Package 'KRNMA'

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Type Package

Title Kenward-Roger-Type Inferences for Network Meta-Analysis

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Description Kenward-Roger-type inferences for network meta-analysis.

Depends R (>= 3.5.0)

Imports stats, MASS, metafor

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

R topics documented:

`KRNMA-package` *The 'KRNMA' package.*

Description

Kenward-Roger-type inferences for network meta-analysis.

References

Noma, H., Hamura, Y., Gosho, M. and Furukawa, T. A. (2022). Kenward-Roger–type corrections for inference methods of network meta-analysis and meta-regression. In Preparation.

data.edit *Transforming arm-level data to contrast-based summary statistics*

Description

Transforming arm-level data to contrast-based summary statistics.

Usage

```
data.edit(study,trt,d,n)
```

Arguments

study	Study ID
trt	Numbered treatment (=1,2,...)
d	Number of events
n	Sample size

Value

Contrast-based summary statistics are generated.

- y: Contrast-based summary estimates.
- S: Vectored within-study covariance matrix.

Examples

```
data(dstr)
attach(dstr)

edat <- data.edit(study,trt,d,n)
```

dstr *Siontis et al. (2018)'s network meta-analysis data*

Description

- study: Study ID
- treat: Treatment
- trt: Numbered treatment (1:CCTA, 2:CMR, 3:exercise ECG, 4:SPECT-MPI, 5:standard care, 6:Stress Echo)
- n: Sample size
- d: Number of events

Usage

```
data(dstr)
```

Format

A arm-based dataset with 29 rows and 5 variables

References

Siontis, G. C., Mavridis, D., Greenwood, J. P., et al. (2018). Outcomes of non-invasive diagnostic modalities for the detection of coronary artery disease: network meta-analysis of diagnostic randomised controlled trials. *BMJ.* **360**: k504.

KR *Kenward-Roger-type inferences for network meta-analysis*

Description

Implementing the Kenward-Roger-type inferences for network meta-analysis.

Usage

```
KR(y, S)
```

Arguments

y	Contrast-based summary data of the outcome measure
S	Covariance estimates of y

Value

Results of the standard and Kenward-Roger-type inferences for network meta-analysis.

- ML: Maximum likelihood (ML) estimates and Wald-type confidence intervals.
- REML: Restricted maximum likelihood (REML) estimates and Wald-type confidence intervals.
- KR_E: Kenward-Roger-type estimates using expected information and Wald-type confidence intervals.
- KR_O: Kenward-Roger-type estimates using observed information and Wald-type confidence intervals.

References

Noma, H., Hamura, Y., Gosho, M. and Furukawa, T. A. (2022). Kenward-Roger–type corrections for inference methods of network meta-analysis and meta-regression. In Preparation.

Examples

```
data(dstr)
attach(dstr)

# Transforming the arm-level data to the contrast-based summaryies
edat <- data.edit(study,trt,d,n)

y <- edat$y
S <- edat$S
```

```
KR_out <- KR(y,S) # implementing the Kenward-Roger-type inferences

ML <- KR_out[["ML"]]
REML <- KR_out[["REML"]]
KR_E <- KR_out[["KR_E"]]
KR_O <- KR_out[["KR_O"]]

# Results of the NMA analysis
# Comparative odds-ratio estimates and their 95% confidence intervals

exp(ML[[1]]) # ordinary ML estimation
exp(REML[[1]]) # ordinary REML estimation
exp(KR_E[[1]]) # KR(E) method
exp(KR_O[[1]]) # KR(O) method
```

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