Package: metapro (via r-universe)

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Type Package

Title Robust P-Value Combination Methods

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Description The meta-analysis is performed to increase the statistical
power by integrating the results from several experiments. The
p-values are often combined in meta-analysis when the effect
sizes are not available. The 'metapro' R package provides not
only traditional methods (Becker BJ (1994, ISBN:0-87154-226-9),
Mosteller, F. & Bush, R.R. (1954, ISBN:0201048523) and
Lancaster HO (1949, ISSN:00063444)), but also new method named
weighted Fisher's method we developed. While the (weighted)
Z-method is suitable for finding features effective in most
experiments, (weighted) Fisher's method is useful for detecting
partially associated features. Thus, the users can choose the
function based on their purpose. Yoon et al. (2021) ``Powerful
p-value combination methods to detect incomplete association''
<doi:10.1038/s41598-021-86465-y>.

License GPL (>= 2)

Encoding UTF-8

Imports metap, stats

RoxygenNote 7.2.3

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

NeedsCompilation no

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Repository https://ysora.r-universe.dev

RemoteUrl https://github.com/cran/metapro

RemoteRef HEAD

RemoteSha 9bf0057f50946d9bf794cbdc92560c2a222f9cd5

Contents

F_i *Beta probability*

Description

Beta probability

Usage

```
F_i(p, i, n)
```

Arguments

p	p-value
i	rank
n	The number of inputs

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lancaster *Lancaster*

Description

P-value combination based on Lancaster's procedure

Usage

```
lancaster(p, weight, is.onetail = TRUE, eff.sign)
```

Arguments

p	A numeric vector of p-values
weight	A numeric vector of weights (e.g., samples sizes)
is.onetail	Logical. If set TRUE, p-values are combined without considering the direction of effect, and vice versa. Default: TRUE.
eff.sign	A vector of signs of effect sizes (1 or -1). It works when is.onetail = FALSE

Value

p : Combined p-value

overall.eff.direction : The direction of combined effects.

References

Becker BJ (1994). "Combining significance levels." In Cooper H, Hedges LV (eds.), A handbook of research synthesis, 215–230. Russell Sage, New York.

Lancaster HO (1949). "Combination of probabilities arising from data in discrete distributions." Biometrika, 36, 370–382.

Examples

```
lancaster(p=c(0.01,0.2,0.8), weight=c(20,50,10), is.onetail=FALSE, eff.sign=c(1,1,1))
```

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wFisher	*wFisher*

Description

sample size-weighted Fisher's method

Usage

```
wFisher(p, weight = NULL, is.onetail = TRUE, eff.sign)
```

Arguments

p	A numeric vector of p-values
weight	A numeric vector of weight or sample size for each experiment
is.onetail	Logical. If set TRUE, p-values are combined without considering the direction of effects, and vice versa. Default: TRUE.
eff.sign	A vector of signs of effect sizes. It works when is.onetail = FALSE

Value

p : Combined p-value

overall.eff.direction : The direction of combined effects.

References

Becker BJ (1994). "Combining significance levels." In Cooper H, Hedges LV (eds.), A handbook of research synthesis, 215–230. Russell Sage, New York.

Fisher RA (1925). Statistical methods for research workers. Oliver and Boyd, Edinburgh.

Examples

```
wFisher(p=c(0.01,0.2,0.8), weight = c(50,60,100),is.onetail=FALSE, eff.sign=c(1,1,1))
```

wZ	*wZ*

Description

P-value combination based on weighted Z-method

Usage

```
wZ(p, weight = NULL, is.onetail = TRUE, eff.sign)
```

Arguments

p   A numeric vector of p-values

weight   A numeric vector of weights (e.g., sample sizes)

is.onetail   Logical. If set TRUE, p-values are combined without considering the direction
                of effect, and vice versa. Default: TRUE.

eff.sign   A vector of signs of effect sizes. It works when is.onetail = FALSE

Value

p : Combined p-value

overall.eff.direction : The direction of combined effects.

sumz : Sum of transformed z-score

References

Becker BJ (1994). "Combining significance levels." In Cooper H, Hedges LV (eds.), A handbook of research synthesis, 215–230. Russell Sage, New York.

Stouffer SA, Suchman EA, DeVinney LC, Star SA, Williams RMJ (1949). The American soldier, vol 1: Adjustment during army life. Princeton University Press, Princeton.

Mosteller, F. & Bush, R.R. (1954). Selected quantitative techniques. In: Handbook of Social Psychology, Vol. 1 (G. Lindzey, ed.), pp. 289–334. Addison-Wesley, Cambridge, Mass.

Examples

```
wZ(p=c(0.01,0.2,0.8), weight = c(20,10,40), is.onetail=FALSE, eff.sign=c(1,-1,1))
```

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