

Package ‘regplot’

July 26, 2018

Type Package

Title Enhanced Regression Nomogram Plot

Version 0.2

Date 2018-06-01

Description A function to plot a regression nomogram of coxph, lm and glm regression objects. Covariate distributions are superimposed on nomogram scales and the plot is animated to allow on the fly changes to distribution representation and to enable outcome calculation.

License GPL-2

Imports vioplot, sm, beanplot, survival, graphics, stats

RoxygenNote 6.0.1

NeedsCompilation no

Author Roger Marshall [aut, cre]

Maintainer Roger Marshall <rj.marshall@auckland.ac.nz>

Repository CRAN

Date/Publication 2018-07-26 08:10:06 UTC

R topics documented:

regplot 1

Index 4

regplot *Plots a regression nomogram showing covariate distribution.*

Description

regplot plots a regression nomogram. Covariate distributions are superimposed on nomogram scales and the plot is animated to allow on-the-fly changes to distribution representation and to enable outcome calculation.

Usage

```
regplot(reg, dummies = FALSE, center = TRUE, observation = NULL,
        title = NULL, points = TRUE, failtime = NULL, prfail = TRUE,
        baseS = NULL, odds = FALSE, droplines = FALSE, nsamp = 5000,
        showi = TRUE, showP = TRUE, rank = NULL, subticks = FALSE,
        interval = NULL, colors = NULL)
```

Arguments

reg	A regression object of either class <code>glm</code> , <code>glm.nb</code> , <code>lm</code> , <code>survreg</code> or <code>coxph</code>
dummies	TRUE to treat dummy indicators of factor variables as distinct binary variables, with their own nomogram panel. Otherwise different categories of the factor are represented on the same panel.
center	Produces plot in which regression score contributions of continuous data are plotted with respect to mean values of non-factors.
observation	An observation, data frame, whose values are superimposed on the plot. Must include all variables used in the regression formula.
title	A heading title written to the plot
points	If FALSE the regression scores βx are shown. Otherwise the scale is represented by a 0-100 "points" scale.
failtime	Specifies the cut-off time(s) for plotting the risk nomogram of a <code>coxph</code> or <code>survreg</code> regression (if <code>failtime=NULL</code> , cut-off is the median of time variable)
prfail	For survival models. TRUE if probability of failure before <code>failtime</code> is summarised, otherwise after <code>failtime</code> .
baseS	Only relevant for <code>coxph</code> regressions and, if non-null, specifies the baseline survival probability, or probabilities, corresponding to the specified <code>failtime</code> (otherwise this probability is computed within <code>regplot</code> using function <code>basehaz</code>).
odds	For probability outcomes (logistic, cox and <code>survreg</code> models), the output nomogram scale is odds rather than probability.
droplines	Draws faint vertical lines showing score contributions to an observation.
nsamp	The size of a random sample of data to plot distributions (if huge data plotting may be slow).
showi	Whether interactions (if present) are to be shown as a panel of the plot.
showP	Whether P-value regression coefficient asterisk codes are to be displayed.
rank	Allows panels to be ranked by importance to the regression. Importance is measured by standard deviation along nomogram scales (equivalent to standardized regression coefficients for non-factors) NULL for no ranking (ordered as the regression), otherwise "decreasing" or "increasing".
subticks	Whether to put intervening minor tick marks on axes.
interval	draws an interval (confidence or prediction) for outcomes associated with the observation (see Details)
colors	A list of colors that will override the default colors. May include: <code>dencol</code> color fill of density plots, <code>boxcol</code> color fill of frequency boxes, <code>obscol</code> color of superimposed observation, <code>spkcol</code> color of spikes.

Details

Creates a nomogram representation of a fitted regression. The distribution of covariates in the model, and of the total regression score, can be superimposed on the nomogram scales. Also the values of a particular observation can be overlaid, with outcome calculated. If interval is specified a (95%) confidence interval on the outcome is displayed. For `lm` and `glm` OLS regressions a prediction interval can be requested. The plot is active for mouse input allowing on-the-fly changes to distribution type (boxes, spikes, box plot, density, empirical cdf, violin and bean plots) and also to observation values, making it a regression calculator. The regression object `reg` parameter must have been fitted by either `glm`, `lm`, `survreg`, `coxph` or `glm.nb`. For `glm`, the supported family/link pairings are: `gaussian/identity`, `binomial/logit`, and `poisson/log`. For `survreg` the distribution may be `lognormal`, `gaussian`, `weibull`, `exponential` or `loglogistic`. For `glm.nb` (negative binomial regression) only `log-link` is allowed.

Value

If `points=TRUE` a `points.tables` object is returned as a list of dataframes, each frame giving points per covariate, and a total points-to-outcome look-up table.

Author(s)

Roger Marshall <rj.marshall@auckland.ac.nz> The University of Auckland, New Zealand

Examples

```
library(survival)
data(pbc)
pbc$catbili <- cut(pbc$bili,breaks=c(-Inf, 2, 4, Inf),
                 labels=c("low","medium","high"))
pbc$died <- pbc$status==2
pbccox <- coxph(formula = Surv(time,died) ~ age + catbili + sex +
               copper +stage + trt,data=pbc)
## Plot a Cox survival model, showing data for the first observation.
## Display risk for 730, and 1825 days
regplot(pbccox,observation=pbc[1,], failtime = c(730,1825), prfail = TRUE )
## Plot a Weibull model
pbcweib <- survreg(formula = Surv(time,died) ~ age + catbili + sex +
                  copper +stage + trt,dist="weibull", data=pbc)
regplot(pbcweib,observation=pbc[1,], failtime = 1825, prfail = TRUE )
## Plot a logistic regression, showing odds scale and confidence interval
pbcglm <- glm(died ~ age + catbili + sex + copper,family = "binomial", data=pbc )
regplot(pbcglm, observation=pbc[1,], odds=TRUE,interval="confidence")
```

Index

regplot, 1