

Package ‘reportROC’

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Type Package

Title An Easy Way to Report ROC Analysis

Version 3.5

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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).

License GPL-3

Imports pROC

LazyData TRUE

NeedsCompilation no

Repository CRAN

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aSAH	<i>Subarachnoid hemorrhage data</i>
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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/s00134-009-1641-y](https://doi.org/10.1007/s00134-009-1641-y).

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: [10.1186/1471-2105-12-77](https://doi.org/10.1186/1471-2105-12-77)

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))
```

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,plot,xlab,ylab,positive)
```

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
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
positive	logic, 'l': the larger predictor or predictor.binary indicates the 'cases', 's': the smaller one indicates the 'cases'

Value

Cutoff	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	sensitivity
SEN.low,SEN.up	the 95 percent CI of sensitivity
SPE	specificity
SPE.low,SPE.up	the 95 percent CI of specificity
PLR	positive likelihood ratio
PLR.low,PLR.up	the 95 percent CI of PLR
NLR	negative likelihood ratio
NLR.low,NLR.up	the 95 percent CI of NLR
PPV	positive predictive value
PPV.low,PPV.up	the 95 percent CI of PPV
NPV	negative predictive value
NPV.low,NPV.up	the 95 percent CI of NPV

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@hotmail.com) for the useful comments.

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

more functions will be included in 'reportROC' package!

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See Also

nothing

Examples

```
data(aSAH)
reportROC(gold=aSAH$outcome, predictor=aSAH$s100b, important="se", plot=TRUE)
```

```
binary=rep(0, nrow(aSAH))
binary[aSAH$s100b>=0.205]=1
reportROC(gold=aSAH$outcome, predictor.binary=binary)
```

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