Package 'pps'

February 20, 2015

Version 0.94

Date 2005-11-21

Title Functions for PPS sampling

Author Jack G. Gambino <jack.gambino@gmail.com>

Maintainer Jack G. Gambino <jack.gambino@gmail.com>

Description The pps package contains functions to select samples using PPS (probability proportional to size) sampling. It also includes a function for stratified simple random sampling, a function to compute joint inclusion probabilities for Sampford's method of PPS sampling, and a few utility functions. The user's guide pps-ug.pdf is included.

License GPL (>= 2)

Repository CRAN

Date/Publication 2012-10-29 08:59:30

NeedsCompilation no

R topics documented:

calif *California places*

Description

See user's guide

Note

See the user's guide, pps.pdf, for more information.

califcty *California counties*

Description

See user's guide

Note

See the user's guide, pps.pdf, for more information.

permuteinstrata *Randomize units within strata*

Description

Randomize the order of units within each stratum

Usage

```
permuteinstrata(stratsizes)
```

Arguments

stratsizes	A vector containing the size of each stratum

Value

Returns the vector of permuted indices. In the example below, the returned vector has 29 elements.

Note

See the user's guide, pps.pdf, for more information.

Examples

```
stratsizes <- c(9,10,10)  # strata have 9, 10 and 10 units, respectively
permuteinstrata(stratsizes)
```

---

pps1 *Select one unit with PPS*

Description

Use PPS systematic sampling to select a single unit out of N

Usage

```
pps1(sizes)
```

Arguments

sizes	A vector of the sizes of the units in the population

Value

Returns the index of the unit that was selected

Note

See the user's guide, pps.pdf, for more information.

Examples

```
sizes <- c(9,2,5,17,4,21,15,7,4,11,23,23,14)
sampleindex <- pps1(sizes)
```

---

ppss *PPS systematic sampling*

Description

Use PPS systematic sampling to select a sample of n units out of N

Usage

```
ppss(sizes,n)
```

Arguments

sizes	A vector of the sizes of the units in the population
n	The sample size

Value

Returns the indices of the units that were selected in the sample

Note

See the user's guide, pps.pdf, for more information.

Examples

```
sizes <- c(9,2,5,17,4,21,15,7,4,11,23,23,14)
sampleindices <- ppss(sizes,4)
```

---

ppssstrat *Stratified PPS systematic sampling*

Description

In each stratum, select a sample using pps systematic sampling

Usage

```
ppssstrat(sizes,stratum,n)
```

Arguments

sizes	A vector of the sizes of the units in the population, sorted by stratum
stratum	A vector of stratum codes, in the same order
n	A vector containing the sample size in each stratum

Value

Returns the indices of the units that were selected in the sample

Note

ppssstrat calls ppss once per stratum. See the user's guide, pps.pdf, for more information.

Examples

```
sizes <- c(1:5,10:6)*10
strat <- c(1,1,1,2,2,3,3,3,3,3)
n <- c(2,1,3)
ppssstrat(sizes,strat,n)
```

ppswr *PPS sampling with replacement*

Description

Use PPS sampling to select a sample of n units out of N with replacement

Usage

```
ppswr(sizes,n)
```

Arguments

sizes	A vector of the sizes of the units in the population
n	The sample size

Value

Returns the indices of the units that were selected in the sample

Note

See the user's guide, pps.pdf, for more information.

Examples

```
sizes <- c(9,2,5,17,4,21,15,7,4,11,23,23,14)
sampleindices <- ppswr(sizes,4)
```

sampford *Sampford's PPS sampling method*

Description

Use Sampford's method to select a PPS sample of units

Usage

```
sampford(size,n)
```

Arguments

size	A vector of the sizes of the units in the population
n	The sample size

Value

Returns the indices of the units that were selected in the sample

Note

The function `sampfordpi` can be used to compute joint inclusion probabilities for this method. See the user's guide, pps.pdf, for more information.

Examples

```
size <- c(9,2,5,17,4,21,15,7,4,11,23,23,14)
sampleindices <- sampford(size,4)
```

`sampfordpi` *Joint inclusion probabilities for Sampford's PPS sampling method*

Description

Compute joint inclusion probabilities for Sampford's method of PPS sampling

Usage

```
sampfordpi(sizes,n)
```

Arguments

`sizes`	A vector of the sizes of the units in the population
`n`	The sample size

Value

Returns a matrix with the inclusion probability pi(i) for each unit i in the population and with the joint inclusion probability pi(i,j) of units i and j in position (i,j) in the matrix, where i and j are not equal. Note that the size of the matrix is NxN, where N is the population size.

Note

The function `sampford` can be used to select a sample using Sampford's method. See the user's guide, pps.pdf, for more information.

Examples

```
sizes <- c(9,2,5,17,4,21,15,7,4,11,23,23,14)
piij <- sampfordpi(sizes,4)
weights <- 1/diag(piij)  # the weights one would use for estimation
```

sizesok *Check that unit sizes are not too big*

Description

See user's guide

Usage

```
sizesok(size,n)
```

Arguments

size	A vector of the sizes of the units in the population
n	The sample size

Value

Returns the number of "bad" units

Note

See the user's guide, pps.pdf, for more information.

stratsrs *Stratified simple random sampling*

Description

In each stratum, select a simple random sample

Usage

```
stratsrs(stratum,nh)
```

Arguments

stratum	A vector of stratum codes, sorted by stratum
nh	A vector containing the sample size in each stratum

Value

Returns the indices of the units that were selected in the sample

Note

See the user's guide, pps.pdf, for more information.

Examples

```
strat <- c(1,1,1,1,1,2,2,2,3,3,3,3,3,3,3)  # stratum 1 has 5 units, etc.
nh <- c(2,1,3)  # select 2 units from stratum 1, 1 from stratum 2 and 3 from 3
stratsrs(strat,nh)
```

---

stratumsizes *Compute size of each stratum*

Description

Given a vector of sorted stratum indicators, returns the number of units in each stratum

Usage

```
stratumsizes(stratum)
```

Arguments

stratum	A vector of sorted stratum indicators

Value

Returns the number of units in each stratum

Note

See the user's guide, pps.pdf, for more information.

Index