

# Package ‘surrosurvROC’

July 23, 2025

**Type** Package

**Title** Surrogate Survival ROC

**Version** 0.1.0

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**Maintainer** Yunro Chung <yunro.chung@asu.edu>

**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)

**Encoding** UTF-8

**LazyData** true

**NeedsCompilation** no

**Repository** CRAN

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## Contents

surrosurvROC-package . . . . .	1
surrosurvROC . . . . .	2

<b>Index</b>	<b>4</b>
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surrosurvROC-package    *Surrogate Survival ROC*

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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.

**Details**

Package: isoph  
 Type: Package  
 Version: 0.1.0  
 Date: 2018-08-17  
 License: GPL (>= 2)

**Author(s)**

Yunro Chung [cre]  
 Maintainer: Yunro Chung <yunro.chung@asu.edu>

**References**

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

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surrosurvROC

*Surrogate Survival ROC*

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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

**Usage**

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

**Arguments**

DATA	data frame, consisting of Marker: Prediction 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),
  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),
  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)
```

# Index

\* **biomarkers, inverse probability weighing,**

**bootstrap**

surrosurvROC, [2](#)

surrosurvROC-package, [1](#)

surrosurvROC, [2](#)

surrosurvROC-package, [1](#)