Package 'cutoff'

December 20, 2019

Title Seek the Significant Cutoff Value

Version 1.3

Description Seek the significant cutoff value for a continuous variable, which will be transformed into a classification, for linear regression, logistic regression, logrank analysis and cox regression. First of all, all combinations will be gotten by combn() function. Then n.per argument, abbreviated of total number percentage, will be used to remove the combination of smaller data group. In logistic, Cox regression and logrank analysis, we will also use p.per argument, patient percentage, to filter the lower proportion of patients in each group. Finally, p value in regression results will be used to get the significant combinations and output relevant parameters. In this package, there is no limit to the number of cutoff points, which can be 1, 2, 3 or more. Still, we provide 2 methods, typical Bonferroni and Duglas G (1994) <doi: 10.1093/jnci/86.11.829>, to adjust the p value, Missing values will be deleted by na.omit() function before analysis.

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

Imports survival, set, do, ROCit

URL https://github.com/yikeshu0611/cutoff

BugReports https://github.com/yikeshu0611/cutoff/issues

NeedsCompilation no

Author Jing Zhang [aut, cre],
Zhi Jin [aut]

Maintainer Jing Zhang <zj391120@163.com>

Repository CRAN

Date/Publication 2019-12-20 10:10:05 UTC

R topics documented:

---

cox   *Significant Cutoff Value for Cox Regression*

Description

Significant Cutoff Value for Cox Regression

Usage

```
cox(data, time, y, x, cut.numb, n.per, y.per, p.cut = 0.05,
  strict = TRUE, include = "low", round = 2, adjust = 1)
```

Arguments

data	data
time	name for time variable
y	name for y, must be coded as 1 and 0. The outcome must be 1
x	name for x
cut.numb	number of cutoff points
n.per	the least percentage of the smaller group comprised in all patients
y.per	the least percentage of the smaller outcome patients comprised in each group
p.cut	cutoff of p value, default is 0.05
strict	logical. TRUE means significant differences for each group combination were considered. FALSE means considering for any combination
include	direction of cutoff point. Any left letter of lower or upper
round	digital. Default is 2
adjust	numeric value, adjust methord for p value. 1, defaulted, represents Bonferroni. 2 represent formula given by Douglas G in 1994

Value

a dataframe contains cutoff points value, subject numbers in each group, dumb variable, beta of regression and p value.

Examples

```
cox(data=mtcars,
    time = 'disp', y='am', x='wt',
    cut.numb=2,
    n.per=0.25,
    y.per=0.10)

cox(data=mtcars,
    time = 'disp', y='am', x='wt',
    cut.numb=2,
    n.per=0.25,
    y.per=0.10,
    p.cut=0.05,
    strict=TRUE,
    include='low',
    round=2)
```

---

cutit   *Cut Continuous Vector to Classification*

Description

Cut Continuous Vector to Classification

Usage

```
cutit(x, cut_points, include = "low", labels = FALSE)
```

Arguments

x	numeric vector
cut_points	cuting points value
include	The direction of cutoff point. Any left letter of lower or upper
labels	logical. False is defaulted. TRUE means set range as factor.

Value

numeric vector or factor

Examples

```
cutit(mtcars$disp,c(150,190))
cutit(mtcars$disp,c(150,190),labels = TRUE)
```

---

judge_123   *Whether the Data Is Arranged from Small to Large*

Description

Whether the Data Is Arranged from Small to Large

Usage

```
judge_123(x)
```

Arguments

x   numeric vector

Value

logical

Examples

```
judge_123(c(1,2,3,4,5))
judge_123(c(1,3,2))
```

---

judge_321   *Whether the Data Is Arranged from Large to Small*

Description

Whether the Data Is Arranged from Large to Small

Usage

```
judge_321(x)
```

Arguments

x   numeric vector

Value

logical

Examples

```
judge_321(c(5,4,3,2,1))
judge_321(c(3,1,2))
```

linear	*Significant Cutoff Value for Linear Regression*

Description

Significant Cutoff Value for Linear Regression

Usage

```
linear(data, y, x, cut.numb, n.per, p.cut = 0.05, strict = TRUE,
  include = "low", round = 2, adjust = 1)
```

Arguments

data	data
y	name for y
x	name for x
cut.numb	number of cutoff points
n.per	the least percentage of the smaller group comprised in all patients
p.cut	cutoff of p value, default is 0.05
strict	logical. TRUE means significant differences for each group combination were considered. FALSE means considering for any combination
include	direction of cutoff point. Any left letter of lower or upper
round	digital. Default is 2
adjust	numeric value, adjust methord for p value. 1, defaulted, represents Bonferroni. 2 represent formula given by Douglas G in 1994

Value

a dataframe contains cutoff points value, subject numbers in each group, dumb variable, beta of regression and p value.

Examples

```
linear(data=mtcars,y='qsec',x='disp',
       cut.numb=2,
       n.per=0.25)

linear(data=mtcars,y='qsec',x='disp',
       cut.numb=2,
       n.per=0.25,
       p.cut=0.05,
       strict=TRUE,
       include='low',
       round=2)
```

```
linear(data=mtcars,y='qsec',x='disp',
       cut.numb=2,
       n.per=0.25,
       p.cut=0.05,
       strict=FALSE,
       include='low',
       round=2)
```

---

logit   *Significant Cutoff Value for Logistic Regression*

Description

Significant Cutoff Value for Logistic Regression

Usage

```
logit(data, y, x, cut.numb, n.per, y.per, p.cut = 0.05, strict = TRUE,
  include = "low", round = 2, adjust = 1)
```

Arguments

data	data
y	name for y, must be coded as 1 and 0. The outcome must be 1
x	name for x
cut.numb	number of cutoff points
n.per	the least percentage of the smaller group comprised in all patients
y.per	the least percentage of the smaller outcome patients comprised in each group
p.cut	cutoff of p value, default is 0.05
strict	logical. TRUE means significant differences for each group combination were considered. FALSE means considering for any combination
include	direction of cutoff point. Any left letter of lower or upper
round	digital. Default is 2
adjust	numeric value, adjust methord for p value. 1, defaulted, represents Bonferroni. 2 represent formula given by Douglas G in 1994

Value

a dataframe contains cutoff points value, subject numbers in each group, dumb variable, or of regression and p value.

Examples

```
logit(data=mtcars,
      y='am',
      x='disp',
      cut.numb=1,
      n.per=0.25,
      y.per=0.25)
 logit(data=mtcars,
       y='am',
       x='disp',
       cut.numb=1,
       n.per=0.25,
       y.per=0.20,
       p.cut=0.05,
       strict=TRUE,
       include='low',
       round=2)
```

---

logrank   *Significant Cutoff Value for Logrank Analysis*

Description

Significant Cutoff Value for Logrank Analysis

Usage

```
logrank(data, time, y, x, cut.numb, n.per, y.per, p.cut = 0.05,
  strict = TRUE, include = "low", round = 2, adjust = 1)
```

Arguments

data	data
time	name for time variable
y	name for y, must be coded as 1 and 0. The outcome must be 1
x	name for x
cut.numb	number of cutoff points
n.per	the least percentage of the smaller group comprised in all patients
y.per	the least percentage of the smaller outcome patients comprised in each group
p.cut	cutoff of p value, default is 0.05
strict	logical. TRUE means significant differences for each group combination were considered. FALSE means considering for any combination
include	direction of cutoff point. Any left letter of lower or upper
round	digital. Default is 2
adjust	numeric value, adjust methord for p value. 1, defaulted, represents Bonferroni. 2 represent formula given by Douglas G in 1994

Value

a dataframe contains cutoff points value, subject numbers in each group, dumb variable, beta of regression and p value.

Examples

```
logrank(data=mtcars,
        time = 'disp',y='am', x='wt',
        cut.numb=2,
        n.per=0.25,
        y.per=0.10)

logrank(data=mtcars,
        time = 'disp',y='am', x='wt',
        cut.numb=2,
        n.per=0.25,
        y.per=0.10,
        p.cut=0.05,
        strict=TRUE,
        include='low',
        round=2)
```

---

roc   *To Get the Best Cutoff Value for ROC Curve*

Description

Youden index is used for seeking the best cutoff value for ROC Curve.

Usage

```
roc(score, class)
```

Arguments

score	continuous value
class	bianary value, 0 and 1

Value

If the auc of a variate is lower than 0.5, we treat it as negative classification and return information about the negative prediction. Otherwise, The variate will be treated as positive one.

Examples

```
roc(score = mtcars$qsec,class = mtcars$am)
roc(score = mtcars$drat,class = mtcars$am)
```

---

x_ab   *Return x Between a and b*

Description

Return x Between a and b

Usage

```
x_ab(x, a, b, include = "l")
```

Arguments

x	numeric vector
a	one number
b	one number
include	The direction of a and b. Any left letter of lower or upper

Value

values of x between a and b

Examples

```
x_ab(mtcars$disp,150,190)
```

Index