Package ‘WgtEff’

October 12, 2022

Title Functions for Weighting Effects
Version 0.1.2
Description Functions for determining the effect of data weights on the variance of survey data: users will load a data set which has a weights column, and the package will calculate the design effect (DEFF), weighting loss, root design effect (DEFT), effective sample size (ESS), and/or weighted margin of error.

Imports stats
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R topics documented:

DEFF ......................................................... 2
DEFT ......................................................... 2
ESS ......................................................... 3
FULL ......................................................... 4
MOE ......................................................... 4
testweights ............................................. 5
WTGLOSS ................................................ 5

Index 7
DEFF

*Calculate DEFF*

**Description**
Calculates design effect (DEFF)

**Usage**
DEFF(x)

**Arguments**
\[ x \] = weights vector (name of weights column)

**Value**
Design effect (DEFF)

**References**
Design effect (DEFF) due to weighting => \( n * (\text{sum}(x^2) / \text{sum}(x)^2) \)

**Examples**
DEFF(testweights$weights_column)

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DEFT

*Calculate DEFT*

**Description**
Calculates root design effect (DEFT)

**Usage**
DEFT(x)

**Arguments**
\[ x \] = weights vector (name of weights column)

**Value**
Root design effect (DEFT)
References

Root design effect (DEFT) => square root of DEFF

Examples

DEFT(testweights$weights_column)

Description

Calculates effective sample size (ESS)

Usage

ESS(x)

Arguments

x = weights vector (name of weights column)

Value

Effective sample size (ESS)

References

Effective sample size (ESS) => sum(x)^2 / sum(x^2)

Examples

ESS(testweights$weights_column)
FULL

**Calculate Full Statistics**

**Description**
Calculates DEFF, weighting loss, DEFT, ESS, and MOE

**Usage**
FULL(p = 50, conf = 95, N, wtcol)

**Arguments**
- `p` = percentage for which MOE is calculated (optional, default is `p = 50`)
- `conf` = level of confidence (optional, default is `conf = 95`)
- `N` = population size (optional, used for finite population correction)
- `wtcol` = Weights vector (name of weights column)

**Value**
DEFF, weighting loss, DEFT, ESS, and MOE

**Examples**
FULL(N=3000, wtcol=testweights$weights_column)

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MOE

**Calculate MOE**

**Description**
Calculates weighted margin of error (MOE)

**Usage**
MOE(p = 50, conf = 95, N, wtcol)

**Arguments**
- `p` = percentage for which MOE is calculated (optional, default is `p = 50`)
- `conf` = level of confidence (optional, default is `conf = 95`)
- `N` = population size (optional, used for finite population correction)
- `wtcol` = Weights vector (name of weights column)
Value

Weighted margin of error (MOE)

References

Weighted margin of error (MOE) => unweighted MOE * DEFT

Examples

MOE(N=3000, wtcol=testweights$weights_column)

<table>
<thead>
<tr>
<th>testweights</th>
<th>An example weights column for a data set of 80 cases</th>
</tr>
</thead>
</table>

Description

An example weights column for a data set of 80 cases

Usage

testweights

Format

A data frame with 80 rows and 1 variable

weights_column data weights

Source

Example data generated by author

WTGLOSS

Calculate weighting loss

Description

Calculates weighting loss

Usage

WTGLOSS(x)

Arguments

x = weights vector (name of weights column)
Value
  Weighting loss

References
  Weighting loss => DEFF-1

Examples
  WTGLOSS(testweights$weights_column)
Index

* datasets
  testweights, 5

DEFF, 2
DEFT, 2
ESS, 3
FULL, 4
MOE, 4
testweights, 5
WTGLOSS, 5