

Package ‘SSB’

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Type Package

Title The Sample Size for complex estimators using the procedure SSB

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Description

This package provides some functions for computing the sample size required for complex estimators in estimation problems, using the SSB method.

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URL <https://github.com/hadht/NGSSEML-R-Package>

Depends bootstrap,

stats,

R (>= 3.5.0)

Suggests testthat (>= 2.1.0)

RoxygenNote 7.2.2

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SSB	<i>The Sample Size for complex estimators using the procedure SSB</i>
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Description

The computation of the Sample Size in estimations problems with complex estimators using the procedure SSB.

Usage

```
SSB(y=y,m=c(5,10),errormarginset=NULL,B=20000,alpha=0.05,q=0.50,N=1000000)
```

Arguments

y	is the pilot sample.
m	is the grid of sample size to be specified.
errormarginset	is the margin error must be set to compute the respective sample size.
B	is the number of bootstrap samples.
alpha	is the Type I Error.
q	is the order of the quantile to be estimated.
N	is the population size.

Value

out	If the argument of the error margin is null, this function returns a list with the error margin related to the specified grid sample size. Otherwise, it also returns the sample size for the error margin fixed.
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Note

<https://github.com/hadht/SSBoot>

Author(s)

Thiago Rezende dos Santos

References

REZENDE, T. (2023). Sample size calculations with resampling methods: an application to the quantile estimation of urinary iodine concentration. Statistical Methods in Medical Research. To appear.

Examples

```
#Libraries:
library("SSB")
library("bootstrap")
#####
## Main Program: Results
#####
#### Initial values
#set seed:
set.seed(100)
# Population Size:
N=1000
# Number of Bootstrap Samples:
B=500
# Error Type I:
alpha=0.05
#Quantile to be estimated:
q<-0.50
#Load UI Data (pilot sample):
#n=65 obs.
data(UI)
y=UI
nvar<-c(20,30,35,40,45,50,55,60,65,70,75,80,85,90,95,100,150,300)
```

```

na=length(nvar)

#####
#Compute The Sample Size using the procedure SSB:
#####
# Call SSB function
# Error margin with the procedure SSB:
errormarginset=c(29)
damboot2=SSB(y=y,m=nvar,errormarginset,B=B,alpha=alpha,q=q,N=N)
damboot2
# sample sizes
nvar1=damboot2[[1]]
# Error margin with the procedure SSB:
damboot=damboot2[[2]]

#####
#Graphs:
#####
#Median: #####
minn=min(damboot)
mann=max(damboot)
plot(nvar1,damboot,ylim=c(minn,mann),xlab="n",type='o',ylab="d",pch=c(2))
lines(c(0,43),c(29.6,29.6),type='l',col="red",lty=c(2))
lines(c(43,43),c(0,29.6),type='l',col="red",lty=c(2))
legend(200,40,c("SSB"),pch=c(2))
title("Median")

#P_75: #####
minn=min(damboot)
mann=max(damboot)
plot(nvar1,damboot,ylim=c(minn,mann),xlab="n",type='o',ylab="d",pch=c(2))
lines(c(0,106),c(29.6,29.6),type='l',col="red",lty=c(2))
lines(c(106,106),c(0,29.6),type='l',col="red",lty=c(2))
legend(200,40,c("SSB"),pch=c(2))
title("75 Quantile")

```

UI

Urinary iodine concentration (UI)

Description

The UI data consist of 65 observations of pregnant women who visit a hospital in Belo Horizonte, MG, Brazil.

Usage

```
data(UI)
```

Details

The data is used as a pilot sample in an application in our paper (Rezende, 2023).

Source

<https://github.com/hadht/SSBoot>

References

REZENDE, T. (2023). Sample size calculations with resampling methods: an application to the quantile estimation of urinary iodine concentration. *Statistical Methods in Medical Research*. To appear.

Examples

```
data(UI)
```

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