Package 'fglsnet'

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Type Package

Title A Feasible Generalized Least Squares Estimator for Regression
Analysis of Outcomes with Network Dependence

Version 1.0

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Description
The function estimates a multivariate regression model for outcomes with network dependence.

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Imports network, sna, matrixcalc, Matrix, MASS, sandwich, lmtest

License GPL-3

LazyData true

Encoding UTF-8

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R topics documented:

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dat *Simulated data for demonstrating* "fglsnet".

Description

Simulated data for demonstrating "fglsnet".

Usage

```
data(dat)
```

Format

An object of class list of length 3.

Details

Y is the outcome. X contains the regressors including the intercept.. M is the dependence network.

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fglsnet *A Feasible Generalized Least Squares Estimator for Regression Analysis of Outcomes with Network Dependence*

Description

fglsnet estimates a multivariate regression model for analyzing outcomes with network dependence.

Usage

```
fglsnet(
  formula,
  M = NULL,
  directed = TRUE,
  mcorr = TRUE,
  CSE = FALSE,
  k = 10,
  data = data
)
```

Arguments

formula	A formula indicating the regression model.
M	The dependence network.
directed	Whether the dependence network is directed or undirected.
mcorr	Whether request multiple correlation coefficients to distinguish triadic, mutual, and asymmetric error dependence.
CSE	Whether use clustered standard error for the residual regression. Default cluster is the ego unit.
k	The number of iterations in the fgls estimation.
data	The data that are used for the regression.

Details

The function estimates a multivariate regression model for analyzing outcomes with network dependence.

Value

A list containing the coefficient coef, the testing results on the error correlations rtest, the estimated error variance Sigma, the estimated error correlation matrix Omega, and the OLS estimates ols.

References

An, Weihua. 2021. "A Tale of Twin-Dependence: A New Multivariate Regression Model and an FGLS Estimator for Analyzing Outcomes with Network Dependence." *Sociological Methods and Research*. (Forthcoming)

Greene, William H. (2008). *Econometric Analysis* (6th edition). New Jersey: Pearson Prentice Hall.

Examples

```
data(dat)

g <- fglsnet(Y~ X-1, M = dat$M, directed = TRUE, mcorr = 1, k = 5, data = dat)

g$coef
```

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