

Package ‘sccr’

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Type Package

Title The Self-Consistent, Competing Risks (SC-CR) Algorithms

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Description The SC-SR Algorithm is used to calculate fully non-parametric and self-consistent estimators of the cause-specific failure probabilities in the presence of interval-censoring and possible making of the failure cause in a competing risks environment. In the version 2.0 the function creating the probability matrix from double-censored data is added.

Imports dplyr

License GPL-2

NeedsCompilation no

Depends R (>= 3.5.0)

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 sccr-package

The Self-Consistent, Competing Risks (SC-CR) Algorithms

Description

The SC-SR Algorithm is used to calculate the cause-deleted life expectancy improvement for left and right censored data. In the version 2.0 the function creating the probability matrix from double-censored data is added.

Author(s)

Peter Adamic, Alicja Wolny-Dominiak Maintainer: <alicja.wolny-dominiak@ue.katowice.pl>

References

1. Adamic, P., Caron, S. (2014), "SC-CR Algorithms with Informative Masking", Scandinavian Actuarial Journal, 2014(4), 339-351.
2. Adamic, P., Dixon, S., Gillis, D. (2010), "Multiple Decrement Modeling in the Presence of Interval Censoring and Masking", Scandinavian Actuarial Journal, 2010(4), 312-327.
3. Adamic, P., Ouadah, S. (2009), "A Kernel Method for Modeling Interval Censored Competing Risks", South African Statistical Journal, 43(1), 1-20.
4. Turnbull, B. (1976). The Empirical Distribution Function with Arbitrarily Grouped, Censored and Truncated Data, Journal of the Royal Statistical Society. Series B (Methodological), 38(3), 290-295.

 alpha

The alpha matrix

Description

The matrix corresponding $I_{(ij)}$ function

Usage

```
alpha(data, tau)
```

Arguments

data	input matrix of probabilities
tau	the vector of time points corresponding to columns in input matrix

References

Adamic, P., Caron, S. (2014), "SC-CR Algorithms with Informative Masking", Scandinavian Actuarial Journal, 2014(4), 339-351.

Examples

```
data(censoredMatrix)
res <- inputM(censoredMatrix)

alpha(res$input, res$tau)
```

censoredMatrix	<i>The double-censored data</i>
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Description

A data frame with 8 observations on the following 5 variables.

Format

L a numeric vector
 R a numeric vector
 C1 a numeric vector
 C2 a numeric vector
 C3 a numeric vector

Examples

```
data(censoredMatrix)
str(censoredMatrix)
```

inputM	<i>The probability matrix creator</i>
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Description

The function creating the probability matrix and tau time vector from the double-censored data.

Arguments

data	censored data
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Value

input	the probability matrix
tau	time tau

Author(s)

Alicja Wolny-Dominiak, Peter Adamic

Examples

```
data(censoredMatrix)
res <- inputM(censoredMatrix)

res$input
res$tau
```

survCompeting

Self-Consistent, Competing Risks (SC-CR) Algorithms

Description

This package describes an algorithm for producing fully non-parametric and self-consistent estimators of the cause-specific failure probabilities in the presence of interval-censoring and possible masking of the failure cause in a competing risks environment. It is a generalization of Turnbull's (1976) classic univariate algorithm. The algorithm was published in Adamic et al. (2010) and Adamic & Caron (2014).

Usage

```
survCompeting(data, tau, n, nc, epsilon)
```

Arguments

data	input matrix of probabilities
tau	the vector of time points corresponding to columns in input matrix
n	the number of intervals in the dataset corresponding to rows in input matrix
nc	the number of causes (competing risks)
epsilon	small predetermined value > 0

Value

Yj	estimated number at risk at time tau_j
djc	estimated number of events occurring at time tau_j by cause c
pjc	estimated probability for risk at time tau_j by cause c
djList	the list of d_j for every cause c
pjList	the list of p_j for every cause c
pjListold	the list of p_j for every cause c in the (iter - 1) iteration
iter	the number of iterations in the algorithm

Author(s)

Peter Adamic, Alicja Wolny-Dominiak

References

1. Adamic, P., Caron, S. (2014), "SC-CR Algorithms with Informative Masking", *Scandinavian Actuarial Journal*, 2014(4), 339-351.
2. Adamic, P., Dixon, S., Gillis, D. (2010), "Multiple Decrement Modeling in the Presence of Interval Censoring and Masking", *Scandinavian Actuarial Journal*, 2010(4), 312-327.
3. Adamic, P., Ouadah, S. (2009), "A Kernel Method for Modeling Interval Censored Competing Risks", *South African Statistical Journal*, 43(1), 1-20.
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Examples

```
data(censoredMatrix)
df <- inputM(censoredMatrix)

res <- survCompeting(df$input, df$tau, 8, 3, 0.01)
res

#summary
round(res$Yj, 2)
round(res$djc, 2)
round(res$ajc, 2)
res$iter
sum(unlist(res$pjList))
sum(unlist(res$pjListold))
```

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