Package ‘Wcompo’

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**CompoML**

*Fit a proportional means regression model for weighted composite endpoint of recurrent event and death*

**Description**

Fit a semiparametric proportional means regression model for the weighted composite endpoint of recurrent event and death (Mao and Lin, 2016). (Jared D. Huling (ORCID: 0000-0003-0670-4845) contributed to the optimization of this code.)

**Usage**

```r
CompoML(id, time, status, Z, w = NULL, ep = 1e-04)
```

**Arguments**

- `id`: A vector of unique patient identifiers.
- `time`: A vector of event times.
- `status`: A vector of event type labels. 0: censoring; 1: death; 2, 3,..., \( K \): different types of (possibly recurrent) nonfatal event.
- `Z`: Covariate matrix (must be time-constant).
- `w`: A \( K \)-vector of weights assigned to event types 1 (death), 2, ... , \( K \) (nonfatal events); If NULL, an unweighted endpoint is modeled (i.e., with \( w = c(1, 1, \ldots, 1) \)).
- `ep`: Convergence threshold for the Newton-Raphson algorithm.

**Value**

An object of class `CompoML` with the following components. `beta`: a vector of estimated regression coefficients (log-mean ratios); `var`: estimated covariance matrix for `beta`; `t`: unique event times; `y`: estimated baseline mean function (of `t`).

**References**


**See Also**

`plot.CompoML`, `print.CompoML`
Examples

```r
## load package and data
library(Wcompo)
head(hfmock)
## fit a weighted PM (w_D=2, w_1=1)
obj <- CompoML(hfmock$id,hfmock$time,hfmock$status,hfmock[,c("Training","HF.etiology")],
w=c(2,1))
## print out the result
obj

oldpar <- par(mfrow = par("mfrow"))
par(mfrow=c(1,2))
## plot the estimated mean function for
## non-ischemic patients by treatment
plot(obj,c(1,0),ylim=c(0,1.5),xlim=c(0,50),
     main="Non-ischemic",
     xlab="Time (months)",cex.main=1.2,lwd=2)
plot(obj,c(0,0),add=TRUE,cex.main=1.2,lwd=2,lty=2)
legend("topleft",lty=1:2,lwd=2,c("Exercise training","Usual care"))

## plot the estimated mean function for
## ischemic patients by treatment
plot(obj,c(1,1),ylim=c(0,1.5),xlim=c(0,50),
     main="Ischemic",
     xlab="Time (months)",cex.main=1.2,lwd=2)
plot(obj,c(0,1),add=TRUE,cex.main=1.2,lwd=2,lty=2)
legend("topleft",lty=1:2,lwd=2,c("Exercise training","Usual care"))
par(oldpar)
```

**hfmock**

*A dataset from the HF-ACTION trial*

Description

The Heart Failure: A Controlled Trial Investigating Outcomes of Exercise Training (HF-ACTION) study was conducted between 2003–2007 to investigate whether adding exercise training to the usual care of heart failure patients improves their cardiovascular outcomes (O’Conner et al., 2009). This is a mock dataset consisting of 963 patients with baseline information about heart failure etiology.

Usage

hfmock
Format

A data frame with 1,315 rows and 5 variables:

- **id**  Unique patient identifier.
- **time**  Event time (months).
- **status**  Event type; $2$ = recurrent hospitalization, $1$ = death, $0$ = censoring.
- **Training**  $1$ = exercise training, $0$ = usual care.
- **HF.etiology**  $1$ = ischemic, $0$ = non-ischemic.

References


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plot.CompoML

Plot the predicted mean function under the proportional means model

Description

Plot the predicted mean function under the proportional means model for a new observation.

Usage

```r
## S3 method for class 'CompoML'
plot(x,
     z = NULL,
     xlab = "Time",
     ylab = "Mean function",
     lty = 1,
     frame.plot = FALSE,
     add = FALSE,
     ...
)
```

Arguments

- **x**  An object returned by `CompoML`.
- **z**  Covariate vector for the new observation. If `NULL`, the baseline mean function will be plotted.
- **xlab**  A label for the x axis.
- **ylab**  A label for the y axis.
- **lty**  Line type for the plot.
print.CompoML

frame.plot  Boolean argument indicating whether to add a rectangular frame to the plot.
add        If TRUE, the curve will be overlaid on an existing plot; otherwise, a separate
            plot will be constructed.
...        Other arguments that can be passed to the underlying plot method.

Value

No return value, called for side effects.

See Also

CompoML, print.CompoML.

Examples

    ## see example for CompoML
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