Package: controlTest (via r-universe)

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Type Package

Title Quantile Comparison for Two-Sample Right-Censored Survival Data

Version 1.1.0

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Description Nonparametric two-sample procedure for comparing survival quantiles.

Encoding UTF-8

Imports survival (>= 2.41), graphics (>= 3.4.0), stats (>= 3.4.0)

LazyData true

License GPL-3

RoxygenNote 6.0.1

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

RemoteUrl https://github.com/erickawaguchi/controltest

RemoteRef HEAD

RemoteSha 9ee6b25300edf000430a876e8c909043f20542c7

Contents

`quantileControlTest` *Find standard error for survival quantile*

Description

Find standard error for survival quantile

Usage

```
quantileControlTest(timevar1, censor1, timevar2, censor2, q = 0.5, B = 1000,
  seed = 1234, plots = FALSE)
```

Arguments

`timevar1`	Vector of observed survival times for sample 1 (control).
`censor1`	Vector of censoring indicators for sample 1 (1 = uncensored, 0 = censored).
`timevar2`	Vector of observed survival times for sample 2 (treatment).
`censor2`	Vector of censoring indicators for sample 2 (1 = uncensored, 0 = censored).
`q`	Quantile of interest (in terms of CDF). Default is median.
`B`	Number of bootstrap samples.
`seed`	Seed number (for reproducibility).
`plots`	Logical. TRUE to show plot of cumulative distribution functions.

Details

It is important to note the possiblilty that the estimated quantile may not be estimable in our bootstrap samples. In such cases the largest observed survival time will be considered as an estimate for the quantile.

Value

Returns quantile estimate, bootstrapped standard error, test statistic, and two-sided p-value.

References

Li, G., Tiwari, R.C., and Wells, M. (1996). "Quantile Comparison Functions in Two-Sample Problems: With Applications to Comparisons of Diagnostic Markers." Journal of the American Statistical Association, 91, 689-698.

Chakraborti, S., and Mukerjee, R. (1989), "A Confidence Interval for a Measure Associated With the Comparison of a Treatment With a Control," South African Statistical Journal, 23, 219-230.

Gastwirth, J. L., and Wang, J. L. (1988), "Control Percentile Test for Censored Data," Journal of Statistical Planning and Inference, 18, 267-276.

Examples

```
#Reference: Survival Analysis Techniques for Censored and Truncated Data.
#Klein and Moeschberger (1997) Springer.
#Data: Chapter 7.6 Example 7.9 (p. 211)
library(controlTest)
t1 <- c(1, 63, 105, 129, 182, 216, 250, 262, 301, 301,
       342, 354, 356, 358, 380, 383, 383, 338, 394, 408, 460, 489,
       499, 523, 524, 535, 562, 569, 675, 676, 748, 778, 786, 797,
       955, 968, 1000, 1245, 1271, 1420, 1551, 1694, 2363, 2754, 2950)
t2 <- c(17, 42, 44, 48, 60, 72, 74, 95, 103, 108, 122, 144, 167, 170,
       183, 185, 193, 195, 197, 208, 234, 235, 254, 307, 315, 401, 445,
       464, 484, 528, 542, 547, 577, 580, 795, 855, 1366, 1577, 2060,
       2412, 2486, 2796, 2802, 2934, 2988)
c1 <- c(rep(1, 43), 0, 0)
c2 <- c(rep(1, 39), rep(0, 6))
quantileControlTest(t1, c1, t2, c2, q = 0.5, B = 500)
```

`quantileSE` *Find standard error for survival quantile*

Description

Find standard error for survival quantile

Usage

```
quantileSE(timevar, censor, q = 0.5, B = 1000, alpha = 0.05,
  seed = 1991, plots = FALSE)
```

Arguments

`timevar`	Vector of observed survival times.
`censor`	Vector of censoring indicators (1 = uncensored, 0 = censored).
`q`	Quantile of interest (Default is median).
`B`	Number of bootstrap samples.
`alpha`	Significance level for confidence interval of quantile.
`seed`	Seed number (for reproducibility).
`plots`	Logical. TRUE to show Kaplan-Meier plot

Value

Returns quantile estimate, bootstrapped standard error, and (1 - alpha / 2) * 100

Examples

```
#Reference: Survival Analysis Techniques for Censored and Truncated Data.
#Klein and Moeschberger (1997) Springer.
#Data: Chapter 7.6 Example 7.9 (p. 211)
library(controlTest)
t1 <- c(1, 63, 105, 129, 182, 216, 250, 262, 301, 301,
       342, 354, 356, 358, 380, 383, 383, 338, 394, 408, 460, 489,
       499, 523, 524, 535, 562, 569, 675, 676, 748, 778, 786, 797,
       955, 968, 1000, 1245, 1271, 1420, 1551, 1694, 2363, 2754, 2950)
c1 <- c(rep(1, 43), 0, 0)
quantileSE(timevar = t1, censor = c1, q = 0.5, B = 500)
```

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supControlTest *Supremum-type test for two-sample comparison of survival quantiles.*

Description

Supremum-type test for two-sample comparison of survival quantiles.

Usage

```
supControlTest(timevar1, censor1, timevar2, censor2, q.min = NULL,
  q.max = 0.5, gridpts = 50, B = 500, seed = 1234, plots = FALSE)
```

Arguments

timevar1	Vector of observed survival times for sample 1 (control).
censor1	Vector of censoring indicators for sample 1 (1 = uncensored, 0 = censored).
timevar2	Vector of observed survival times for sample 2 (treatment).
censor2	Vector of censoring indicators for sample 2 (1 = uncensored, 0 = censored).
q.min	Smallest quantile (in terms of CDF) to test. Default is the time to earliest event for sample 1.
q.max	Largest quantile (in terms of CDF) to test.
gridpts	Number of grid points between q.min and q.max to test.
B	Number of bootstrap samples.
seed	Seed number (for reproducibility).
plots	Logical. TRUE to show plot of cumulative distribution functions.

Details

It is important to note the possiblilty that the estimated quantile may not be estimable in our bootstrap samples. In such cases the largest observed survival time will be considered as an estimate for the quantile.

Value

Returns quantile estimate, bootstrapped standard error, test statistic, and two-sided p-value.

References

Li, G., Tiwari, R.C., and Wells, M. (1996). "Quantile Comparison Functions in Two-Sample Problems: With Applications to Comparisons of Diagnostic Markers." Journal of the American Statistical Association, 91, 689-698.

Chakraborti, S., and Mukerjee, R. (1989), "A Confidence Interval for a Measure Associated With the Comparison of a Treatment With a Control," South African Statistical Journal, 23, 219-230.

Gastwirth, J. L., and Wang, J. L. (1988), "Control Percentile Test for Censored Data," Journal of Statistical Planning and Inference, 18, 267-276.

Examples

```
#Reference: Survival Analysis Techniques for Censored and Truncated Data.
#Klein and Moeschberger (1997) Springer.
#Data: Chapter 7.6 Example 7.9 (p. 211)
library(controlTest)
t1 <- c(1, 63, 105, 129, 182, 216, 250, 262, 301, 301,
       342, 354, 356, 358, 380, 383, 383, 338, 394, 408, 460, 489,
       499, 523, 524, 535, 562, 569, 675, 676, 748, 778, 786, 797,
       955, 968, 1000, 1245, 1271, 1420, 1551, 1694, 2363, 2754, 2950)
t2 <- c(17, 42, 44, 48, 60, 72, 74, 95, 103, 108, 122, 144, 167, 170,
       183, 185, 193, 195, 197, 208, 234, 235, 254, 307, 315, 401, 445,
       464, 484, 528, 542, 547, 577, 580, 795, 855, 1366, 1577, 2060,
       2412, 2486, 2796, 2802, 2934, 2988)
c1 <- c(rep(1, 43), 0, 0)
c2 <- c(rep(1, 39), rep(0, 6))
supControlTest(t1, c1, t2, c2, q.max = 0.5, B = 500)
```

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