Package 'splineplot'

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Type Package

Title Visualization of Spline Effects in GAM and GLM Models

Version 0.1.1

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Description Creates 'ggplot2'-
based visualizations of smooth effects from GAM (Generalized Additive Models)
fitted with 'mgcv' and spline effects from GLM (Generalized Linear Models). Supports interaction terms
and provides hazard ratio plots with histograms for survival analysis.
Wood (2017, ISBN:9781498728331) provides comprehensive methodology for generalized additive models.

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Encoding UTF-8

Imports ggplot2 (>= 3.0.0), stats

Suggests mgcv, survival, splines, testthat (>= 3.0.0), knitr,
rmarkdown, covr, pkgdown

RoxygenNote 7.3.2

VignetteBuilder knitr

URL https://github.com/jinseob2kim/splineplot,
https://jinseob2kim.github.io/splineplot/

BugReports https://github.com/jinseob2kim/splineplot/issues

Config/testthat/edition 3

NeedsCompilation no

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Repository CRAN

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extract_spline_data   *Extract Spline Data*

Description

Extract predictions and confidence intervals from fitted models

Usage

```
extract_spline_data(
  fit,
  data,
  xvar,
  refx,
  model_info,
  term_index = 1,
  log_scale = FALSE,
  ci_level = 0.95
)
```

Arguments

fit	Fitted model object
data	Data frame
xvar	Variable name
refx	Reference value
model_info	Model information list
term_index	Which smooth term to use (for multiple s() terms)
log_scale	Whether to use log scale
ci_level	Confidence level

Value

Data frame with predictions

Examples

```
# Create sample data
set.seed(123)
n <- 100
x <- rnorm(n, mean = 50, sd = 10)
y <- rbinom(n, 1, plogis(-0.05*(x - 50)))
dat <- data.frame(x = x, y = y)

# Fit GLM with splines
library(splines)
fit <- glm(y ~ ns(x, df = 4), family = binomial(), data = dat)

# Extract spline data
model_info <- list(type = "glm", family = "binomial", ylabel = "Odds Ratio")
df <- extract_spline_data(fit, dat, "x", refx = 50, model_info,
                          log_scale = FALSE, ci_level = 0.95)
head(df)
```

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splineplot   *Spline Plot for GAM and GLM Models*

Description

Create ggplot2 visualizations of smooth or spline effects from GAM and GLM models. Supports Linear, Logistic, Poisson, and Cox models with interaction terms. Handles GAM smooth terms (s(), te(), ti()), GLM splines (ns(), bs()), and Cox pspline().

Usage

```
splineplot(
  fit,
  data,
  xvar = NULL,
  by_var = NULL,
  refx = NULL,
  term_index = 1,
  bins = 12,
  xlim = NULL,
  ylim = NULL,
  show_hist = NULL,
  log_scale = FALSE,
  ci_level = 0.95,
  show_ref_point = TRUE,
  colors = NULL,
  ribbon_ci = FALSE,
  xlab = NULL,
  ylab = NULL,
```

```
    ylab_right = "Percent of Population"
)
```

Arguments

`fit`	A fitted model object (gam, glm, lm, coxph)
`data`	The data frame used to fit the model
`xvar`	Character string specifying the variable name for x-axis (default: first spline term)
`by_var`	Character string specifying the interaction variable (default: auto-detect from model)
`refx`	Reference value for the x variable (default: median)
`term_index`	For GAM with multiple smooth terms, which term to plot (default: 1)
`bins`	Number of bins for histogram (default: 12)
`xlim`	X-axis limits (default: range of x variable)
`ylim`	Y-axis limits (default: auto-determined, e.g., c(0.25, 2.0) for HR/OR/RR)
`show_hist`	Logical, whether to show histogram (default: TRUE)
`log_scale`	Logical, whether to use log scale for OR/RR/HR (default: FALSE)
`ci_level`	Confidence interval level (default: 0.95)
`show_ref_point`	Logical, whether to show reference point marker (default: TRUE)
`colors`	Named vector of colors for by_var levels
`ribbon_ci`	Logical, whether to use ribbon style for CI (default: FALSE, uses dotted lines)
`xlab`	Custom x-axis label (default: xvar name)
`ylab`	Custom y-axis label (default: auto-determined based on model type)
`ylab_right`	Custom right y-axis label for histogram (default: "Percent of Population")

Value

A ggplot2 object

Examples

```
# Create sample data
set.seed(123)
n <- 200
x <- rnorm(n, mean = 50, sd = 10)
lp <- -0.05*(x - 50) + 0.001*(x - 50)^2
y <- rbinom(n, 1, plogis(lp))
dat <- data.frame(x = x, y = y)

# GLM with natural splines
library(splines)
fit_glm <- glm(y ~ ns(x, df = 4), family = binomial(), data = dat)
p <- splineplot(fit_glm, dat)
```

```
# GAM example (requires mgcv)
if (requireNamespace("mgcv", quietly = TRUE)) {
  fit_gam <- mgcv::gam(y ~ s(x), family = binomial(), data = dat)
  p2 <- splineplot(fit_gam, dat)
}

# Cox model example (requires survival)
if (requireNamespace("survival", quietly = TRUE)) {
  time <- rexp(n, rate = exp(lp/2))
  status <- rbinom(n, 1, 0.8)
  dat$time <- time
  dat$status <- status
  fit_cox <- survival::coxph(survival::Surv(time, status) ~ ns(x, df = 4),
                             data = dat)
  p3 <- splineplot(fit_cox, dat)
}
```

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