Package ‘gamboostMSM’

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Type Package
Title Boosting Multistate Models
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Description Contains infrastructure for using mboost::gamboost() in order to estimate 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
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 including elements

times 
  a vector of observed event times,

cbhr 
  a vector of calculated cumulative hazard rate values.

Author(s)

Holger Reulen

Examples

## Not run: breslow(f, riskset, entry, exit, trans, event)
buildrisksets  Calculation of risksets

Description
Calculates risksets needed for using 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 risksets needed for family multistate.

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

Author(s)
Holger Reulen

cvriskMSM  Cross-validation for Boosting Multi-state Models

Description
Cross-validation for Boosting Multi-state Models.

Usage
cvriskMSM(m, d, id, formulaMSM, xlist, qlist, k, riskset)
degreesoffreedom

Arguments

- m ...
- d ...
- id ...
- formulaMSM ...
- xlist ...
- qlist ...
- k ...
- riskset ...

Details

...

Value

...

Author(s)

Holger Reulen

degreesoffreedom Degrees of Freedom

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 boosted multi state model.
- 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: degreesofreedom(m, statusinfo)

```
helpfunctionmultistate1
...
```

Description

...

Usage

helpfunctionmultistate1(x, ef)

Arguments

x ...  

ef ...  

Details

...

Author(s)

Holger Reulen

Examples

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

Description
...

Usage
helpfunctionmultistate2(x, dummy)

Arguments
  x ... 
dummy ...

Details
...

Author(s)
Holger Reulen

Examples
## Not run: helpfunctionmultistate2(x, dummy)

meancentering  Mean Centering with Taking Care of the Transition Type(s)

Description
...

Usage
meancentering(d, x, q, x.name, q.name)

Arguments
  d     data set
  x     covariate
  q     transition type(s)
x.name name of the covariate for pasting the new transition type specific covariate name
q.name name of the transition type for pasting the new transition type specific covariate name
multistate

Details

... 

Value

... 

Author(s)

Holger Reulen

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**multistate**

*Family for Multistate Models*

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**Description**

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

**Usage**

```
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
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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