package 'CPE'

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Title Concordance Probability Estimates in Survival Analysis
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Description Functions to calculate concordance probability estimates in survival analysis.
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phcpe  Gonen & Heller Concordance Probability Estimate for the Cox Proportional Hazards model

Description

A function to calculate Gonen & Heller concordance probability estimate (CPE) for the Cox proportional hazards model.

Usage

phcpe(coxfit, CPE=FALSE, out.ties=FALSE)
Arguments

- **coxfit**: A coxph or cph object
- **CPE.SE**: A logical value indicating whether the standard error of the CPE should be calculated
- **out.ties**: If out.ties is set to FALSE, pairs of observations tied on covariates will be used to calculate the CPE. Otherwise, they will not be used.

Value

- **CPE**: Concordance Probability Estimate
- **CPE.SE**: the Standard Error of the Concordance Probability Estimate

Author(s)

Qianxing Mo, Mithat Gonen and Glenn Heller; <qianxing.mo@moffitt.org>

References


See Also

- `phcpeR`

Examples

```r
### create a simple data set for testing
set.seed(199)
nn <- 1000
time <- rexp(nn)
status <- sample(0:1, nn, replace=TRUE)
covar <- matrix(rnorm(3*nn), ncol=3)
survd <- data.frame(time, status, covar)
names(survd) <- c("time","status","x1","x2","x3")
coxph.fit <- coxph(Surv(time,status)=x1+x2+x3, data=survd)

### Calculate CPE only (needs much less time).
phcpe(coxph.fit)
phcpe(coxph.fit, out.ties=TRUE)
# result is identical because the covariates are not tied

### Calculate CPE and CPE.SE
phcpe(coxph.fit, CPE.SE=TRUE)
phcpe(coxph.fit, CPE.SE=TRUE, out.ties=TRUE)
```
### Gonen & Heller Concordance Probability Estimate for the Cox Proportional Hazards model

**Description**

A function to calculate Gonen & Heller concordance probability estimate (CPE) for the Cox proportional hazards model.

**Usage**

```r
phcpe2(coef, coef.var, design, CPE.SE=FALSE, out.ties=FALSE)
```

**Arguments**

- `coef`  
  The coefficients of the Cox model.

- `coef.var`  
  The covariance matrix of the coefficients of the Cox model.

- `design`  
  A design matrix for covariates. The rows correspond to subjects, and the columns correspond to covariates.

- `CPE.SE`  
  A logical value indicating whether the standard error of the CPE should be calculated.

- `out.ties`  
  If out.ties is set to FALSE, pairs of observations tied on covariates will be used to calculate the CPE. Otherwise, they will not be used.

**Value**

- `CPE`  
  Concordance Probability Estimate

- `CPE.SE`  
  the Standard Error of the Concordance Probability Estimate

**Author(s)**

Qianxing Mo, Mithat Gonen and Glenn Heller; <qianxing.mo@moffitt.org>
References


See Also

phcpe

Examples

```r
### create a simple data set for testing
set.seed(199)
nn <- 1000
time <- rexp(nn)
status <- sample(0:1, nn, replace=TRUE)
covar <- matrix(rnorm(S*nn), ncol=3)
surv <- data.frame(time, status, covar)
names(surv) <- c("time","status","x1","x2","x3")

coxph.fit <- coxph(surv(time, status)~x1+x2+x3, data=surv)

phcpe(coxph.fit,CPE.SE=TRUE)
phcpe2(coef=coxph.fit$coefficients, coef.var=coxph.fit$var, design=model.matrix(coxph.fit))

### For unknown reason, 'coxph.fit' may need to be removed before running cph()
rm(coxph.fit)

cph.fit <- cph(Surv(time, status)~x1+x2+x3, data=surv, method="breslow")

### Calculate CPE only (needs much less time).
phcpe2(cph.fit$coefficients, coef.var=cph.fit$var, design=model.matrix(cph.fit), CPE.SE=TRUE)
```
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