Package 'MRQoL'

June 18, 2025

Type Package

Title Minimal Clinically Important Difference and Response Shift
Effect for Health-Related Quality of Life

Version 1.0.1

Date 2025-06-17

Author Ahmad Ousmen [aut, cre]

Maintainer Ahmad Ousmen <ousmen.ahmad@hotmail.com>

Description To calculate the Minimal Clinically Important Difference by applying the Anchor-
based method and the Response shift effect by applying the Then-Test method.

License GPL (>= 2.0)

NeedsCompilation no

Repository CRAN

Date/Publication 2025-06-18 07:50:17 UTC

Contents

| MRQoL-package | *Minimal Clinically Important Difference and Response Shift Effect for* |
| | *Health-Related Quality of Life* |

Description

Using this package we can calculate the Minimal Clinically Important Difference by applying the
Anchor-based method and the Response shift effect by applying the Then-Test method.

Details

Package:	MCID
Type:	Package
Version:	1.0
Date:	2015-07-30

License: GPL (>= 2.0)

Author(s)

Ahmad Ousmen Maintainer: Ahmad Ousmen <ousmen.ahmad@hotmail.com>

References

Ann K Kvam, Finn Wisloff and Peter M Fayers, Minimal important differences and response shift in health related quality of life ; a longitudinal study in patients with multiple myeloma, Health and Quality of Life Outcomes, 2010;1477-7525-8-79.

T. S. Dabakuyo, F. Guillemin, T. Conroy, M. Velten, D. Jolly, M. Mercier, S. Causeret, J. Cuisenier, O. Graesslin, M. Gauthier, F. Bonnetain, Response shift effects on measuring post-operative quality of life among breast cancer patients: a multicenter cohort study, Qual Life Res, 2012.

Zeinab Hamidou, Tienhan Sandrine Dabakuyo and Franck Bonnetain, Impact of response shift on longitudinal quality-of-life assessment in cancer clinical trials, Pharmacoeconomics Outcomes Res, 2011;11(5), 549-559.

---

dataghs   *Data of Global Health Status (GHS) dimension.*

Description

This data contain 5 scores at 3 measurement times (at baseline, after three months (T1) and after six months (T2)), and 2 Anchor's questions (anchor1 at (T1) and anchor2 at (T2)).

Usage

```
data("dataghs")
```

Format

A data frame is composed of 100 observations and 7 variables.

anchor1 The Jaeschke's questions at (T1)

anchor2 The Jaeschke's questions at (T2)

GHS0 The Pre-test score at baseline

GHSr1 The Then-test score at (T1)

GHS1 The Post-test score at (T1)

GHSr2 The Then-test score at (T2)

GHS2 The Post-test score at (T2)

Details

This data is composed of 7 variables: anchor1, anchor2: the first and second anchor's question at (T1) and (T2) respectively, and it have five categories ((much worse (MW), little worse (LW), no change (NC), little better (LB), much better (MB)), GHS0: the Pre-test score of GHS at baseline, GHS1: the Post-test score of GHS at (T1) (after 3 months of the baseline), GHSr1: the Then-test score of GHS at (T1) (the retrospective score of GHS0), GHS2: the Post-test score of GHS at (T2), GHSr2: the Then-test score of GHS at (T2) (the retrospective score of GHS1).

MCID	*Determination of the Minimal Clinically Important Difference (MCID)*

Description

A function to calculate the MCID for one dimension of health-related quality of life using the Anchor-based method. The anchor is composed of five categories which are detailed below.

Usage

```
MCID(score_1, score_2, X)
```

Arguments

score_1	the Post-test score of each dimension
score_2	the Pre-test score if we calculate the MCID without Response shift effect, and it is the Then-test score in the case of MCID with Response shift effect of each dimension
X	the Jaeschke's question with five categories

Details

This function calculates the MCID with and without effect of response shift for the 5 categories cited in the Jaeschke's question (much worse (MW), little worse (LW), no change (NC), little better (LB), much better (MB)) for each quality of life dimension in oncology using the "Anchor-based method". The MCID is the Mean difference between Post-test and Pre-test if we calculate the MCID without effect of response shift and the Mean difference between Post-test and Then-test if we calculate the MCID with effect of response shift for each category of QoL dimension. More concretely, for example if we want to calculate the MCID with effect of Response shift at (T1) used the data (dataghs), we calculate the difference between the two variables GHS1 and GHSr1, then we calculate the average of the values associated for the category (MW) in the variable anchor1, in this case we obtain the MCID for the category much worse, and the MCID for each other category is calculated by the same method.

Value

The values returned by this function are the following:

MW: the MCID of the category "much worse"

LW: the MCID of the category "little worse"

NC: the MCID of the category "no change"

LB: the MCID of the category "little better"

MB: the MCID of the category "much better"

Note

If we have more than five categories in the Jaeschke's question, we must recode this variable to obtain in the end five categories to implement this function.

Author(s)

Ahmad Ousmen

Examples

```
#Example 1:
#Example to calculate the MCID without effect of Response Sift:
data(dataghs)
MCID(dataghs$GHS1,  dataghs$GHS0, dataghs$anchor1)


#Example 2:
#Example to calculate the MCID with effect of Response Sift:

MCID(dataghs$GHS1,  dataghs$GHSr1, dataghs$anchor1)
```

RS   *Determination of Response shift effect (RS)*

Description

This function allow us to determine the RS given by Pre-test minus Then-test, applyed on each dimension of quality of life questionnaires in oncology using Then-test method. In addition, it calculates the number of patients, the RS, the confidence interval (lower and upper limits of confidence interval), the p-value and the effect size for each category.

Usage

```
RS(score_1, score_2, X)
```

Arguments

`score_1`	the Post-test score of each dimension
`score_2`	the Pre-test score if we calculate the minimal clinically important difference without RS, and it is the Then-test score in the case of minimal clinically important difference with RS of each dimension
`X`	the Jaeschke's question with five categories

Value

ID: Dimension: Global Health Status (GHS) dimension, MW: the category "much worse", LW: the category "little worse", NC: the category "no change", LB: the category "little better", MB: the category "much better".

N: contain six values, the first value is the total number of patients for the quality of life dimension, and the five others values are the number of patients for each category of quality of life dimension.

RS: used this formula "Pre-test minus Then-test" we can calculate the global RS for the dimension and the five others RS for each category.

LCI: column contain five values, these values are the lower limits of the confidence interval of the RS calculated for each category. UCI: column contain five values, these values are the upper limits of the confidence interval of the RS calculated for each category.

p-value: used wilcoxon test we can obtained the global p-value for the dimension and the five others p-value for each category.

ES: the effect size obtained by divided the RS over the standard deviation at baseline. For example between (T1) and (T2) the baseline is (T1).

Note

If we have more than five categories in the Jaeschke's question, we must recode this variable to obtain in the end five categories to implement this function.

Author(s)

Ahmad Ousmen

Examples

```
#Example to calculate the Response Shift and the others statistics:
data(dataghs)
RS(dataghs$GHS0,dataghs$GHSr1, dataghs$anchor1)
```

---

stat_MCID	*Statistics of the Minimal Clinically Important Difference*

Description

Calculate the number of patients, standard deviation and the confidence interval for each category of quality of life dimension.

Usage

```
stat_MCID(score_1, score_2, X)
```

Arguments

score_1	the post-test score at (T1) or (T2)
score_2	the Pre-test score if we calculate the minimal clinically important difference without Response shift effect, and it is the Then-Test score in the case of MCID with Response shift effect of each dimension
X	the Jaeschke's question with five categories

Details

This function help us to obtain the number of patients, standard deviation and the confidence interval in two columns (Lower Confidence interval and Upper confidence Interval) for each category of quality of life dimension, that it help us to interpret the result of the minimal clinically important difference.

Value

ID: Dimension: Global Health Status (GHS) dimension, MW: the category "much worse", LW: the category "little worse", NC: the category "no change", LB: the category "little better", MB: the category "much better".

N: column contain six values, he first value is the total number of patients for the quality of life dimension. The five others values are the number of patients for each category of quality of life dimension.

SD: column contain six values, he first value is the global SD for the quality of life dimension. The five others values are the SD for each category of quality of life dimension.

LCI: column contain five values, these values are the lower limits of the confidence interval of the minimal clinically important difference calculated for each category. UCI: column contain five values, these values are the upper limits of the confidence interval of the minimal clinically important difference calculated for each category.

Note

If we have more than five categories in the Jaeschke's question, we must recode this variable to obtain in the end five categories to implement this function.

Author(s)

Ahmad Ousmen

Examples

```
#Example to calculate the statistics of minimal clinically important difference:
data(dataghs)
stat_MCID(dataghs$GHS1,  dataghs$GHS0, dataghs$anchor1)
```

Index