

# Package ‘WgtEff’

July 21, 2025

**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

**Depends** R (>= 3.5)

**License** GPL (>= 2)

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 6.1.1

**Suggests** knitr, rmarkdown

**VignetteBuilder** knitr

**NeedsCompilation** no

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**Repository** CRAN

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DEFF

*Calculate DEFF*

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**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  $\Rightarrow n * (\text{sum}(x^2) / \text{sum}(x)^2)$

**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)
```

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ESS

*Calculate ESS*

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**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)
```

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FULL *Calculate Full Statistics*

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### 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*

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### 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, wtc1=testweights$weights_column)
```

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testweights	<i>An example weights column for a data set of 80 cases</i>
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**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

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WTGLOSS	<i>Calculate weighting loss</i>
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**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)
```

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