Package 'compareCstat'

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Title Compare C-Statistics (Concordance) Between Survival Models

Version 0.1.0

Description Compare C-statistics (concordance statistics)
between two survival models, using either bootstrap resampling (Harrell's C)
or Uno's C with perturbation-resampling (from the survC1 package). Returns
confidence intervals and a p-value for the difference in C-statistics.
Useful for evaluating and comparing predictive performance of survival models.
Methods implemented for Uno's C are described in Uno et al. (2011) <doi:10.1002/sim.4154>.

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Encoding UTF-8

Depends R (>= 3.5.0)

Imports boot

Suggests survival, survC1

RoxygenNote 7.3.2

URL https://github.com/Lemonade0924/compareCstat

BugReports https://github.com/Lemonade0924/compareCstat/issues

NeedsCompilation no

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Repository CRAN

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compare_c_stat	*Compare C-statistics Between Two Models with Bootstrapped or Uno's C Confidence Intervals*

Description

This function compares the C-statistics of two fitted models using either bootstrap resampling (Harrell's C) or Uno's C via perturbation-resampling (survC1 package).

Usage

```
compare_c_stat(
  model_raw,
  model_ext,
  data,
  R = 10,
  ci_type = "perc",
  method = "Harrell",
  tau = NULL
)
```

Arguments

model_raw	A fitted model (e.g., coxph) representing the base model.
model_ext	A fitted model (e.g., coxph) representing the extended model.
data	The dataset used for fitting the models.
R	Number of bootstrap or perturbation-resampling replications. Default is 100.
ci_type	Type of confidence interval to return ("perc", "norm", "basic", etc., for Harrell's C).
method	Which C-statistic to use: "Harrell" (default) or "Uno".
tau	Truncation time for Uno's C (default is max observed time in your data).

Value

A data frame showing C-statistics for each model, their confidence intervals, and the p-value for the difference.

References

Uno H, Cai T, Pencina MJ, D'Agostino RB, Wei LJ. (2011) On the C-statistics for evaluating overall adequacy of risk prediction procedures with censored survival data. *Statistics in Medicine*, 30(10):1105-1117. doi:10.1002/sim.4154

Examples

```
library(survival)
data(lung)
lung$status <- ifelse(lung$status == 2, 1, 0)
model1 <- coxph(Surv(time, status) ~ age, data = lung)
model2 <- coxph(Surv(time, status) ~ age + sex, data = lung)
compare_c_stat(model1, model2, data = lung, R = 10, method = "Harrell")
compare_c_stat(model1, model2, data = lung, R = 10, method = "Uno")
compare_c_stat(model1, model2, data = lung, R = 10, method = "Uno", tau = 365.25*2)
```

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