

Package ‘controlTest’

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Type Package
Title Median Comparison for Two-Sample Right-Censored Survival Data
Version 1.0
Date 2015-06-17
Author Eric Kawaguchi
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Description Nonparametric two-sample procedure for comparing the median survival time.
Depends R (>= 3.1.0)
Imports survival (>= 2.38)
License GPL-2
NeedsCompilation no
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controlTest-package	<i>Median Comparison for Two-Sample Right-Censored Survival Data</i>
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Author(s)

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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

```
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))
control_median_test(t1, c1, t2, c2, R = 500)
```

control_median_test	<i>Median Comparison for Two-Sample Right-Censored Survival Data</i>
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Description

Median Comparison for Two-Sample Right-Censored Survival Data

Usage

```
control_median_test(t1, c1, t2, c2, R = 1000, seed = 1234)
```

Arguments

t1	A vector of observed right-censored survival times for group 1 (Control).
c1	A vector of censoring indicators for group 1 (0 = alive, 1 = dead).
t2	A vector of observed right-censored survival times for group 2 (Treatment).
c2	A vector of censoring indicators for group 2 (0 = alive, 1 = dead).
R	Number of replications for bootstrapping (Default = 1000).
seed	Seed number for bootstrapping (Default = 1234).

Details

This function only compares the median between two samples. A general quantile version has not been developed yet. It is important to note the possibility that the median survival time may not be estimable in our bootstrap samples. In such cases the largest observed survival time will be considered as an estimate for the median survival time. Also, if the median survival time for the control group is larger than the longest survival time for the treatment group, then Q will be evaluated using the last observed survival time for the treatment group.

Value

A list containing the median survival times for both groups, Z-score, and two-sided p-value. A plot of the two survival curves is also outputted.

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: Klein and Moeschberger (1997)
#Survival Analysis Techniques for Censored and Truncated Data, 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))
control_median_test(t1, c1, t2, c2, R = 500)
```

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