Package 'Tariff'

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Type Package

Title Replicate Tariff Method for Verbal Autopsy

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Description Implement the Tariff algorithm for coding cause-of-death from verbal autopsies. The Tariff method was originally proposed in James et al (2011) <DOI:10.1186/1478-7954-9-31> and later refined as Tariff 2.0 in Serina, et al. (2015) <DOI:10.1186/s12916-015-0527-9>. Note that this package was not developed by authors affiliated with the Institute for Health Metrics and Evaluation and thus unintentional discrepancies may exist between the this implementation and the implementation available from IHME.

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RoxygenNote 6.1.0

NeedsCompilation no

Repository CRAN

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R topics documented:

plot.tariff *Plot CSMF of the results obtained from Tariff algorithm*

Description

This function plots the CSMF of the fitted results.

Usage

```
## S3 method for class 'tariff'
plot(x, top = NULL, min.prob = 0, ...)
```

Arguments

x	fitted object from tariff
top	maximum causes to plot
min.prob	minimum fraction for the causes plotted
...	Arguments to be passed to/from graphic function

Examples

```
data("RandomVA3")
test <- RandomVA3[1:200, ]
train <- RandomVA3[201:400, ]
allcauses <- unique(train$cause)
fit <- tariff(causes.train = "cause", symps.train = train,
symps.test = test, causes.table = allcauses)
plot(fit, top = 10, main = "Top 5 population COD distribution")
plot(fit, min.prob = 0.05, main = "Ppulation COD distribution (at least 5%)")
```

print.tariff_summary *Print method for the summary of the results obtained from Tariff algorithm*

Description

This function prints the summary message of the fitted results.

Usage

```
## S3 method for class 'tariff_summary'
print(x, ...)
```

Arguments

x	summary object for Tariff fit
...	not used

`RandomVA3` *400 records of Sample Input*

Description

This is a dataset consisting of 400 arbitrary sample input deaths randomly sampled from cleaned PHMRC data.

Format

400 arbitrary input records.

Examples

```
data(RandomVA3)
head(RandomVA3$train)
head(RandomVA3$test)
```

`SampleCategory3` *Grouping of causes in RandomVA3*

Description

This is a matrix specifying a default grouping of the causes used in RandomVA3.

Format

17 by 2 matrix

Examples

```
data(SampleCategory3)
SampleCategory3
```

summary.tariff *Summary of the results obtained from Tariff algorithm*

Description

This function prints the summary message of the fitted results.

Usage

```
## S3 method for class 'tariff'
summary(object, top = 5, id = NULL, ...)
```

Arguments

object	fitted object from tariff
top	number of top CSMF to show
id	the ID of a specific death to show
...	not used

Examples

```
data("RandomVA3")
test <- RandomVA3[1:200, ]
train <- RandomVA3[201:400, ]
allcauses <- unique(train$cause)
fit <- tariff(causes.train = "cause", symps.train = train,
symps.test = test, causes.table = allcauses)
correct <- which(fit$causes.test[,2] == test$cause)
accuracy <- length(correct) / dim(test)[1]
summary(fit)
summary(fit, top = 10)
summary(fit, id = "p849", top = 3)
```

tariff *Replicate Tariff methods*

Description

This function implements Tariff method.

Usage

```
tariff(causes.train, symps.train, symps.test, causes.table = NULL,
  use.rank = TRUE, nboot.rank = 1, use.sig = TRUE, nboot.sig = 500,
  use.top = FALSE, ntop = 40, ...)
```

Arguments

causes.train	character vector of causes, or the column name of cause in the training data
symps.train	N.train by S matrix
symps.test	N.test by S matrix
causes.table	list of causes in the data
use.rank	logical indicator for whether using ranks instead of scores
nboot.rank	number of re-sampling for baseline rank comparison. Default to 1, which re-samples training data to have a uniform cause distribution of the same size. Set this to 0 removes bootstrapping the training dataset.
use.sig	logical indicator for whether using significant Tariff only
nboot.sig	number of re-sampling for testing significance.
use.top	logical indicator for whether the tariff matrix should be cleaned to have only top symptoms
ntop	number of top tariff kept for each cause
...	not used

Value

score	matrix of score for each cause within each death
causes.train	vector of most likely causes in training data
causes.test	vector of most likely causes in testing data
csmf	vector of CSMF
causes.table	cause list used for output, i.e., list of existing causes in the training data
use.rank	logical indicator for whether using ranks instead of scores

Author(s)

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References

James, S. L., Flaxman, A. D., Murray, C. J., & Population Health Metrics Research Consortium. (2011). *Performance of the Tariff Method: validation of a simple additive algorithm for analysis of verbal autopsies. Population Health Metrics, 9(1), 1-16.*

Serina, P., Riley, I., Stewart, A., James, S. L., Flaxman, A. D., Lozano, R., ... & Ahuja, R. (2015). *Improving performance of the Tariff Method for assigning causes of death to verbal autopsies. BMC medicine, 13(1), 1.*

Tyler H. McCormick, Zehang R. Li, Clara Calvert, Amelia C. Crampin, Kathleen Kahn and Samuel J. Clark(2016) *Probabilistic cause-of-death assignment using verbal autopsies*, http://arxiv.org/abs/1411.3042 *To appear, Journal of the American Statistical Association*

Examples

```
data("RandomVA3")
test <- RandomVA3[1:200, ]
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allcauses <- unique(train$cause)
fit <- tariff(causes.train = "cause", symps.train = train,
symps.test = test, causes.table = allcauses)
correct <- which(fit$causes.test[,2] == test$cause)
accuracy <- length(correct) / dim(test)[1]
```

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