

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

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ExactCox	<i>Exact Test and exact Confidence Interval for the Cox Model</i>
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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 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

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

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

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

Author(s)

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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;
fuptime = 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(fuptime, fustat, rx, hr = 1, alternative = 'less', conf.int = TRUE)
```

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