Package 'reportROC'

October 14, 2022

Type Package

Title An Easy Way to Report ROC Analysis

Version 3.6

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Description Provides an easy way to report the results of ROC analysis, including:
1. an ROC curve.
2. the value of Cutoff, AUC (Area Under Curve), ACC (accuracy),
SEN (sensitivity), SPE (specificity),
PLR (positive likelihood ratio), NLR (negative likelihood ratio),
PPV (positive predictive value), NPV (negative predictive value),
PPA (percentage of positive accordance), NPA (percentage of negative accordance), TPA (percentage of total accordance),
KAPPA (kappa value).

License GPL-3

Imports pROC, vcd, methods

LazyData TRUE

NeedsCompilation no

Repository CRAN

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R topics documented:

aSAH *Subarachnoid hemorrhage data*

Description

This dataset summarizes several clinical and one laboratory variable of 113 patients with an aneurysmal subarachnoid hemorrhage.

Usage

```
aSAH
```

Format

A data.frame containing 113 observations of 7 variables.

Source

Natacha Turck, Laszlo Vutskits, Paola Sanchez-Pena, Xavier Robin, Alexandre Hainard, Marianne Gex-Fabry, Catherine Fouda, Hadiji Bassem, Markus Mueller, Frédérique Lisacek, Louis Puybasset and Jean-Charles Sanchez (2010). A multiparameter panel method for outcome prediction following aneurysmal subarachnoid hemorrhage. Intensive Care Medicine. 36:(1), 107-115. doi: 10.1007/s001340091641y

References

Xavier Robin, Natacha Turck, Alexandre Hainard, et al. (2011). pROC: an open-source package for R and S+ to analyze and compare ROC curves. BMC Bioinformatics. 7, 77. doi: 10.1186/147121051277

Examples

```
# load the dataset
data(aSAH)

# Gender, outcome and set
with(aSAH, table(gender, outcome))

# Age
with(aSAH, by(age, outcome, mean))
with(aSAH, by(age, outcome,
     function(x) sprintf("mean: %.1f (+/- %.1f), median: %.1f (%i-%i)",
                         mean(x), sd(x), median(x), min(x), max(x))))

# WFNS score
with(aSAH, table(wfns=ifelse(wfns<=2, "1-2", "3-4-5"), outcome))
```

reportROC *An Easy Way to Report ROC Analysis*

Description

Provides an easy way to report the results of ROC analysis, including: 1. an ROC curve. 2. the value of Cutoff, AUC (Area Under Curve), ACC (accuracy), SEN (sensitivity), SPE (specificity), PLR (positive likelihood ratio), NLR (negative likelihood ratio), PPV (positive predictive value), NPV (negative predictive value).

Usage

```
reportROC(gold,predictor,predictor.binary,important,positive,exact,plot,xlab,ylab)
```

Arguments

gold	numeric(0/1) or binary, the 'gold standard'; typically encoded with 0 (controls) and 1 (cases)
predictor	numeric, the predictor variable
predictor.binary	numeric(0/1) or binary, if this argument was used, other arguments including 'predictor' and 'important' would be disabled
important	'se' or 'sp', some Youden index maybe the same, and 'important' is to indicate which is more important between sensitivity and specificity
positive	logic, 'l': the larger predictor or predictor.binary indicates the 'cases', 's': the smaller one indicates the 'cases'
exact	logic, whether to calculate the exact p value for AUC
plot	logic, whether to plot the ROC curve with specific style
xlab	character, the name of X axis
ylab	character, the name of Y axis

Value

Curoff	cutoff, only for numeric predictor
AUC	Area Under Curve, AUC
AUC.SE	the standard error of AUC
AUC.low,AUC.up	the 95 percent CI of AUC
P	the p value for AUC using one-sided test, which is different from SPSS using two-sided test
ACC	accuracy
ACC.low,ACC.up	the 95 percent CT of accuracy
SEN,SEN.low,SEN.up	the esitmate and the 95 percent CI of sensitivity

`SPE,SPE.low,SPE.up`
: the esitmate and the 95 percent CI of specificity

`PLR,PLR.low,PLR.up`
: the esitmate and the 95 percent CI of positive likelihood ratio

`NLR,NLR.low,NLR.up`
: the esitmate and the 95 percent CI of negative likelihood ratio

`PPV,PPV.low,PPV.up`
: the esitmate and the 95 percent CI of positive predictive value

`NPV,NPV.low,NPV.up`
: the esitmate and the 95 percent CI of negative predictive value

`PPA,PPA.low,PPA.up`
: the esitmate and the 95 percent CI of percentage of positive accordance

`NPA,NPA.low,NPA.up`
: the esitmate and the 95 percent CI of percentage of negative accordance

`TPA,TPA.low,TPA.up`
: the esitmate and the 95 percent CI of percentage of total accordance

`KAPPA,KAPPA.low,KAPPA.up`
: the esitmate and the 95 percent CI of Kappa

Note

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

Update description:

version 2.0: 1. 95 percent CIs for AUC, SEN, SPE, PLR, NLR, PPV and NPV are available.

version 3.0: 1. binary predictor is available with the new argument 'predictor.binary'. 2. positive indicator is available with the new argument 'positive'.

version 3.1: 1. accuracy is available. 2. roc curve is available for binary predictor.

version 3.2: 1. data with missing values can be handled.

version 3.3: 1. fixed the bug of the same value in 'AUC' and 'AUC.low'.

version 3.4: 1. fixed the axis names of the ROC plot. Thank Cesar S. Rabak (csrabak@hotmial.com) for the useful feedback.

version 3.5: 1. add p value to the outputs.

version 3.6: 1. add PPA, NPA, TPA, and KAPPA to the outputs. 2. limit sensitivity and specificity to a maximum of one. Thank Tengfei Song (songtf@mail2.sysu.edu.cn) for the useful feedback. 3. add the argument 'exact' to avoid the wanring message of "cannot compute exact p-value" in wilcox.test. 4. add the 95 percent CI to AUC in the ROC cruve.

more functions will be included in 'reportROC' package!

Author(s)

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See Also

nothing

Examples

```
data(aSAH)
#for continuous variables
reportROC(gold=aSAH$outcome,predictor=aSAH$s100b,important="se",plot=TRUE)
#for binary variables
binary=rep(0,nrow(aSAH))
binary[aSAH$s100b>=0.205]=1
reportROC(gold=aSAH$outcome,predictor.binary=binary)
reportROC(gold=aSAH$outcome[1:50],predictor.binary=binary[1:50],exact=FALSE)
```

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