# Package: smmr (via r-universe)

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**Type** Package

**Title** Sign test and Mood's median test

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**Description** Provides alternatives to t-test and two-sample t / ANOVA when normality is questionable.

**License** GPL-2

**Encoding** UTF-8

**RoxygenNote** 7.3.2

**Imports** purrr, rlang, magrittr, dplyr, tidyr

**Config/pak/sysreqs** libicu-dev

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`ci_median` *Confidence interval for median by inverting sign test*

---

## Description

Confidence interval for median by inverting sign test

## Usage

```
ci_median(d, x, conf.level = 0.95, tol = 0.01)
```

## Arguments

| | |
|---|---|
| `d` | a data frame |
| `x` | unquoted name of column of data |
| `conf.level` | level for CI (as decimal), default 95 percent |
| `tol` | ends of CI determined to within this accuracy, default 0.01 |

## Value

lower and upper limits

## Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

## Examples

```
d <- data.frame(z = 1:20)
d1 <- data.frame(z = 1:5)
ci_median(d, z)
ci_median(d1, z)
ci_median(datasets::mtcars, mpg)
```

## ci_median0 *Confidence interval for median by inverting sign test*

### Description

Confidence interval for median by inverting sign test

### Usage

```
ci_median0(x, conf.level = 0.95, tol = 0.01)
```

### Arguments

| | |
|---|---|
| x | vector of data |
| conf.level | level for CI (as decimal), default 95 percent |
| tol | ends of CI determined to within this accuracy, default 0.01 |

### Value

lower and upper limits

### Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

### Examples

```
ci_median0(1:20)
ci_median0(1:5)
```

## median_test *Mood's median test for comparison of group medians*

### Description

Mood's median test for comparison of group medians

### Usage

```
median_test(d, x, g, tol = 1e-06)
```

### Arguments

| | |
|---|---|
| d | a data frame |
| x | unquoted name of quantitative variable |
| g | unquoted name of grouping variable |
| tol | (default 1e-6) any data values closer to overall median than this are discarded |

### Value

list of 2 objects: table, counts of values above and below the grand median in each group; value, test statistic, df and P-value

### Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

### Examples

```
median_test(datasets::mtcars, mpg, cyl)
d <- data.frame(z = 1:9, gg = c(1, 1, 1, 1, 1, 2, 2, 2, 2))
median_test(d, z, gg)
```

---

## median_test_pair *Mood's median tests for one pair of groups*

---

### Description

Mood's median tests for one pair of groups

### Usage

```
median_test_pair(d, x, g, g1, g2, tol = 1e-06)
```

### Arguments

| | |
|---|---|
| d | a data frame |
| x | unquoted name of quantitative variable |
| g | unquoted name of grouping variable (as character, not a factor) |
| g1 | first group to compare (as text) |
| g2 | second group to compare (as text) |
| tol | (default 1e-6) any data values closer to overall median than this are discarded |

### Value

(two-sided) P-value

### Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

### Examples

```
median_test_pair(datasets::mtcars, mpg, cyl, 4, 8)
```

---

## median_test0 *Mood's median test for comparison of group medians*

---

### Description

Mood's median test for comparison of group medians

### Usage

```
median_test0(x, g)
```

### Arguments

| | |
|---|---|
| x | vector of data |
| g | vector of group memberships (same length as x) |

### Value

list of 3 objects: grand median of all obs, table, counts of values above and below the grand median in each group; value, test statistic, df and P-value

### Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

### Examples

```
median_test0(datasets::mtcars$mpg, datasets::mtcars$cyl)
```

## pairwise_median_test *Pairwise Mood's median tests for all comparison of pairs of group medians*

### Description

Pairwise Mood's median tests for all comparison of pairs of group medians

### Usage

```
pairwise_median_test(d, x, g, tol = 1e-06)
```

### Arguments

| | |
|---|---|
| d | a data frame |
| x | unquoted name of quantitative variable |
| g | unquoted name of grouping variable (can be a factor, is treated as text) |
| tol | (default 1e-6) any data values closer to overall median than this are discarded |

### Value

data frame of groups being compared and unadjusted and Bonferroni-adjusted P-values

### Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

### Examples

```
pairwise_median_test(datasets::mtcars, mpg, cyl)
```

## pval_sign *Two-sided P-value for sign test*

### Description

Two-sided P-value for sign test

### Usage

```
pval_sign(med0, d, x)
```

### Arguments

| | |
|---|---|
| med0 | null median |
| d | data frame |
| x | vector of data for test |

### Value

P-value of two-sided sign test for median

### Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

### Examples

```
d <- data.frame(z = 1:10)
pval_sign(3.5, d, z)
pval_sign(3, d, z)
pval_sign(25, datasets::mtcars, mpg)
```

---

## pval_sign0 *Two-sided P-value for sign test*

---

### Description

Two-sided P-value for sign test

### Usage

```
pval_sign0(med0, x)
```

### Arguments

| | |
|---|---|
| med0 | null median |
| x | vector of data for test |

### Value

P-value of two-sided sign test for median

### Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

## Examples

```
pval_sign0(3.5, 1:10)
pval_sign0(3, 1:10)
pval_sign0(25, datasets::mtcars$mpg)
```

---

`sign_test` *Sign test for given median*

---

## Description

Sign test for given median

## Usage

```
sign_test(d, x, med0 = 0, tol = 1e-06)
```

## Arguments

| | |
|---|---|
| `d` | a data frame |
| `x` | unquoted name of column to test |
| `med0` | null median (defaults to zero) |
| `tol` | (default 1e-6) how close a data value has to be to the null median to be considered equal to null median (and discarded) |

## Value

list of two elements: table of values above and below null median, data frame of 1-sided and 2-sided P-values

## Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

## Examples

```
d <- data.frame(z = 1:10)
sign_test(d, z, 3.5)
sign_test(d, z, 3)
sign_test(datasets::mtcars, mpg, 25)
```

`sign_test0` *Sign test (simplified) for given median*

## Description

Sign test (simplified) for given median

## Usage

```
sign_test0(x, med0 = 0, tol = 1e-06)
```

## Arguments

| | |
|---|---|
| `x` | vector of data |
| `med0` | null median (defaults to zero) |
| `tol` | (default 1e-6) how close a data value has to be to the null median to be considered equal to null median (and discarded) |

## Value

list of two elements: table of values above and below null median, data frame of 1-sided and 2-sided P-values

## Author(s)

Ken Butler, <butler@utsc.utoronto.ca>

## Examples

```
sign_test0(1:10, 3.5)
sign_test0(1:10, 3)
sign_test0(datasets::mtcars$mpg, 25)
```

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