

Package ‘rankhazard’

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Type Package

Title Rank-hazard plots

Version 0.8

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Author Juha Karvanen

Maintainer Juha Karvanen <juha.karvanen@iki.fi>

Requires Design, survival

Description Rank-hazard plots (Karvanen and Harrell, Statistics in Medicine 2009) visualize the relative importance of covariates in a proportional hazards model. The key idea is to rank the covariate values and plot the relative hazard as a function of ranks scaled to interval $[0,1]$. The relative hazard is plotted with respect to the reference hazard, which can be e.g. the hazard related to the median of the covariate. Transformation to scaled ranks allows plotting of covariates measured in different units in the same graph, which helps in the interpretation of the epidemiological relevance of the covariates. Rank-hazard plots show the difference of hazards between the extremes of the covariate values present in the data and can be used as a tool to check if the proportional hazards assumption leads to reasonable estimates for individuals with extreme covariate values. Alternative covariate definitions or different transformations applied to covariates can be also compared using rank-hazard plots.

License GPL-2

LazyLoad yes

Repository CRAN

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rankhazard-package *Rank-hazard plots*

Description

Rank-hazard plots visualize the relative importance of covariates in a proportional hazards model. The key idea is to rank the covariate values and plot the relative hazard as a function of ranks scaled to interval [0,1]. The relative hazard is plotted with respect to the reference hazard, which can be e.g. the hazard related to the median of the covariate.

Details

Package:	rankhazard
Type:	Package
Version:	0.8
Date:	2009-06-29
License:	GPL 2
LazyLoad:	yes

The function rankhazardplot receives a coxph (package survival) object or a cph (package Design) object as an argument and creates a rank-hazard plot of the covariates. The reference values for the relative hazards and legend texts can be provided as optional arguments. Plotting parameters such as, lwd, lty, col and pch are passed to the plotting commands.

Author(s)

Juha Karvanen <juha.karvanen@iki.fi>

References

J. Karvanen, F. E. Harrell Jr., Visualizing covariates in proportional hazards model. *Statistics in Medicine*, 28:1957–1966, 2009.

Examples

```
library(survival)
model <- coxph(Surv(time,status) ~ age + sex + ph.karno, data=cancer, x=TRUE)
rankhazardplot(model)
```

rankhazardplot	<i>Create a rank-hazard plot</i>
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Description

rankhazardplot creates a rank-hazard plot of the covariates of a proportional hazards model.

Usage

```
rankhazardplot(...)
rankhazardplot.coxph(coxphobj, refvalues=NULL, x=NULL, legendtext=NULL, axistext=NULL, plottype="hazard")
rankhazardplot.cph(cphobj, refvalues=NULL, x=NULL, legendtext=NULL, axistext=NULL, plottype="hazard", ...)
rankhazardplot.default(x, coefs=NULL, xp=NULL, refvalues=NULL, legendtext=NULL, axistext=NULL, plottype="
```

Arguments

coxphobj	An object of class 'coxph' (survival).
cphobj	An object of class 'cph' (Design).
refvalues	A vector of reference values given in the same order as the covariates in the model. If NULL, the medians of each covariate are used.
x	A matrix or data frame of the covariate data. Needed if the coxphobj\$x or cphobj\$x does not exist.
legendtext	A vector of covariate names for the legend box. If NULL, the column names are from x, coxphobj\$x or cphobj\$x.
axistext	A vector of covariate names and units for the x-axis. If NULL, the column names are from x, coxphobj\$x or cphobj\$x.
plottype	Scaling for the y-axis. Either "hazard" for the relative hazard with log-scale or "loghazard" for the logarithm of the relative hazard with linear scale.
coefs	A vector of regression coefficients for the covariates. If NULL, xp is required.
xp	Predictions ("terms") for the covariates. If NULL, coefs is required and xp is calculated a product of coefs and x.
col	See documentation for par .
pch	See documentation for points .
lwd	See documentation for par .
...	Other arguments to passed to the plotting commands.

Details

The function receives a coxph (package survival) object or a cph (package Design) object as an argument and creates a rank-hazard plot of the covariates. The reference values for the relative hazards and legend texts can be provided as optional arguments. Plotting parameters such as, lwd, lty, col and pch are passed to the plotting commands.

Author(s)

Juha Karvanen

References

J. Karvanen, F. E. Harrell Jr., Visualizing covariates in proportional hazards model. *Statistics in Medicine*, 28:1957–1966, 2009.

See Also

[coxph](#) and [cph](#)

Examples

```
library(survival)
model <- coxph(Surv(time,status) ~ age + sex + ph.karno, data=cancer, x=TRUE)
rankhazardplot(model)
```

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