Package ‘KONPsurv’

March 2, 2020

Type    Package
Title    KONP Tests: Powerful K-Sample Tests for Right-Censored Data
Version  1.0.3
Date     2020-03-02
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Description The K-sample omnibus non-proportional hazards (KONP) tests are powerful non-
parametric tests for comparing K (>=2) hazard functions based on right-censored data (Gorfine, Schlesinger and Hsu, 2019, <arXiv:1901.05739v1>). These tests are consistent against any differences between the hazard functions of the groups. The KONP tests are often more powerful than other existing tests, especially under non-proportional hazard functions.
License  GPL (>= 2)
Imports  survival, Rcpp (>= 0.12.16)
LinkingTo Rcpp
RoxygenNote 7.0.0
Encoding UTF-8
Suggests testthat
NeedsCompilation yes
Repository CRAN
Date/Publication 2020-03-02 18:00:02 UTC

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Description

An implementation of the $K$-sample omnibus non-proportional hazards (KONP) tests.

The KONP tests are powerful non-parametric tests for comparing $K$ ($\geq 2$) hazard functions based on right-censored data. These tests are consistent against any differences between the hazard functions of the groups. The KONP tests are often more powerful than other existing tests, especially under non-proportional hazard functions.

Details

The package contains one function:

konp_test: non-parametric tests for equality of $K$ distributions using right-censored data.

Author(s)

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References


Examples

# gastric cancer data
data(gastric)

konp_test(gastric$time, gastric$status, gastric$group, n_perm=10^3)

carcinoma

Urothelial carcinoma.

Description

Survival data from a trial comparing chemotherapy versus atezolizumab in the treatment of Urothelial carcinoma.

KONPsurv-package KONP Tests for Testing the Equality of $K$ Distributions for Right-Censored Data
**Usage**

data(carcinoma)

**Format**

A data frame with 625 observations (316 in the atezolizumab group and 309 chemotherapy group) with the following 3 columns:

- **time**: the observed follow-up times in days.
- **status**: the event indicators, 0=right censored, 1= event.
- **group**: the group labels, 1 = atezolizumab, 2 = chemotherapy.

**References**


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**Usage**

data(gastric)

**Format**

A data frame with 90 observations (45 in each treatment group) with the following 3 columns:

- **time**: the observed follow-up times in days.
- **status**: the event indicators, 0=right censored, 1= event.
- **group**: the group labels, 1 = chemotherapy, 2 = chemotherapy plus radiotherapy.

**Source**


**References**

KONP tests are $K$-sample Omnibus Non-Proportional hazards tests for right-censored data.

Usage

konp_test(time, status, group, n_perm, n_impu = 1)

Arguments

time A vector of the observed follow-up times.
status A vector of event indicators, 0=right censored, 1= event at time.
group A vector denoting the group labels, must contain at least two different values.
n_perm The number of permutations.
n_impu The number of imputations, for each imputation n_perm permutations will be executed.

Details

The KONP tests are powerful non-parametric tests for comparing $K$ (>=2) hazard functions based on right-censored data. These tests are consistent against any differences between the hazard functions of the groups. The KONP tests are often more powerful than other existing tests, especially under non-proportional hazard functions.

Value

Three test statistics and their respective p-values are returned:

\begin{align*}
\text{pv_chisq} & \quad \text{returns the p-value based on the KONP test chi-square statistic.} \\
\text{pv_lr} & \quad \text{returns the p-value based on the KONP test likelihood ratio statistic.} \\
\text{pv_cauchy} & \quad \text{returns the p-value based on the KONP-based Cauchy-combination test statistic.} \\
\text{chisq_test_stat} & \quad \text{returns the KONP test chi-squared test statistic.} \\
\text{lr_test_stat} & \quad \text{returns the KONP test likelihood-ratio test statistic.} \\
\text{cauchy_test_stat} & \quad \text{returns the KONP-based Cauchy-combination test statistic.}
\end{align*}

Examples

\begin{verbatim}
# gastric cancer data
data(gastric)

konp_test(gastric$time, gasric$status, gastric$group, n_perm=10^3)
\end{verbatim}
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