

# Package ‘Neighboot’

June 1, 2022

**Title** Neighborhood Bootstrap Method for RDS

**Version** 1.0.1

**Date** 2022-05-31

**Author** Mamadou Yauck [aut, cre], Erica E. M. Moodie [aut]

**Maintainer** Mamadou Yauck <yauck.mamadou@uqam.ca>

**Description** A bootstrap method for Respondent-Driven Sampling (RDS) that relies on the underlying structure of the RDS network to estimate uncertainty.

**License** GPL-3

**LazyData** true

**RoxygenNote** 7.2.0

**Imports** RDSreeboot, igraph, RDS, dplyr

**Depends** R (>= 2.10)

**Encoding** UTF-8

**NeedsCompilation** no

**Repository** CRAN

**Date/Publication** 2022-05-31 23:20:08 UTC

## R topics documented:

neighb . . . . .	2
pop.network . . . . .	3
to.rds . . . . .	3

<b>Index</b>	<b>5</b>
--------------	----------

---

**neighb***Compute standard errors and confidence intervals*

---

**Description**

This function estimate standard errors and compute confidence intervals from an RDS sample using the neighborhood bootstrap method.

**Usage**

```
neighb(RDS.data, quant=c(0.025, 0.975),  
       method=c("percentile", "Wald"), B=1000)
```

**Arguments**

RDS.data	A list containing the following objects: nodes a numeric vector containing IDs edges a list containing two vectors: node1 for the recruiter's ID and node2 for the recruit's ID. traits a data frame containing respondents' traits. degree a vector containing each node's degree, or number of social connections.
quant	a vector of positive integers between 0 and 1, representing quantiles to be estimated.
method	a character string representing the method for computing confidence intervals, either percentile or Wald. Default is percentile.
B	the number of bootstrap repetitions. Default is 1000.

**Details**

The function `neighb` compute standard errors and confidence intervals using the neighborhood bootstrap method for RDS. Confidence intervals can be computed using the percentile method or the studentized method.

**Value**

A matrix of estimated standard errors and quantiles. Each row represents a trait.

**Author(s)**

Mamadou Yauck <yauck.mamadou@uqam.ca> and Erica E. M. Moodie.

**Examples**

```
#Load the synthetic population network dataset.
data("pop.network")

#Draw an RDS sample from the simulated network using the samplerDS function
#from the package RDStreeboot.
require(RDStreeboot)
RDS.samp <- sample.RDS(pop.network$traits, pop.network$adj.mat, 200, 10,
  3, c(1/6,1/3,1/3,1/6), FALSE)

#Compute 95% confidence intervals using the percentile method
neighb(RDS.data=RDS.samp, quant=c(0.025, 0.975),method="percentile", B=100)
```

---

pop.network

*Population network*


---

**Description**

Population network

**Usage**

pop.network

**Format**

A list containing two elements:

traits a dataframe of 2000 rows and 4 columns

adj.mat an adjacency matrix

---

to.rds

*Transform an sample.RDS object to an rds.data.frame object.*


---

**Description**

This function transforms an output from the `sample.RDS` function of the **RDStreeboot** package to an `rds.data.frame` object of the **RDS** package.

**Usage**

to.rds(RDS.data)

**Arguments**

`RDS.data` A list containing the following objects:  
`nodes` a numeric vector containing IDs  
`edges` a list containing two vectors: `node1` for the recruiter's ID and `node2` for the recruit's ID.  
`traits` a data frame containing respondents' traits.  
`degree` a vector containing each node's degree, or number of social connections.

**Value**

An `rds.data.frame` object.

**Author(s)**

Mamadou Yauck <yauck.mamadou@uqam.ca> and Erica E. M. Moodie.

**Examples**

```
#Load the synthetic population network dataset.
data("pop.network")

#Draw an RDS sample from the simulated network using the sampleRDS function
#from the package RDStreeboot.
require(RDStreeboot)
RDS.samp <- sample.RDS(pop.network$traits, pop.network$adj.mat, 200, 10,
  3, c(1/6,1/3,1/3,1/6), FALSE)

#Tranform RDS.samp to an rds.data.frame object
require(RDS)
to.rds(RDS.data=RDS.samp)
```

# Index

## \* datasets

pop.network, 3

neighb, 2

pop.network, 3

to.rds, 3