

Package ‘IsoCI’

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Type Package

Title Confidence intervals for current status data based on transformations and bootstrap.

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Description Some functions for confidence intervals for current status data based on transformations and bootstrap.

Depends R(>= 2.13.1), KernSmooth

License GPL (>= 2)

NeedsCompilation no

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bandwidth.choose	<i>Selection of optimal bandwidth for nonparametric density estimation of current status failure times.</i>
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Description

Conduct likelihood-based leave-one-out cross-validation (loocv) to select optimal bandwidth for nonparametric density estimation of current status failure times.

Usage

```
bandwidth.choose(h.set, z, d)
```

Arguments

h.set	a set of bandwidth values
z	a vector of covariate
d	a vector of outcome

Value

h.opt	an optimal bandwidth
result.table	the 1st column: bandwidth, the 2nd column: loocv-log-likelihood value

Author(s)

Choi, B. Y., Fine, J. P., and Brookhart, M. A.

References

Choi, B. Y., Fine, J. P., and Brookhart, M. A. (2013) Practicable confidence intervals for current status data. *Statistics in Medicine* 32, 1419-1428.

Ghosh, D., Banerjee, M., and Biswas, P. (2008). Inference for Constrained Estimation of Tumor Size Distributions. *Biometrics* 64, 1009-1017.

Groeneboom, P. and Wellner, J. A. (1992). *Information Bounds and Nonparametric Maximum Likelihood Estimation*. Boston: Birkhauser.

See Also

[iso.ci](#)

Examples

```
# simulating data

n <- 50
z <- rexp(n)
pz <- pexp(z)
d <- rbinom(n,1,pz)

# finding optimal bandwidth for estimating a density function
h.opt = bandwidth.choose(h.set=seq(0.1,2,len=15),z=z,d=d)

# Untransformed and transformed Wald-type confidence intervals
fit.wald <- iso.ci(z=z,d=d,h.opt=h.opt$h.opt)

# Bootstrap confidence intervals
## Not run: fit.bt <- iso.ci(z=z,d=d,method="bt",nboots=100)
```

```
# Untransformed and transformed bootstrap-Wald-type confidence intervals
## Not run: fit.bt.wald <- iso.ci(z=z,d=d,method="bt.wald",nboots=100)
```

iso.ci	<i>Calculate confidence intervals for cumulative distribution function of current stuas failure times</i>
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Description

Calculate untransformed and transformed Wald-type confidence intervals, bootstrap confidence intervals and bootstrap-Wald confidence intervals for cumulative distribution function of current stuas failure times.

Usage

```
iso.ci(z, d, alpha=0.05, h.opt=0.3, nboots=500, method="wald.tr", seed=1253)
```

Arguments

z	a vector of covariate
d	a vector of outcome
alpha	a test level for $100 \cdot (1 - \alpha)$ two-sided confidence intervals.
h.opt	an optimal bandwidth for estimating g (for "wald.tr" only)
nboots	the number of bootstrap iteration (for "bt" and "bt.wald")
method	"wald.tr" for untransformed and transformed Wald confidence intervals, "bt" for bootstrap confidence intervals, and "bt.wald" for bootstrap-Wald confidence intervals.
seed	seed value for bootstarp and bootstrap-Wald methods

Value

z	ordered covariate
yf	NPMLE estimate for cumulative distribution function
wald.lhm	left side of non-transformed Wald CI
wald.rhm	right side of non-transformed Wald CI
logit.lhm	left side of logit transformed Wald CI
logit.rhm	right side of logit transformed Wald CI
llog.lhm	left side of log(-log) transformend Wald CI
llog.rhm	right side of log(-log) transformend Wald CI
nbt.lhm	left side of bootstrap CI
nbt.rhm	right side of bootstrap CI
bt.wald.lhm	left side of non-transformed bootstrap-Wald CI

bt.wald.rhm	right side of non-transformed bootstrap-Wald CI
bt.logit.lhm	left side of logit transformed bootstrap-Wald CI
bt.logit.rhm	right side of logit transformed bootstrap-Wald CI
bt.llog.lhm	left side of log(-log) transformend bootstrap-Wald CI
bt.llog.rhm	right side of log(-log) transformend bootstrap-Wald CI

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References

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See Also

[bandwidth.choose](#)

Examples

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n <- 50
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d <- rbinom(n,1,pz)

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h.opt = bandwidth.choose(h.set=seq(0.1,2,len=15),z=z,d=d)

# Untransformed and transformed Wald-type confidence intervals
fit.wald <- iso.ci(z=z,d=d,h.opt=h.opt$h.opt)

# Bootstrap confidence intervals
## Not run: fit.bt <- iso.ci(z=z,d=d,method="bt",nboots=100)

# Untransformed and transformed bootstrap-Wald-type confidence intervals
## Not run: fit.bt.wald <- iso.ci(z=z,d=d,method="bt.wald",nboots=100)
```

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