Package 'surrosurvROC'

August 30, 2018

Type Package

Title Surrogate Survival ROC

Version 0.1.0

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Description Nonparametric and semiparametric estimations of the time-dependent ROC curve for an incomplete failure time data with surrogate failure time endpoints.

Depends R (>= 3.5.0), survival

License GPL (>= 2)

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NeedsCompilation no

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Author(s)

Yunro Chung [cre]

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References

Yunro Chung and Yingye Zheng, Improving efficiency of evaluating prognostic accuracy of biomarkers for incomplete failure-time data with surrogate outcome (in progress)

`surrosurvROC` *Surrogate Survival ROC*

Description

Nonparametric and semiparametric estimations of the time-dependent ROC curve for an incomplete failure time data with surrogate failure time endpoints

Usage

```
surrosurvROC(DATA, method, pred.time, wt=NULL, span=NULL, b.rep=200)
```

Arguments

`DATA`	data frame, consisting of Marker: Predictior or marekr value; Survival time; Status: Event indicator (1: event; 0: censoring); STime: Surroagte survival Time; SStatus: Surrogate event indicator (1: event; 0: censoring)
`method`	"KNN"" for nonparametric model using nearest neighborhood kernel; "COX"" for semiparametric proportional hazard model
`pred.time`	Prediction time of the ROC curve
`wt`	Weight, such as inverse probablity weighting
`span`	Smoothing bandwidth parameter for KNN
`b.rep`	Number of bootstrap

Details

It provides a more efficient time-dependent ROC curve for an incomplete failure time data, when surrogate failure time endpoints are additionally observed for all subjects.

Author(s)

Yunro Chung [cre]

References

Yunro Chung and Yingye Zheng, Evaluating Prognostic Accuracy of Biomarkers for Incomplete and Right-Censored Data with Surrogate Outcome (in progress)

Examples

```
DATA=data.frame(
  Time=   c(1,2,5,3,9,NA,8,9,10,NA,NA,NA,6,4,NA,NA,NA,NA,NA,NA,NA,NA,NA,NA),
  Status= c(1,1,0,0,1,NA,1,1,0, NA,NA,NA,0,0,NA,NA,NA,NA,NA,NA,NA,NA,NA,NA),
  STime=  c(3,2,4,2,8,5,8,7,11,1,8,9,3,5,2,5,10,3,5,8,5,2,4,6,7),
  SStatus=c(1,0,1,0,1,1,1,0,0,1,1,1,1,0,1,1,0,0,1,0,1,0,1,0,0),
  Marker= c(1,5,1,2,3,1,2,3,4,5,9,8,5,7,3,4,2,5,3,4,7,5,9,3,8)
)

#COX at year 3
RES1=surrosurvROC(DATA, method="COX", pred.time=3)
print(RES1)

#KNN at year 3
nobs=sum(!is.na(DATA$Time))
span=0.25*nobs^(-0.20)
RES2=surrosurvROC(DATA, method="KNN",pred.time=3,span=span)
print(RES2)
```

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