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

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Contents

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_(ijy) 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 *The double-censored data*

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 *The probability matrix creator*

Description

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

Arguments

`data`	censored data

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 predermined value > 0

Value

`Yj`	estimated number at risk at time tau_j
`djc`	estimated number of events occuring 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.

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.

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$pjc, 2)
res$iter
sum(unlist(res$pjList))
sum(unlist(res$pjListold))
```

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