

Package ‘nparsurv’

January 26, 2017

Title Nonparametric Tests for Main Effects, Simple Effects and Interaction Effect in a Factorial Design with Censored Data

Description Nonparametric Tests for Main Effects, Simple Effects and Interaction Effect with Censored Data and Two Factorial Influencing Variables.

Version 0.1.0

Depends R (>= 3.2.5)

Imports survival (>= 2.38-3), TH.data(>= 1.0-7)

License GPL-2

LazyData TRUE

RoxygenNote 5.0.1

NeedsCompilation no

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nparsurv_test *Nonparametric Tests for Main Effects, Simple Effects and Interaction Effect in a Two-Factorial Design with Censored Data*

Description

The nparsurv_test function calculates the test statistics and the p-values as described in ‘Non-parametric Methods for Factorial Designs with Censored Data’ by Akritas and Brunner.

Usage

```
nparsurv_test(data)
```

Arguments

data A `data.frame` of the form (time, status, factorA, factorB)
time: time of event or censoring, numeric
status: indicator for censoring, 1=event, 0=censored, integer
factorA: first factor variable, factor
factorB: second factor variable, factor
 Missing values must be saved as NA.

Details

The package provides tests for a survival setting with two influencing variables, that are factors with at least two levels each. Details are shown in 'Nonparametric Methods for Factorial Designs with Censored Data' by Akritas and Brunner. The `nparsurv_test` function returns the values of the five test statistics: the tests for main effects, simple effects and the interaction effect. Additionally, based on the asymptotic chi-square distribution of the test statistic under the null hypothesis, p-values are computed.

Value

A `nparsurv_test` object containing the following components:

`maineffectA` / `maineffectB`
 The test statistic and p-value for the null hypotheses 'no main effect of factor A' and 'no main effect of factor B' respectively.

`simpleeffectA` / `simpleeffectB`
 The test statistic and p-value for the null hypotheses 'no simple effect of factor A' and 'no simple effect of factor B' respectively.

`interactioneffect`
 The test statistic and p-value for the null hypothesis 'no interaction effect between factor A and factor B'.

References

Michael G. Akritas, Edgar Brunner(1997). Nonparametric Methods for Factorial Designs with Censored Data. *Journal of the American Statistical Association*.

Examples

```
data_ovarian<-data.frame(survival::ovarian$futime,
                        survival::ovarian$fustat,
                        as.factor(survival::ovarian$resid.ds),
                        as.factor(survival::ovarian$rx))
nparsurv_test(data_ovarian)
```

```
data_GBSG2<-data.frame(TH.data::GBSG2$time,  
                       TH.data::GBSG2$cens,  
                       TH.data::GBSG2$tgrade,  
                       TH.data::GBSG2$horTh)  
nparsurv_test(data_GBSG2)
```

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