Package: CsChange (via r-universe)

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Type Package

Title Testing for Change in C-Statistic

Version 0.1.7

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Description Calculate the confidence interval and p value for change
in C-statistic. The adjusted C-statistic is calculated by using
formula as ``Somers' Dxy rank correlation''/2+0.5. The confidence
interval was calculated by using the bootstrap method. The p
value was calculated by using the Z testing method. Please
refer to the article of Peter Ganz et al. (2016)
<doi:10.1001/jama.2016.5951>.

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Encoding UTF-8

Imports rms, survival, boot, stats, Hmisc

NeedsCompilation no

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Repository https://marsdu1989.r-universe.dev

RemoteUrl https://github.com/cran/CsChange

RemoteRef HEAD

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Contents

CsChange *Testing for Change in C-Statistic*

Description

Calculate the confidence interval and p value for change in C-statistic. The adjusted C-statistic is calculated by using formula as "Somers' Dxy rank correlation"/2+0.5. The confidence interval was calculated by using the bootstrap method. The p value was calculated by using the Z testing method. Please refer to the article of Peter Ganz et al. (2016) <doi:10.1001/jama.2016.5951>.

Usage

```
CsChange(fit1,fit2,form1,form2,data,nb,signif,seed)
```

Arguments

fit1	an object from 'cph', 'coxph' or 'lrm' model
fit2	another object from 'cph', 'coxph' or 'lrm' model
form1	unnecessary, the formula used in fit1, i.e., 'y~x1'
form2	unnecessary, the formula used in fit2, i.e., 'y~x1+x2'
data	a data frame used in the fit1 or fit2
nb	the number of bootstrap replicate, with a default of 200
signif	the significant level of confidence interval, with a default of 0.05 and a two-sided test
seed	an integer used to set for random seed, with a default of 123

Value

change	in list 1, the change of C-statistic from fit1 to fit2
low, up	in list 1, the confidence interval of change
p	in list 1, the p value of testing for change
c	in list 2, the C-statistic of fit1 and fit2
low, up	in list 2, the confidence interval of change

Note

Please feel free to contact us, if you have any advice and find any bug!

Update description:

Version 0.1.1: Fix the error of "variables not found" for the 'coxph' model.

Version 0.1.2: Fix the error of data with missing value.

Version 0.1.3: a) Add the c statistic of fit1 and fit2 to the output. b) Fix the error of model with multiple variables. c) Fix the error of independent variable with functions, i.e., rcc(), ploy().

Version 0.1.4: a) Fix the error with the arguments of 'time=' and 'event=' in the coxph model. b) 'lrm' model was supported. c) Different dependent variables could be set.

Version 0.1.5: a) Apply 'boot.ci' function to compute the confidence interFix the error with the arguments of 'time=' and 'event=' in the coxph model. b) 'lrm' model was supported. c) Different dependent variables could be set.

Version 0.1.6: Fix minor bugs.

Version 0.1.7: Fix the error from the update that 'survival' is no longer attached by rms.

more functions will be included in 'CsChange' package!

Author(s)

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References

Peter Ganz, Bettina Heidecker, Kristian Hveem, Christian Jonasson, Shintaro Kato, Mark R. Segal, David G. Sterling, Stephen A. Williams. Development and Validation of a Protein-Based Risk Score for Cardiovascular Outcomes Among Patients With Stable Coronary Heart Disease. JAMA. 2016; 315(23):2532-2541. doi:10.1001/jama.2016.5951

Examples

```
require("rms")
require("survival")
set.seed(123)
n=50
age=50+12*rnorm(n)
sex=factor(sample(c('Male','Female'), n,rep=TRUE, prob=c(.6, .4)))
cens=15*runif(n)
h=.02*exp(.04*(age-50)+.8*(sex=='Female'))
dt=-log(runif(n))/h
e=ifelse(dt <= cens,1,0)
dt=pmin(dt, cens)
units(dt)="Year"
data=data.frame(dt=dt,e=e,dt1=dt,dt2=dt,e1=e,e2=e,age,sex)
dd=datadist(age, sex)
options(datadist='dd')

#for 'cph' model
fit1=cph(Surv(dt,e)~age,data)
fit2=cph(Surv(dt,e)~age+sex,data)
CsChange(fit1,fit2,data=data,nb=20)

#for 'coxph' model
fit1=coxph(Surv(dt,e)~age,data)
fit2=coxph(Surv(dt,e)~age+sex,data)
CsChange(fit1,fit2,data=data,nb=20)

#for 'coxph' model
#fit1=coxph(Surv(dt1,e1)~age,data)
```

```
#fit2=coxph(Surv(dt2,e2)~age+sex,data)
#CsChange(fit1,fit2,data=data,nb=20)

#for 'coxph' model
#fit1=coxph(Surv(dt,e)~age+sex,data)
#fit2=coxph(Surv(dt,e)~rcs(age)+sex,data)
#CsChange(fit1,fit2,data=data,nb=20)#ignore the warnings messages
```

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