Package 'ExactCox'

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Type Package

Title Exact Test and Exact Confidence Interval for the Cox Model

Version 0.1.0

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Description Performs the exact test on whether there is a difference between two survival curves. Exact confidence interval for the hazard ratio can also be generated for the Cox model.

Imports BiasedUrn

License GPL-3

Encoding UTF-8

NeedsCompilation no

Repository CRAN

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Contents

`ExactCox` *Exact Test and exact Confidence Interval for the Cox Model*

Description

Performs the exact test on whether there is a difference between two survival curves. Exact confidence interval for the hazard ratio can also be generated if treatment is the only fixed effect in the Cox model.

Usage

```
ExactCox(time, status, trt, hr = 1, alternative = "two.sided", conf.int = FALSE,
    conf.level = 0.95)
```

Arguments

time	Time of the event or censoring.
status	a binary variable indicating whether the record is an event or is censored. 1 is for event, 0 is for censoring.
trt	a binary treatment group.
hr	the hypothesized hazard ratio.
alternative	indicates the alternative hypothesis and must be one of "two.sided", "greater" or "less".
conf.int	logical indicating if a confidence interval for the hazard ratio should be computed (and returned).
conf.level	confidence level for the returned confidence interval. Only used if conf.int = TRUE.

Details

The exact p-value is generated based on the conditional error method. The exact confidence interval is generated by inverting the exact test. See Shao, Ye and Zhang (2024) for details.

Value

p.value	the p-value of the exact test.
conf.int	the exact confidence interval.
alternative	a character string describing the alternative hypothesis.

Author(s)

Yongwu Shao

References

Shao, Y., Ye, Z. and Zhang, Z. (2024). Exact test and exact confidence interval for the Cox model. Submitted.

Examples

```
## Creating example data
N = 100;
futime = rexp(N)
fustat = rbinom(N, 1, 0.2)
rx = rbinom(N, 1, 0.5)
## Calculate the exact p-value and the exact confidence interval.
ExactCox(futime, fustat, rx, hr = 1, alternative = 'less', conf.int = TRUE)
```

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