Package ‘WR’

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Type Package
Title Win Ratio Analysis
Version 0.1.1
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Description Contains win-ratio analysis routines for prioritized composite time-to-event outcomes, e.g., death and non-fatal events. These routines include functions to fit the proportional win-fractions (PW) model and to compute and plot the standardized score process to assess the proportionality assumption.
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Description

These are a subset of the data on the non-ischemic patients in the HF-ACTION study.

Usage

non_ischemic

Format

A data frame with 751 rows and 16 variables:

- **ID**: subject IDs
- **time**: event times
- **status**: event status
- **trt_ab**: treatment indicator: 1=exercise training; 0=usual care
- **age**: patient age in years
- **sex**: 1=female; 2=male
- **Black.vs.White**: 1=black; 0=otherwise
- **Other.vs.White**: 1=race other than black or white; 0=otherwise
- **bmi**: body mass index
- **bipllvef**: (biplane) left-ventricular ejection fraction
- **hyperten**: indicator for history of hypertension
- **COPD**: indicator for history of COPD
- **diabetes**: indicator for history of diabetes
- **acei**: indicator for current use of ACE inhibitors
- **betab**: indicator for current use of beta blockers
- **smokecurr**: indicator for current smoker

References

Description

Plot the standardized score processes.

Usage

## S3 method for class 'pwreg.score'
plot(x, k, xlab = "Time", ylab = "Standardized score", lty = 1, frame.plot = TRUE, add = FALSE, ylim = c(-3, 3), xlim = NULL, lwd = 1, ...)

Arguments

x an object of class pwreg.score.
k A positive integer indicating the order of covariate to be plotted. For example, k=3 requests the standardized score process for the third covariate in the covariate matrix Z.
xlab a title for the x axis.
ylab a title for the y axis.
lty the line type. Default is 1.
frame.plot a logical variable indicating if a frame should be drawn in the 1D case.
add a logical variable indicating whether add to current plot?
ylim a vector indicating the range of y-axis. Default is (-3, 3).
xlim a vector indicating the range of x-axis. Default is NULL.
lwd the line width, a positive number. Default is 1.
... further arguments passed to or from other methods

Value

a plot of the standardized score process for object pwreg.score.

See Also

score.proc

Examples

# see the example for score.proc
print.pwreg

Print the results of the proportional win-fractions regression model

Description

Print the results of the proportional win-fractions regression model

Usage

## S3 method for class 'pwreg'
print(x, ...)

Arguments

x an object of class pwreg.

... further arguments passed to or from other methods

Value

print the results of pwreg object

See Also

pwreg

Examples

# see the example for pwreg

print.pwreg.score

Print information on the content of the pwreg.score object

Description

Print information on the content of the pwreg.score object

Usage

## S3 method for class 'pwreg.score'
print(x, ...)

Arguments

x A object of class pwreg.score.

... further arguments passed to or from other methods
**pwreg**

**Value**

print the results of `pwreg.score` object

**See Also**

`score.proc`

**Examples**

```r
# see the example for score.proc
```

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<td>time</td>
<td>a vector of all the event times.</td>
</tr>
<tr>
<td>status</td>
<td>a vector of the status for all the event. 0: censoring, 1: death and 2: non-fatal event.</td>
</tr>
<tr>
<td>Z</td>
<td>a matrix or a vector of covariates.</td>
</tr>
<tr>
<td>ID</td>
<td>a vector of unique subject-level identifiers.</td>
</tr>
<tr>
<td>rho</td>
<td>a non-negative number as the power of the survival function used in the weight. Default (rho=0) is recommended.</td>
</tr>
<tr>
<td>eps</td>
<td>precision for the convergence of Newton-Raphson algorithm.</td>
</tr>
<tr>
<td>maxiter</td>
<td>maximum number of iterations allowable for the Newton-Raphson algorithm.</td>
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**Description**

Fit priority-adjusted proportional win-fractions (PW) regression model.

**Usage**

```r
pwreg(time, status, Z, ID, rho = 0, eps = 1e-04, maxiter = 50)
```

**Value**

An object of class `pwreg` with the following components:

- `beta`: a vector of estimated regression coefficients.
- `Var`: estimated covariance matrix for `beta`.
- `conv`: boolean variable indicating whether the algorithm converged within the maximum number of iterations.

**References**

score.proc

Computes the standarized score processes

Description

Computes the standarized score processes for the covariates.

Usage

score.proc(obj, t = NULL)

Arguments

obj an object of class pwreg.

A vector containing times. If not specified, the function will use all unique event times from the data.

Value

An object of class pwreg.score consisting of t: a vector of times; and score: a matrix whose rows are the standarized score processes as a function of t.
References


See Also

pwreg

Examples

library(WR)
head(non_ischemic)

# Randomly sample 200 subjects from non_ischemic data
id_unique <- unique(non_ischemic$ID)
set.seed(2019)
id_sample <- sample(id_unique, 200)

non_ischemic_reduce <- non_ischemic[non_ischemic$ID %in% id_sample, ]
# Use the reduced non_ischemic data for analysis
nr <- nrow(non_ischemic_reduce)
p <- ncol(non_ischemic_reduce)-3
ID <- non_ischemic_reduce[, "ID"]
time <- non_ischemic_reduce[, "time"]
status <- non_ischemic_reduce[, "status"]
Z <- as.matrix(non_ischemic_reduce[,4:(3+p)],nr,p)
pwreg.obj <- pwreg(time=time,status=status,Z=Z,ID=ID)
score.obj <- score.proc(pwreg.obj)
# plot the standardized score process for the first covariate
plot(score.obj, k = 1)
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