicating the number of decimal places to display.
`...`	further arguments.

Author(s)

Ivan Jacob Agaloos Pesigan

summary.metavarmeta *Summary Method for Object of Class* metavarmeta

Description

Summary Method for Object of Class metavarmeta

Usage

```
## S3 method for class 'metavarmeta'
summary(object, alpha = 0.05, digits = 4, ...)
```

Arguments

object	an object of class metavarmeta.
alpha	Numeric vector. Significance level α.
digits	Integer indicating the number of decimal places to display.
...	further arguments.

Author(s)

Ivan Jacob Agaloos Pesigan

vcov.metavarmeta *Variance-Covariance Matrix Method for an Object of Class* metavarmeta

Description

Variance-Covariance Matrix Method for an Object of Class metavarmeta

Usage

```
## S3 method for class 'metavarmeta'
vcov(object, ...)
```

Arguments

object	an object of class metavarmeta.
...	further arguments.

Value

Returns the variance-covariance matrix of the estimated parameters.

Author(s)

Ivan Jacob Agaloos Pesigan

Index