

Package ‘rmetrics’

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Type Package

Title A Collection of Metrics to Evaluate the Performance of Statistical and Machine Learning Models

Version 0.1.0

Description The package provides a common interface to a very large collection of metrics for the evaluation of machine learning models and statistical models.
It is mainly designed as a backend for the revaluate package, but each function can of course be used on its own.

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<i>calc_acc</i>	<i>Calculate Accuracy (acc)</i>
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Description

Calculate Accuracy (acc)

Usage

```
calc_acc(...)

## Default S3 method:
calc_acc(tp, tn, fp, fn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_acc(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_acc(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.

ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_acc(default):
- calc_acc(table):
- calc_acc(data.frame):

calc_acc_macro	<i>Calculate Accuracy Macro.</i>
----------------	----------------------------------

Description

Calculate Accuracy Macro.

Usage

```
calc_acc_macro(...)

## Default S3 method:
calc_acc_macro(tp, tn, n, ...)

## S3 method for class 'table'
calc_acc_macro(tbl, ...)

## S3 method for class 'data.frame'
calc_acc_macro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
tn	Numeric vector of True Negatives (TN) by class.
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_acc_macro(default):`
- `calc_acc_macro(table):`
- `calc_acc_macro(data.frame):`

calc_af	<i>Calculate Adjusted F-score (af).</i>
---------	---

Description

Calculate Adjusted F-score (af).

Usage

```
calc_af(...)

## Default S3 method:
calc_af(tp, fp, fn, tn, ...)

## S3 method for class 'table'
calc_af(tbl, ...)

## S3 method for class 'data.frame'
calc_af(data, prediction, reference, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used.
<code>tp</code>	Numeric, True Positives (TP).
<code>fp</code>	Numeric, False Positives (FP).
<code>fn</code>	Numeric, False Negatives (FN).
<code>tn</code>	Numeric, True Negatives (TN).
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in <code>rmetrics</code> will generate incorrect results.
<code>data</code>	A <code>data.frame</code> containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in data that contains the predictions.
<code>reference</code>	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_af(default):`
- `calc_af(table):`
- `calc_af(data.frame):`

calc_agm	<i>Calculate Adjusted geometric mean (agm).</i>
----------	---

Description

Calculate Adjusted geometric mean (agm).

Usage

```
calc_agm(...)  
  
## Default S3 method:  
calc_agm(tn, fp, tp, fn, ...)  
  
## S3 method for class 'table'  
calc_agm(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_agm(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_agm(default):
- calc_agm(table):
- calc_agm(data.frame):

calc_aickin	<i>Calculate Aickin's Alpha.</i>
-------------	----------------------------------

Description

Calculate Aickin's Alpha.

Usage

```
calc_aickin(...)

## S3 method for class 'table'
calc_aickin(
  tbl,
  d = diag(1, nrow = nrow(tbl), ncol = ncol(tbl)),
  epsilon = 1e-07,
  ci.type = "aickin",
  ci.level = 0.95,
  maxiter = 1000,
  ...
)

## S3 method for class 'data.frame'
calc_aickin(
  data,
  prediction,
  reference,
  d = diag(1, nrow = nrow(tbl), ncol = ncol(tbl)),
  epsilon = 1e-07,
  ci.type = "aickin",
  ci.level = 0.95,
  maxiter = 1000,
  ...
)
```

Arguments

...	Additional arguments. Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
d	The agreement matrix for tbl. Must have the same dimensions as tbl, with 1 to indicate agreeing scores, and 0 disagreeing scores. By default the diagonal is considered agreeing.
epsilon	Convergence criterion. The algorithm stops when two consecutive α estimates differ by less than epsilon. Default is 1e-7.
ci.type	Either FALSE if no confidence intervals are desired or 'aickin' if the default CI's by Aickin should be calculated. If FALSE overwrites ci.level. Default is to calculate the CI.

ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
maxiter	Integer or double. Maximum number of iterations to try until convergence. Default is 1000.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_aickin(table):
- calc_aickin(data.frame):

Author(s)

Shamelessly stolen and only slightly adapted from Joseph, L. and Bélisle, P. <https://www.medicine.mcgill.ca/epidemiology/Joseph/PBelisle/Aickin-Alpha-Agreement-R.html>

Source

1. Aickin, M. (1990) Maximum Likelihood Estimation of Agreement in the Constant Predictive Probability Model, and Its Relation to Cohen's Kappa. Biometrics 46, 293-302.

calc_aunp	<i>Calculate overall AUC (aunp).</i>
-----------	--------------------------------------

Description

Calculate overall AUC (aunp).

Usage

```
calc_aunp(...)

## Default S3 method:
calc_aunp(tp, tn, fp, fn, ...)

## S3 method for class 'table'
calc_aunp(tbl, ...)

## S3 method for class 'data.frame'
calc_aunp(data, prediction = "prediction", reference = "reference", ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
tn	Numeric vector of True Negatives (TN) by class.
fp	Numeric vector of False Positives (FP) by class.

fn	Numeric vector of False Negatives (FN) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_aunp(default):
- calc_aunp(table):
- calc_aunp(data.frame):

calc_aunu	<i>Calculate average AUC (aunu) / AUC macro.</i>
-----------	--

Description

Calculate average AUC (aunu) / AUC macro.

Usage

```
calc_aunu(...)

## Default S3 method:
calc_aunu(tp, tn, fp, fn, ...)

## S3 method for class 'table'
calc_aunu(tbl, ...)

## S3 method for class 'data.frame'
calc_aunu(data, prediction = "prediction", reference = "reference", ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
tn	Numeric vector of True Negatives (TN) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_aunu(default):
- calc_aunu(table):
- calc_aunu(data.frame):

calc_aupr

*Calculate Area under the PR curve (AUPR).***Description**

Calculate Area under the PR curve (AUPR).

Usage

```
calc_aupr(...)

## Default S3 method:
calc_aupr(tp, fp, fn, ...)

## S3 method for class 'table'
calc_aupr(tbl, ...)

## S3 method for class 'data.frame'
calc_aupr(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_aupr(default):
- calc_aupr(table):
- calc_aupr(data.frame):

calc_auroc	<i>Calculate Area under the ROC curve for each class (auroc).</i>
------------	---

Description

Calculate Area under the ROC curve for each class (auroc).

Usage

```
calc_auroc(...)  
  
## Default S3 method:  
calc_auroc(tn, fp, tp, fn, ...)  
  
## S3 method for class 'table'  
calc_auroc(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_auroc(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_auroc(default):
- calc_auroc(table):
- calc_auroc(data.frame):

calc_b	<i>Calculate Bangdiwala's B.</i>
--------	----------------------------------

Description

Calculate Bangdiwala's B.

Usage

```
calc_b(...)

## Default S3 method:
calc_b(tp, fp, fn, ...)

## S3 method for class 'table'
calc_b(tbl, ...)

## S3 method for class 'data.frame'
calc_b(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_b(default):
- calc_b(table):
- calc_b(data.frame):

calc_bbs	<i>Calculate Braun-Blanquet similarity (bbs).</i>
----------	---

Description

Calculate Braun-Blanquet similarity (bbs).

Usage

```
calc_bbs(...)

## Default S3 method:
calc_bbs(tp, ppos, pos, ...)

## S3 method for class 'table'
calc_bbs(tbl, ...)

## S3 method for class 'data.frame'
calc_bbs(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
ppos	Number of positives in prediction vector (= TP + FP)
pos	Number of positives in reference.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_bbs(default):
- calc_bbs(table):
- calc_bbs(data.frame):

calc_bcd	<i>Calculate Bray-Curtis dissimilarity (bcd).</i>
----------	---

Description

Calculate Bray-Curtis dissimilarity (bcd).

Usage

```
calc_bcd(...)

## Default S3 method:
calc_bcd(ppos, pos, n, ...)

## S3 method for class 'table'
calc_bcd(tbl, ...)

## S3 method for class 'data.frame'
calc_bcd(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
ppos	Number of positives in prediction vector (= TP + FP)
pos	Number of positives in reference.
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_bcd(default):
- calc_bcd(table):
- calc_bcd(data.frame):

calc_bennett_s	<i>Calculate Bennett's S.</i>
----------------	-------------------------------

Description

Calculate Bennett's S.

Usage

```
calc_bennett_s(...)

## S3 method for class 'table'
calc_bennett_s(tbl, ...)

## S3 method for class 'data.frame'
calc_bennett_s(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_bennett_s(table):
- calc_bennett_s(data.frame):

calc_cba	<i>Calculate Class Balance Accuracy.</i>
----------	--

Description

Calculate Class Balance Accuracy.

Usage

```
calc_cba(...)

## Default S3 method:
calc_cba(tp, fp, fn, ...)

## S3 method for class 'table'
calc_cba(tbl, ...)

## S3 method for class 'data.frame'
calc_cba(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_cba(default):
- calc_cba(table):
- calc_cba(data.frame):

calc_chisq	<i>Calculate Chi-squared.</i>
------------	-------------------------------

Description

A simple wrapper over `stats::chisq.test`

Usage

```
calc_chisq(...)

## S3 method for class 'table'
calc_chisq(tbl, ...)

## S3 method for class 'data.frame'
calc_chisq(data, prediction, reference, ...)
```

Arguments

...	Additional parameters passed on to <code>chisq.test</code> .
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Value

A named vector with the test statistic, degrees of freedom and p value of the test.

Methods (by class)

- `calc_chisq(table):`
- `calc_chisq(data.frame):`

`calc_conditional_entropy`
Calculate conditional entropy.

Description

Calculate conditional entropy.

Usage

```
calc_conditional_entropy(...)

## S3 method for class 'data.frame'
calc_conditional_entropy(
  data,
  prediction = "prediction",
  reference = "reference",
  ...
)

## S3 method for class 'table'
calc_conditional_entropy(tbl, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used. Computes the average conditional entropy between two vectors.
<code>data</code>	A data.frame containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in data that contains the predictions.
<code>reference</code>	Character. The name of the variable in data that contains the reference values.
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.

Methods (by class)

- `calc_conditional_entropy(data.frame):`
- `calc_conditional_entropy(table):`

calc_cramer_v	<i>Calculate Cramer's V.</i>
---------------	------------------------------

Description

Calculate Cramer's V.

Usage

```
calc_cramer_v(...)

## S3 method for class 'table'
calc_cramer_v(
  tbl,
  ci.type = c("ncchisq", "ncchisqadj", "fisher", "fisheradj"),
  ci.level = 0.95,
  bias.correct = FALSE,
  ...
)

## S3 method for class 'data.frame'
calc_cramer_v(
  data,
  prediction = "prediction",
  reference = "reference",
  ci.type = c("ncchisq", "ncchisqadj", "fisher", "fisheradj"),
  ci.level = 0.95,
  bias.correct = FALSE,
  ...
)
```

Arguments

...	Additional arguments passed on to <code>stats::chisq.test</code> . Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in <code>rmetrics</code> will generate incorrect results.
ci.type	FALSE if no ci is requested or one out of "ncchisq" (using noncentral chisquare), "ncchisqadj", "fisher" (using fisher z transformation), "fisheradj" (using fisher z transformation and bias correction).
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
bias.correct	Should a bias correction be applied? FALSE by default.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Details

A Cramer's V between 0 and 0.3 is considered as weak, 0.3-0.7 as medium and > 0.7 as strong. Equivalent to Tschuprow's T in square tables.

Value

A numeric vector with the three elements 'v', 'll' and 'ul'. If no CI is requested, 'll' and 'ul' are NA.

Methods (by class)

- `calc_cramer_v(table)`:
- `calc_cramer_v(data.frame)`:

Author(s)

This implementation is based on code by Andri Signorell andri@signorell.net and Michael Smithson michael.smithson@anu.edu.au for the package DescTools with only minor changes.

References

Cramer, H. (1946) Mathematical Methods of Statistics. Princeton University Press
 Agresti, A. (2002) Categorical Data Analysis. John Wiley & Sons

calc_cross_entropy	<i>Calculate Cross entropy.</i>
--------------------	---------------------------------

Description

Calculate Cross entropy.

Usage

```
calc_cross_entropy(...)

## Default S3 method:
calc_cross_entropy(tp, fp, fn, n, ...)

## S3 method for class 'table'
calc_cross_entropy(tbl, ...)

## S3 method for class 'data.frame'
calc_cross_entropy(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.

n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_cross_entropy(default):
- calc_cross_entropy(table):
- calc_cross_entropy(data.frame):

calc_csi_macro

Calculate classification Success Index Macro.

Description

Calculate classification Success Index Macro.

Usage

```
calc_csi_macro(...)

## Default S3 method:
calc_csi_macro(tp, fn, fp, ...)

## S3 method for class 'table'
calc_csi_macro(tbl, ...)

## S3 method for class 'data.frame'
calc_csi_macro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fn	Numeric vector of False Negatives (FN) by class.
fp	Numeric vector of False Positives (FP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_csi_macro(default):
- calc_csi_macro(table):
- calc_csi_macro(data.frame):

calc_dind	<i>Calculate Distance index (dind).</i>
-----------	---

Description

Calculate Distance index (dind).

Usage

```
calc_dind(...)

## Default S3 method:
calc_dind(tn, fp, tp, fn, ...)

## S3 method for class 'table'
calc_dind(tbl, ...)

## S3 method for class 'data.frame'
calc_dind(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_dind(default):
- calc_dind(table):
- calc_dind(data.frame):

calc_dor	<i>Calculate Diagnostic odds ratio</i>
----------	--

Description

Calculate Diagnostic odds ratio

Usage

```
calc_dor(...)

## Default S3 method:
calc_dor(tp, fn, tn, fp, ...)

## S3 method for class 'table'
calc_dor(tbl, ...)

## S3 method for class 'data.frame'
calc_dor(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_dor(default):
- calc_dor(table):
- calc_dor(data.frame):

calc_dp	<i>Calculate Discriminant Power (dp).</i>
---------	---

Description

Calculate Discriminant Power (dp).

Usage

```
calc_dp(...)  
  
## Default S3 method:  
calc_dp(tn, fp, tp, fn, ...)  
  
## S3 method for class 'table'  
calc_dp(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_dp(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_dp(default):
- calc_dp(table):
- calc_dp(data.frame):

calc_err	<i>Calculate Error rate (err).</i>
----------	------------------------------------

Description

Calculate Error rate (err).

Usage

```
calc_err(...)

## Default S3 method:
calc_err(tp, tn, fp, fn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_err(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_err(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti-coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_err(default):
- calc_err(table):
- calc_err(data.frame):

calc_f05	<i>Calculate F0.5 Score</i>
----------	-----------------------------

Description

Calculate F0.5 Score

Usage

```
calc_f05(...)  
  
## Default S3 method:  
calc_f05(tp, fp, fn, ...)  
  
## S3 method for class 'table'  
calc_f05(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_f05(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_f05(default):
- calc_f05(table):
- calc_f05(data.frame):

calc_f1	<i>Calculate F1 Score</i>
---------	---------------------------

Description

Calculate F1 Score

Usage

```
calc_f1(...)

## Default S3 method:
calc_f1(tp, fp, fn, ...)

## S3 method for class 'table'
calc_f1(tbl, ...)

## S3 method for class 'data.frame'
calc_f1(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_f1(default):
- calc_f1(table):
- calc_f1(data.frame):

calc_f2	<i>Calculate F2 Score</i>
---------	---------------------------

Description

Calculate F2 Score

Usage

```
calc_f2(...)  
  
## Default S3 method:  
calc_f2(tp, fp, fn, ...)  
  
## S3 method for class 'table'  
calc_f2(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_f2(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_f2(default):
- calc_f2(table):
- calc_f2(data.frame):

calc_fdr

*Calculate False Discovery Rate***Description**

Calculate False Discovery Rate

Usage

```
calc_fdr(...)

## Default S3 method:
calc_fdr(fp, tp, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_fdr(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_fdr(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_fdr(default):
- calc_fdr(table):
- calc_fdr(data.frame):

calc_fmi	<i>Calculate Fowlkes–Mallows Index.</i>
----------	---

Description

Calculate Fowlkes–Mallows Index.

Usage

```
calc_fmi(...)  
  
## S3 method for class 'table'  
calc_fmi(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_fmi(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used. The Fowlkes–Mallows index is the geometric mean of precision (PPV) and recall (TPR). It is generally used to compare the results of two clustering algorithms. It ranges from 0 to 1, with 1 indicating perfect classification.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_fmi(table):
- calc_fmi(data.frame):

References

Fowlkes, E. B.; Mallows, C. L. (1 September 1983). "A Method for Comparing Two Hierarchical Clusterings". *Journal of the American Statistical Association*. 78 (383): 553. doi:10.2307/2288117

calc_fnr	<i>Calculate False Negative Rate</i>
----------	--------------------------------------

Description

Calculate False Negative Rate

Usage

```
calc_fnr(...)

## Default S3 method:
calc_fnr(fn, tp, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_fnr(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_fnr(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
fn	Numeric, False Negatives (FN).
tp	Numeric, True Positives (TP).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_fnr(default):
- calc_fnr(table):
- calc_fnr(data.frame):

calc_fnr_macro	<i>Calculate FNR macro.</i>
----------------	-----------------------------

Description

Calculate FNR macro.

Usage

```
calc_fnr_macro(...)

## Default S3 method:
calc_fnr_macro(fn, tp, ...)

## S3 method for class 'table'
calc_fnr_macro(tbl, ...)

## S3 method for class 'data.frame'
calc_fnr_macro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
fn	Numeric vector of False Negatives (FN) by class.
tp	Numeric vector of True Positives (TP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_fnr_macro(default):
- calc_fnr_macro(table):
- calc_fnr_macro(data.frame):

calc_fnr_micro	<i>Calculate FNR micro.</i>
----------------	-----------------------------

Description

Calculate FNR micro.

Usage

```
calc_fnr_micro(...)

## Default S3 method:
calc_fnr_micro(otp, n, ...)

## S3 method for class 'table'
calc_fnr_micro(tbl, ...)

## S3 method for class 'data.frame'
calc_fnr_micro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
otp	Overall True Positives (OTP).
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_fnr_micro(default):
- calc_fnr_micro(table):
- calc_fnr_micro(data.frame):

calc_for	<i>Calculate False Omission Rate</i>
----------	--------------------------------------

Description

Calculate False Omission Rate

Usage

```
calc_for(...)

## Default S3 method:
calc_for(fn, tn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_for(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_for(data, prediction, reference, ci.type, ci.level, ...)
```


Arguments

<code>...</code>	Additional arguments. Not used.
<code>fn</code>	Numeric, False Negatives (FN).
<code>tn</code>	Numeric, True Negatives (TN).
<code>ci.type</code>	Either FALSE if no confidence intervals are desired or one of "agresti-coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
<code>ci.level</code>	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
<code>data</code>	A data.frame containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in data that contains the predictions.
<code>reference</code>	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_for(default):`
- `calc_for(table):`
- `calc_for(data.frame):`

<code>calc_fpr</code>	<i>Calculate False Positive Rate</i>
-----------------------	--------------------------------------

Description

Calculate False Positive Rate

Usage

```
calc_fpr(...)

## Default S3 method:
calc_fpr(fp, tn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_fpr(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_fpr(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used.
<code>fp</code>	Numeric, False Positives (FP).
<code>tn</code>	Numeric, True Negatives (TN).
<code>ci.type</code>	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites <code>ci.level</code> .
<code>ci.level</code>	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in <code>rmetrics</code> will generate incorrect results.
<code>data</code>	A data.frame containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in data that contains the predictions.
<code>reference</code>	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_fpr(default):`
- `calc_fpr(table):`
- `calc_fpr(data.frame):`

<code>calc_fpr_macro</code>	<i>Calculate FPR Macro.</i>
-----------------------------	-----------------------------

Description

Calculate FPR Macro.

Usage

```
calc_fpr_macro(...)

## Default S3 method:
calc_fpr_macro(fp, tn, ...)

## S3 method for class 'table'
calc_fpr_macro(tbl, ...)

## S3 method for class 'data.frame'
calc_fpr_macro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
fp	Numeric vector of False Positives (FP) by class.
tn	Numeric vector of True Negatives (TN) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_fpr_macro(default):
- calc_fpr_macro(table):
- calc_fpr_macro(data.frame):

calc_fpr_micro	<i>Calculate FPR Micro.</i>
----------------	-----------------------------

Description

Calculate FPR Micro.

Usage

```
calc_fpr_micro(...)

## Default S3 method:
calc_fpr_micro(tn, fp, ...)

## S3 method for class 'table'
calc_fpr_micro(tbl, ...)

## S3 method for class 'data.frame'
calc_fpr_micro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric vector of True Negatives (TN) by class.
fp	Numeric vector of False Positives (FP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_fpr_micro(default):
- calc_fpr_micro(table):
- calc_fpr_micro(data.frame):

calc_f_macro	<i>Calculate F macro.</i>
--------------	---------------------------

Description

Calculate F macro.

Usage

```
calc_f_macro(...)

## Default S3 method:
calc_f_macro(tp, fp, fn, beta = 1, ...)

## S3 method for class 'table'
calc_f_macro(tbl, beta = 1, ...)

## S3 method for class 'data.frame'
calc_f_macro(data, prediction, reference, beta = 1, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
beta	Scaling factor. 1 by default for the F1-Score.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_f_macro(default):
- calc_f_macro(table):
- calc_f_macro(data.frame):

calc_gini	<i>Calculate Gini index (gini).</i>
-----------	-------------------------------------

Description

Calculate Gini index (gini).

Usage

```
calc_gini(...)  
  
## Default S3 method:  
calc_gini(tn, fp, tp, fn, ...)  
  
## S3 method for class 'table'  
calc_gini(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_gini(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_gini(default):
- calc_gini(table):
- calc_gini(data.frame):

calc_gmean	<i>Calculate Geometric mean (gmean) of TPR and TNR.</i>
------------	---

Description

Calculate Geometric mean (gmean) of TPR and TNR.

Usage

```
calc_gmean(...)

## Default S3 method:
calc_gmean(tn, fp, tp, fn, ...)

## S3 method for class 'table'
calc_gmean(tbl, ...)

## S3 method for class 'data.frame'
calc_gmean(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_gmean(default):
- calc_gmean(table):
- calc_gmean(data.frame):

calc_grey

*Calculate Size of Grey Area***Description**

Calculate Size of Grey Area

Usage

```
calc_grey(...)

## Default S3 method:
calc_grey(ind, n, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_grey(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_grey(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
ind	Number of indeterminate results.
n	Total number of observations.
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_grey(default):
- calc_grey(table):
- calc_grey(data.frame):

calc_gwet_ac1	<i>Calculate Gwet AC1.</i>
---------------	----------------------------

Description

Calculate Gwet AC1.

Usage

```
calc_gwet_ac1(...)

## Default S3 method:
calc_gwet_ac1(tp, fp, fn, n, ...)

## S3 method for class 'table'
calc_gwet_ac1(tbl, ...)

## S3 method for class 'data.frame'
calc_gwet_ac1(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_gwet_ac1(default):
- calc_gwet_ac1(table):
- calc_gwet_ac1(data.frame):

calc_hamming	<i>Calculate Hamming Loss.</i>
--------------	--------------------------------

Description

Calculate Hamming Loss.

Usage

```
calc_hamming(...)  
  
## Default S3 method:  
calc_hamming(otp, n, ...)  
  
## S3 method for class 'table'  
calc_hamming(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_hamming(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
otp	Overall True Positives (OTP).
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_hamming(default):
- calc_hamming(table):
- calc_hamming(data.frame):

calc_iba	<i>Calculate Index of Balanced Accuracy.</i>
----------	--

Description

Calculate Index of Balanced Accuracy.

Usage

```
calc_iba(...)

## Default S3 method:
calc_iba(tn, fp, tp, fn, alpha = 1, ...)

## S3 method for class 'table'
calc_iba(tbl, alpha = 1, ...)

## S3 method for class 'data.frame'
calc_iba(data, prediction, reference, alpha = 1, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
alpha	Weight for TPR - TNR. By default 1.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_iba(default):
- calc_iba(table):
- calc_iba(data.frame):

calc_icsi	<i>Calculate Individual classification success index.</i>
-----------	---

Description

Calculate Individual classification success index.

Usage

```
calc_icsi(...)  
  
## Default S3 method:  
calc_icsi(tp, fn, fp, ...)  
  
## S3 method for class 'table'  
calc_icsi(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_icsi(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
fp	Numeric, False Positives (FP).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_icsi(default):
- calc_icsi(table):
- calc_icsi(data.frame):

calc_informedness	<i>Calculate Informedness</i>
-------------------	-------------------------------

Description

Calculate Informedness

Usage

```
calc_informedness(...)

## Default S3 method:
calc_informedness(tp, fn, tn, fp, ...)

## S3 method for class 'table'
calc_informedness(tbl, ...)

## S3 method for class 'data.frame'
calc_informedness(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_informedness(default):
- calc_informedness(table):
- calc_informedness(data.frame):

calc_is	<i>Calculate Information score.</i>
---------	-------------------------------------

Description

Calculate Information score.

Usage

```
calc_is(...)  
  
## Default S3 method:  
calc_is(tp, fp, fn, n, ...)  
  
## S3 method for class 'table'  
calc_is(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_is(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_is(default):
- calc_is(table):
- calc_is(data.frame):

calc_jaccard	<i>Calculate Jaccard index</i>
--------------	--------------------------------

Description

Calculate Jaccard index

Usage

```
calc_jaccard(...)

## Default S3 method:
calc_jaccard(tp, fn, fp, ...)

## S3 method for class 'table'
calc_jaccard(tbl, ...)

## S3 method for class 'data.frame'
calc_jaccard(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
fp	Numeric, False Positives (FP).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_jaccard(default):
- calc_jaccard(table):
- calc_jaccard(data.frame):

calc_jaccard_overall *Calculate Mean overall Jaccard index.*

Description

Calculate Mean overall Jaccard index.

Usage

```
calc_jaccard_overall(...)

## Default S3 method:
calc_jaccard_overall(tp, fn, fp, ...)

## S3 method for class 'table'
calc_jaccard_overall(tbl, ...)

## S3 method for class 'data.frame'
calc_jaccard_overall(
  data,
  prediction = "prediction",
  reference = "reference",
  ...
)
```

Arguments

...	Additional arguments. Not used. The overall Jaccard index is calculated as the mean Jaccard index over all classes in data.
tp	Numeric vector of True Positives (TP) by class.
fn	Numeric vector of False Negatives (FN) by class.
fp	Numeric vector of False Positives (FP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_jaccard_overall(default):
- calc_jaccard_overall(table):
- calc_jaccard_overall(data.frame):

calc_joint_entropy	<i>Calculate Joint entropy.</i>
--------------------	---------------------------------

Description

Calculate Joint entropy.

Usage

```
calc_joint_entropy(...)

## S3 method for class 'table'
calc_joint_entropy(tbl, ...)

## S3 method for class 'data.frame'
calc_joint_entropy(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_joint_entropy(table):
- calc_joint_entropy(data.frame):

calc_kalpha	<i>Calculate Unweighted Krippendorff's Alpha.</i>
-------------	---

Description

Calculate Unweighted Krippendorff's Alpha.

Usage

```
calc_kalpha(...)

## S3 method for class 'table'
calc_kalpha(tbl, unbiased = TRUE, ...)

## S3 method for class 'data.frame'
calc_kalpha(data, prediction, reference, ...)
```


Arguments

...	Additional arguments. Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
unbiased	TRUE/FALSE. Should unbiased overall random accuracy be used?
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_kalpha(table):
- calc_kalpha(data.frame):

calc_kappa	<i>Calculate Kappa, unbiased Kappa or Kappa no Prevalence.</i>
------------	--

Description

Calculate Kappa, unbiased Kappa or Kappa no Prevalence.

Usage

```
calc_kappa(...)

## S3 method for class 'table'
calc_kappa(tbl, unbiased = FALSE, prev = TRUE, ...)

## S3 method for class 'data.frame'
calc_kappa(
  data,
  prediction = "prediction",
  reference = "reference",
  unbiased = FALSE,
  prev = TRUE,
  ...
)
```

Arguments

...	Additional arguments. Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
unbiased	Logical, should 'normal' or unbiased overall random accuracy be used.
prev	TRUE for Kappa and unbiased Kappa, FALSE for Kappa no prevalence.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_kappa(table):
- calc_kappa(data.frame):

calc_kl_divergence	<i>Calculate Kullback-Leibler Divergence.</i>
--------------------	---

Description

Calculate Kullback-Leibler Divergence.

Usage

```
calc_kl_divergence(...)

## Default S3 method:
calc_kl_divergence(tp, fp, fn, n, epsilon = 1e-06, ...)

## S3 method for class 'table'
calc_kl_divergence(tbl, epsilon = 1e-06, ...)

## S3 method for class 'data.frame'
calc_kl_divergence(data, prediction, reference, epsilon = 1e-06, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
n	Total number of observations.
epsilon	Continuity correction for zero cells. By default 0.000001.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_kl_divergence(default):
- calc_kl_divergence(table):
- calc_kl_divergence(data.frame):

calc_lambda

*Calculate Goodman Kruskal Lambda.***Description**

Calculate Goodman Kruskal Lambda.

Usage

```
calc_lambda(...)

## S3 method for class 'table'
calc_lambda(
  tbl,
  direction = c("symmetric", "row", "column"),
  ci.type = FALSE,
  ci.level = 0.95,
  ...
)

## S3 method for class 'data.frame'
calc_lambda(
  data,
  prediction = "prediction",
  reference = "reference",
  direction = c("symmetric", "row", "column"),
  ci.type = FALSE,
  ci.level = 0.95,
  ...
)
```

Arguments

...	Additional arguments. Not used.
	Calculates symmetric and asymmetric (lambda A and lambda B) Goodman Kruskal lambda and their confidence intervals. Lambda measures the proportional reduction in error in cross tabulation analysis. It can be used to gauge the strength of association between two nominal variables. It can be interpreted as the probable improvement in predicting the reference given knowledge of the predictions.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
direction	Character, either "symmetric", "row" or "column". "row" corresponds to Lambda B and "column" to Lambda A.
ci.type	FALSE if no ci is requested or "normal" for normal approximation CIs
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Details

This implementation is based on code by Andri Signorell andri@signorell.net, Antti Arppe antti.arppe@helsinki.fi and Nanina Anderegg (confidence interval symmetric lambda) for the package DescTools.

Value

A numeric vector with the three elements 'lambda', 'll' and 'ul'. If no CI is requested, 'll' and 'ul' are NA.

Methods (by class)

- `calc_lambda(table)`:
- `calc_lambda(data.frame)`:

References

Agresti, A. (2002) Categorical Data Analysis. John Wiley & Sons
 Goodman, L. A., Kruskal W. H. (1979) Measures of Association for Cross Classifications. New York: Springer-Verlag (contains articles appearing in J. Amer. Statist. Assoc. in 1954, 1959, 1963, 1972).
 Liebetrau, A. M. (1983) Measures of Association, Sage University Papers Series on Quantitative Applications in the Social Sciences, 07-004. Newbury Park, CA: Sage, pp. 17–24

calc_lift

Calculate Lift Score

Description

Calculate Lift Score

Usage

```
calc_lift(...)

## Default S3 method:
calc_lift(tp, fp, pos, neg, ...)

## S3 method for class 'table'
calc_lift(tbl, ...)

## S3 method for class 'data.frame'
calc_lift(data, prediction, reference, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used.
<code>tp</code>	Numeric, True Positives (TP).
<code>fp</code>	Numeric, False Positives (FP).
<code>pos</code>	Number of positives in reference.
<code>neg</code>	Number of negatives in reference.

tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_lift(default):
- calc_lift(table):
- calc_lift(data.frame):

calc_markedness	<i>Calculate Markedness.</i>
-----------------	------------------------------

Description

Calculate Markedness.

Usage

```
calc_markedness(...)

## Default S3 method:
calc_markedness(tp, fn, tn, fp, ...)

## S3 method for class 'table'
calc_markedness(tbl, ...)

## S3 method for class 'data.frame'
calc_markedness(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_markedness(default):`
- `calc_markedness(table):`
- `calc_markedness(data.frame):`

`calc_mcc`*Calculate Matthews Correlation Coefficient*

Description

Calculate Matthews Correlation Coefficient

Usage

```
calc_mcc(...)

## Default S3 method:
calc_mcc(tp, tn, fp, fn, ...)

## S3 method for class 'table'
calc_mcc(tbl, ...)

## S3 method for class 'data.frame'
calc_mcc(data, prediction, reference, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used.
<code>tp</code>	Numeric, True Positives (TP).
<code>tn</code>	Numeric, True Negatives (TN).
<code>fp</code>	Numeric, False Positives (FP).
<code>fn</code>	Numeric, False Negatives (FN).
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in <code>rmetrics</code> will generate incorrect results.
<code>data</code>	A <code>data.frame</code> containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in data that contains the predictions.
<code>reference</code>	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_mcc(default):`
- `calc_mcc(table):`
- `calc_mcc(data.frame):`

calc_mcc_overall	<i>Calculate Overall Matthews Correlation Coefficient.</i>
------------------	--

Description

Calculate Overall Matthews Correlation Coefficient.

Usage

```
calc_mcc_overall(...)  
  
## Default S3 method:  
calc_mcc_overall(tp, fp, fn, ...)  
  
## S3 method for class 'table'  
calc_mcc_overall(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_mcc_overall(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_mcc_overall(default):
- calc_mcc_overall(table):
- calc_mcc_overall(data.frame):

calc_mutual_information	<i>Calculate Mutual information.</i>
-------------------------	--------------------------------------

Description

Calculate Mutual information.

Usage

```
calc_mutual_information(...)

## S3 method for class 'table'
calc_mutual_information(tbl, ...)

## S3 method for class 'data.frame'
calc_mutual_information(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_mutual_information(table):
- calc_mutual_information(data.frame):

calc_net_benefit	<i>Calculate Net Benefit.</i>
------------------	-------------------------------

Description

Calculate Net Benefit.

Usage

```
calc_net_benefit(...)

## Default S3 method:
calc_net_benefit(tp, fp, n, weight = 1, ...)

## S3 method for class 'table'
calc_net_benefit(tbl, weight = 1, ...)

## S3 method for class 'data.frame'
calc_net_benefit(data, prediction, reference, weight = 1, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
n	Total number of observations.
weight	The weight for FP in comparison to TP. By default 1.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_net_benefit(default):
- calc_net_benefit(table):
- calc_net_benefit(data.frame):

calc_nir	<i>Calculate No information Rate.</i>
----------	---------------------------------------

Description

Calculate No information Rate.

Usage

```
calc_nir(...)

## Default S3 method:
calc_nir(tp, fn, n, ...)

## S3 method for class 'table'
calc_nir(tbl, ...)

## S3 method for class 'data.frame'
calc_nir(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fn	Numeric vector of False Negatives (FN) by class.
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_nlr(default):
- calc_nlr(table):
- calc_nlr(data.frame):

calc_nlr	<i>Calculate Negative Likelihood Ratio</i>
----------	--

Description

Calculate Negative Likelihood Ratio

Usage

```
calc_nlr(...)

## Default S3 method:
calc_nlr(tp, fn, fp, tn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_nlr(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_nlr(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
fp	Numeric, False Positives (FP).
tn	Numeric, True Negatives (TN).
ci.type	Either FALSE if no confidence intervals are desired or 'koopman'. If FALSE overwrites ci.level.

ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_nlr(default):
- calc_nlr(table):
- calc_nlr(data.frame):

Source

Koopman, PAR (1984) Confidence intervals for the ratio of two binomial proportions. Biometrics; 513-517.

calc_npv	<i>Calculate Negative Predictive Value</i>
----------	--

Description

Calculate Negative Predictive Value

Usage

```
calc_npv(...)

## Default S3 method:
calc_npv(tn, fn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_npv(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_npv(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fn	Numeric, False Negatives (FN).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.

ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_npv(default):
- calc_npv(table):
- calc_npv(data.frame):

calc_oacc	<i>Calculate Calculate Overall Accuracy.</i>
-----------	--

Description

Calculate Calculate Overall Accuracy.

Usage

```
calc_oacc(...)

## Default S3 method:
calc_oacc(otp, n, ...)

## S3 method for class 'table'
calc_oacc(tbl, ...)

## S3 method for class 'data.frame'
calc_oacc(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used. The proportion of overall true positives, regardless of class. Identical to micro-averaging TPR.
otp	Overall True Positives (OTP).
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_oacc(default):`
- `calc_oacc(table):`
- `calc_oacc(data.frame):`

calc_oc	<i>Calculate Overlap Coefficient</i>
---------	--------------------------------------

Description

Calculate Overlap Coefficient

Usage

```
calc_oc(...)

## Default S3 method:
calc_oc(tp, fp, fn, ...)

## S3 method for class 'table'
calc_oc(tbl, ...)

## S3 method for class 'data.frame'
calc_oc(data, prediction, reference, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used.
<code>tp</code>	Numeric, True Positives (TP).
<code>fp</code>	Numeric, False Positives (FP).
<code>fn</code>	Numeric, False Negatives (FN).
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in <code>rmetrics</code> will generate incorrect results.
<code>data</code>	A <code>data.frame</code> containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in <code>data</code> that contains the predictions.
<code>reference</code>	Character. The name of the variable in <code>data</code> that contains the reference values.

Methods (by class)

- `calc_oc(default):`
- `calc_oc(table):`
- `calc_oc(data.frame):`

calc_ooc	<i>Calculate Otsuka-Ochiai Coefficient</i>
----------	--

Description

Calculate Otsuka-Ochiai Coefficient

Usage

```
calc_ooc(...)

## Default S3 method:
calc_ooc(tp, fp, fn, ...)

## S3 method for class 'table'
calc_ooc(tbl, ...)

## S3 method for class 'data.frame'
calc_ooc(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_ooc(default):
- calc_ooc(table):
- calc_ooc(data.frame):

calc_op	<i>Calculate Optimized Precision.</i>
---------	---------------------------------------

Description

Calculate Optimized Precision.

Usage

```
calc_op(...)  
  
## Default S3 method:  
calc_op(tn, fp, tp, fn, ...)  
  
## S3 method for class 'table'  
calc_op(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_op(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_op(default):
- calc_op(table):
- calc_op(data.frame):

 calc_oracc

Calculate Calculate (Unbiased) Overall Random Accuracy.

Description

Calculate Calculate (Unbiased) Overall Random Accuracy.

Usage

```
calc_oracc(...)

## Default S3 method:
calc_oracc(tp, fp, fn, n, unbiased = FALSE, ...)

## S3 method for class 'table'
calc_oracc(tbl, unbiased = FALSE, ...)

## S3 method for class 'data.frame'
calc_oracc(data, prediction, reference, unbiased = FALSE, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
fn	Numeric vector of False Negatives (FN) by class.
n	Total number of observations.
unbiased	TRUE/FALSE, should unbiased random accuracy be returned? FALSE by default.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_oracc(default):
- calc_oracc(table):
- calc_oracc(data.frame):

calc_pearson_c	<i>Calculate Pearson's C.</i>
----------------	-------------------------------

Description

Calculate Pearson's C.

Usage

```
calc_pearson_c(...)

## S3 method for class 'table'
calc_pearson_c(tbl, ...)

## S3 method for class 'data.frame'
calc_pearson_c(data, prediction, reference, ...)
```

Arguments

...	Additional arguments passed on to <code>stats::chisq.test</code> .
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in <code>rmetrics</code> will generate incorrect results.
data	A <code>data.frame</code> containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_pearson_c(table):`
- `calc_pearson_c(data.frame):`

calc_phi	<i>Calculate Phi Coefficient</i>
----------	----------------------------------

Description

Calculate Phi Coefficient

Usage

```
calc_phi(...)

## Default S3 method:
calc_phi(tp, tn, fp, fn, ...)

## S3 method for class 'table'
calc_phi(tbl, ...)

## S3 method for class 'data.frame'
calc_phi(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_phi(default):`
- `calc_phi(table):`
- `calc_phi(data.frame):`

calc_phisq	<i>Calculate Phi-squared.</i>
------------	-------------------------------

Description

Calculate Phi-squared.

Usage

```
calc_phisq(...)

## S3 method for class 'table'
calc_phisq(tbl, ...)

## S3 method for class 'data.frame'
calc_phisq(data, prediction, reference, ...)
```

Arguments

...	Additional arguments passed on to <code>stats::chisq.test</code> .
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_phisq(table):`
- `calc_phisq(data.frame):`

calc_plr

*Calculate Positive Likelihood Ratio***Description**

Calculate Positive Likelihood Ratio

Usage

```
calc_plr(...)

## Default S3 method:
calc_plr(tp, fn, fp, tn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_plr(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_plr(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used.
<code>tp</code>	Numeric, True Positives (TP).
<code>fn</code>	Numeric, False Negatives (FN).
<code>fp</code>	Numeric, False Positives (FP).
<code>tn</code>	Numeric, True Negatives (TN).
<code>ci.type</code>	Either FALSE if no confidence intervals are desired or 'koopman'. If FALSE overwrites ci.level.
<code>ci.level</code>	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
<code>data</code>	A data.frame containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in data that contains the predictions.
<code>reference</code>	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_plr(default):`
- `calc_plr(table):`
- `calc_plr(data.frame):`

Source

Koopman, PAR (1984) Confidence intervals for the ratio of two binomial proportions. *Biometrics*; 513-517.

calc_ppv_macro	<i>Calculate Precision (PPV) Macro.</i>
----------------	---

Description

Calculate Precision (PPV) Macro.

Usage

```
calc_ppv_macro(...)

## Default S3 method:
calc_ppv_macro(tp, fp, ...)

## S3 method for class 'table'
calc_ppv_macro(tbl, ...)

## S3 method for class 'data.frame'
calc_ppv_macro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_ppv_macro(default):
- calc_ppv_macro(table):
- calc_ppv_macro(data.frame):

calc_precision	<i>Calculate Precision</i>
----------------	----------------------------

Description

Calculate Precision

Usage

```
calc_precision(...)

## Default S3 method:
calc_precision(tp, fp, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_precision(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_precision(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_precision(default):
- calc_precision(table):
- calc_precision(data.frame):

calc_prevalence	<i>Calculate Sample Prevalence</i>
-----------------	------------------------------------

Description

Calculate Sample Prevalence

Usage

```
calc_prevalence(...)

## Default S3 method:
calc_prevalence(pos, neg, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_prevalence(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_prevalence(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
pos	Number of positives in reference.
neg	Number of negatives in reference.
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_prevalence(default):
- calc_prevalence(table):
- calc_prevalence(data.frame):

calc_q	<i>Calculate Yule's Q.</i>
--------	----------------------------

Description

Calculate Yule's Q.

Usage

```
calc_q(...)  
  
## Default S3 method:  
calc_q(tp, tn, fp, fn, ...)  
  
## S3 method for class 'table'  
calc_q(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_q(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_q(default):
- calc_q(table):
- calc_q(data.frame):

calc_racc	<i>Calculate (Unbiased) Random Accuracy</i>
-----------	---

Description

Calculate (Unbiased) Random Accuracy

Usage

```
calc_racc(...)

## Default S3 method:
calc_racc(tp, fp, fn, n, unbiased = FALSE, ...)

## S3 method for class 'table'
calc_racc(tbl, unbiased = FALSE, ...)

## S3 method for class 'data.frame'
calc_racc(data, prediction, reference, unbiased = FALSE, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fp	Numeric, False Positives (FP).
fn	Numeric, False Negatives (FN).
n	Total number of observations.
unbiased	Should unbiased random accuracy be calculated? FALSE by default.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_racc(default):
- calc_racc(table):
- calc_racc(data.frame):

calc_rand	<i>Calculate Rand Index.</i>
-----------	------------------------------

Description

Calculate Rand Index.

Usage

```
calc_rand(...)

## S3 method for class 'table'
calc_rand(tbl, adjust = FALSE, ...)

## S3 method for class 'data.frame'
calc_rand(
  data,
  prediction = "prediction",
  reference = "reference",
  adjust = FALSE,
  ...
)
```

Arguments

...	Additional arguments. Not used. The Rand index ranges between 0 and 1 and can be used to measure the similarity between two categorical vectors. It is commonly used to evaluate the similarity between clustering outcomes.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
adjust	Should the index be rescaled to take into account that random chance will cause some objects to occupy the same clusters, so that the Rand Index can never be zero? FALSE by default.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_rand(table):
- calc_rand(data.frame):

Author(s)

Adapted from the implementation for Rand Index and Adjusted Rand index in fossil, written by Matthew Vavrek.

References

Rand, W.M. 1971. Objective criteria for the evaluation of clustering methods. *Journal of the American Statistical Association* 66: 846–850. Hubert, L. and Arabie, P. 1985. Comparing partitions. *Journal of Classification*. 2: 193–218.

calc_rci	<i>Calculate Relative Classifier Information.</i>
----------	---

Description

Calculate Relative Classifier Information.

Usage

```
calc_rci(...)

## S3 method for class 'table'
calc_rci(tbl, ...)

## S3 method for class 'data.frame'
calc_rci(data, prediction = "prediction", reference = "reference", ...)
```

Arguments

...	Additional arguments. Not used.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_rci(table):
- calc_rci(data.frame):

`calc_reference_entropy`*Calculate Reference Entropy.*

Description

Calculate Reference Entropy.

Usage

```
calc_reference_entropy(...)  
  
## Default S3 method:  
calc_reference_entropy(tp, fn, n, ...)  
  
## S3 method for class 'table'  
calc_reference_entropy(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_reference_entropy(data, prediction, reference, ...)
```

Arguments

<code>...</code>	Additional arguments. Not used.
<code>tp</code>	Numeric vector of True Positives (TP) by class.
<code>fn</code>	Numeric vector of False Negatives (FN) by class.
<code>n</code>	Total number of observations.
<code>tbl</code>	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in <code>rmetrics</code> will generate incorrect results.
<code>data</code>	A <code>data.frame</code> containing the prediction and the reference.
<code>prediction</code>	Character. The name of the variable in <code>data</code> that contains the predictions.
<code>reference</code>	Character. The name of the variable in <code>data</code> that contains the reference values.

Methods (by class)

- `calc_reference_entropy(default):`
- `calc_reference_entropy(table):`
- `calc_reference_entropy(data.frame):`

calc_response_entropy *Calculate Response Entropy.*

Description

Calculate Response Entropy.

Usage

```
calc_response_entropy(...)

## Default S3 method:
calc_response_entropy(tp, fp, n, ...)

## S3 method for class 'table'
calc_response_entropy(tbl, ...)

## S3 method for class 'data.frame'
calc_response_entropy(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_response_entropy(default):
- calc_response_entropy(table):
- calc_response_entropy(data.frame):

calc_rr	<i>Calculate Global Performance Index.</i>
---------	--

Description

Calculate Global Performance Index.

Usage

```
calc_rr(...)  
  
## Default S3 method:  
calc_rr(tp, fp, ...)  
  
## S3 method for class 'table'  
calc_rr(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_rr(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fp	Numeric vector of False Positives (FP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_rr(default):
- calc_rr(table):
- calc_rr(data.frame):

calc_sind	<i>Calculate Similarity Index</i>
-----------	-----------------------------------

Description

Calculate Similarity Index

Usage

```
calc_sind(...)  
  
## Default S3 method:  
calc_sind(tn, fp, tp, fn, ...)  
  
## S3 method for class 'table'  
calc_sind(tbl, ...)  
  
## S3 method for class 'data.frame'  
calc_sind(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_sind(default):
- calc_sind(table):
- calc_sind(data.frame):

calc_tnr

*Calculate Specificity (TNR)***Description**

Calculate Specificity (TNR)

Usage

```
calc_tnr(...)

## Default S3 method:
calc_tnr(tn, fp, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_tnr(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_tnr(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric, True Negatives (TN).
fp	Numeric, False Positives (FP).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti.coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_tnr(default):
- calc_tnr(table):
- calc_tnr(data.frame):

calc_tnr_macro	<i>Calculate TNR Macro.</i>
----------------	-----------------------------

Description

Calculate TNR Macro.

Usage

```
calc_tnr_macro(...)

## Default S3 method:
calc_tnr_macro(tn, fp, ...)

## S3 method for class 'table'
calc_tnr_macro(tbl, ...)

## S3 method for class 'data.frame'
calc_tnr_macro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric vector of True Negatives (TN) by class.
fp	Numeric vector of False Positives (FP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_tnr_macro(default):
- calc_tnr_macro(table):
- calc_tnr_macro(data.frame):

calc_tnr_micro	<i>Calculate TNR Micro.</i>
----------------	-----------------------------

Description

Calculate TNR Micro.

Usage

```
calc_tnr_micro(...)

## Default S3 method:
calc_tnr_micro(tn, fp, ...)

## S3 method for class 'table'
calc_tnr_micro(tbl, ...)

## S3 method for class 'data.frame'
calc_tnr_micro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tn	Numeric vector of True Negatives (TN) by class.
fp	Numeric vector of False Positives (FP) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_tnr_micro(default):
- calc_tnr_micro(table):
- calc_tnr_micro(data.frame):

calc_tpr	<i>Calculate Sensitivity (TPR)</i>
----------	------------------------------------

Description

Calculate Sensitivity (TPR)

Usage

```
calc_tpr(...)

## Default S3 method:
calc_tpr(tp, fn, ci.type, ci.level, ...)

## S3 method for class 'table'
calc_tpr(tbl, ci.type, ci.level, ...)

## S3 method for class 'data.frame'
calc_tpr(data, prediction, reference, ci.type, ci.level, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric, True Positives (TP).
fn	Numeric, False Negatives (FN).
ci.type	Either FALSE if no confidence intervals are desired or one of "agresti-coull", "agresti-coull", "ac", "asymptotic", "normal", "wald", "clopper-pearson", "cp", "exact", "jeffreys", "bayes", and "wilson". If FALSE, overwrites ci.level.
ci.level	A number between 0 and 1 for the levels of the confidence intervals that should be calculated.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_tpr(default):
- calc_tpr(table):
- calc_tpr(data.frame):

calc_tpr_macro	<i>Calculate TPR Macro.</i>
----------------	-----------------------------

Description

Calculate TPR Macro.

Usage

```
calc_tpr_macro(...)

## Default S3 method:
calc_tpr_macro(tp, fn, ...)

## S3 method for class 'table'
calc_tpr_macro(tbl, ...)

## S3 method for class 'data.frame'
calc_tpr_macro(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
tp	Numeric vector of True Positives (TP) by class.
fn	Numeric vector of False Negatives (FN) by class.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- calc_tpr_macro(default):
- calc_tpr_macro(table):
- calc_tpr_macro(data.frame):

calc_zero_one_loss	<i>Calculate Zero-One Loss.</i>
--------------------	---------------------------------

Description

Calculate Zero-One Loss.

Usage

```
calc_zero_one_loss(...)

## Default S3 method:
calc_zero_one_loss(otp, n, ...)

## S3 method for class 'table'
calc_zero_one_loss(tbl, ...)

## S3 method for class 'data.frame'
calc_zero_one_loss(data, prediction, reference, ...)
```

Arguments

...	Additional arguments. Not used.
otp	Overall True Positives (OTP).
n	Total number of observations.
tbl	A table representing the input confusion matrix. This must always have prediction on rows and reference on columns, otherwise most functions in rmetrics will generate incorrect results.
data	A data.frame containing the prediction and the reference.
prediction	Character. The name of the variable in data that contains the predictions.
reference	Character. The name of the variable in data that contains the reference values.

Methods (by class)

- `calc_zero_one_loss(default):`
- `calc_zero_one_loss(table):`
- `calc_zero_one_loss(data.frame):`

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