Package ‘gamboostMSM’

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Type Package
Title Estimating multistate models using gamboost()
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Description Provides features to use function gamboost() from package mboost for estimation of multistate models
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Component-wise Functional Gradient Descent Boosting of Multi State Models

Description

Gradient boosting for Cox-type multi state models: minimization of negative partial log likelihood using component- and transition-wise base-learners.

Details

This package provides function objects to fit Cox-type multi state models using the functional gradient descent boosting algorithm as implemented in the splendid package mboost. Therefore, function family() for fitting multi state models is given, including negative log partial likelihood of a Cox-type multi state model as risk function and its negative first partial derivative with respect to the linear predictor as working response function.

Author(s)

Holger Reulen

References


See Also

mboost
breslow

Breslow estimator for cumulative baseline hazard rate

Description

This function calculates the Breslow estimator for the cumulative baseline hazard rate, given fitted linear predictor values.

Usage

breslow(f, riskset, entry, exit, trans, event)

Arguments

- **f**: fitted linear predictor values
- **riskset**: riskset list as generated by buildrisksets.
- **entry**: entry times.
- **exit**: exit times.
- **trans**: transition index.
- **event**: observed event indicator.

Details

This function calculates the Breslow estimator for the cumulative baseline hazard rate, given fitted linear predictor values.

Value

A list of length Q with each element including elements

- **times**: a vector of observed event times,
- **cbhr**: a vector of calculated cumulative hazard rate values.

Author(s)

Holger Reulen

Examples

```r
## Not run: breslow(f, riskset, entry, exit, trans, event)
```
buildrisksets

Description
This function calculates the risksets needed to boost multistate models using the family multistate.

Usage
buildrisksets(entry, exit, trans, event, statusinfo)

Arguments
entry a vector with entry times.
exit a vector with exit times.
trans a vector with transition types.
event a vector with noncensoring event indicators.
statusinfo a logical indicating if information on the calculation process should be printed.

Details
This function calculates riksets needed for family multistate.

Value
A list of length 2 with elements Ci and Ri, each vectors of length n.

Author(s)
Holger Reulen
### degreesoffreedom

#### Arguments

- **m**: a fitted multi state model using `gamboost(..., family=multistate(...))`.
- **statusinfo**: a logical indicating if information on the calculation process should be printed.

#### Details

This function calculates the degrees of freedom as part of the calculation of the Akaike Information Criterion (AIC).

#### Value

...  

#### Author(s)

Holger Reulen

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**degreesoffreedom**  
**Degrees of Freedom**

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### Description

This function calculates the degrees of freedom as part of the calculation of the Akaike Information Criterion (AIC).

### Usage

```
degreesoffreedom(m, statusinfo)
```

### Arguments

- **m**: a fitted multi state model using `gamboost(..., family=multistate(...))`.
- **statusinfo**: a logical indicating if information on the calculation process should be printed.

### Details

This function calculates the degrees of freedom as part of the calculation of the Akaike Information Criterion.
Value
A vector of length equal to the number of boosting iterations in the plugged in model object.

Author(s)
Holger Reulen

Examples

## Not run: degreesoffreedom(m, statusinfo)

helpfunctionmultistate1
...

Description
...

Usage

helpfunctionmultistate1(x, ef)

Arguments

x ... 

ef ... 

Details
...

Author(s)
Holger Reulen

Examples

## Not run: helpfunctionmultistate1(x, ef)
helpfunctionmultistate2

...
Details

... 

Value

... 

Author(s)

Holger Reulen

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**multistate**

*Family for Multistate Models*

Description

This function implements a family for fitting multistate models using `mboost`.

Usage

```r
multistate(Ri, Ci)
```

Arguments

- **Ri**: a list giving the individual (i.e., spell specific) risksets.
- **Ci**: a list giving the indexes of risksets an individual spell is a part of (see page 213 in the book Generalized Additive Models by T.J. Hastie and R.J. Tibshirani for a description).

Details

This function implements a family for multistate models and will be used inside the `gamboost` or `glmboost` function.

Value

Functions to be used inside `gamboost`.

Author(s)

Holger Reulen
plloss

plloss ... 

Description
...

Usage
plloss(event, f, Ri)

Arguments
   event ... 
   f ... 
   Ri ... 

Details
...

Value
...

Author(s)
   Holger Reulen

plotcvriskmsm  Plot Cross-validation for Boosting Multi-state Models

Description
   Plot cross-validation for boosting multi-state models.

Usage
plotcvriskmsm(cvriskMSMobject, type)

Arguments
   cvriskMSMobject
      result from cvriskMSM
   type   should all stratified results be plotted ("all", default), or only mean ("mean")
Details
...

Value
...

Author(s)
Holger Reulen
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