Package 'compicc'

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Type Package

Title Calculate the Confidence Interval for the Difference of ICCs

Version 0.1.0

Description Contains functions to calculate the confidence interval for the difference between the intraclass correlation coefficients (ICCs) of two datasets. The package contains two functions: one for two dependent datasets and one for two independent datasets. The method for calculating the confidence intervals is found in Ramasundarahettige et al. (2009) <DOI:10.1002/sim.3523>.

License GPL (>= 3)

Encoding UTF-8

RoxygenNote 7.1.2

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Imports irr, stats

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VignetteBuilder knitr

Config/testthat/edition 3

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R topics documented:

compicc 2
dep_ci 2
dep_df1 3

dep_df2 4
indep_ci 4
indep_df1 5
indep_df2 6

Index **7**

`compicc` *compicc*

Description

A package for computing the confidence interval for the difference between two datasets' intra-class correlation coefficients (ICCs). It contains functions to compute the confidence interval for dependent (`dep_ci`) and independent (`indep_ci`) data.

If the two dataset being compared consist of the same subjects, the dependent function `dep_ci` should be used. If a different set of subjects were tested in each dataset, the independent function `indep_ci` should be used.

The package includes 4 dataframes. The dataframes dep_df1 and dep_df2 can be used as examples with the function (`dep_ci()`), while the dataframes indep_df1 and indep_df2 can be used as examples with the function (`indep_ci()`).

The method to calculate the confidence interval was first proposed by Ramasundarahettige et al. (2009).

`dep_ci` *Confidence Interval for the difference between two dependent ICCs*

Description

Confidence Interval for the difference between two dependent ICCs

Usage

```
dep_ci(data1, data2, conf_level = 0.95)
```

Arguments

`data1`	A dataframe in wide format
`data2`	A dataframe in wide format
`conf_level`	The confidence level of the confidence interval; defaults to 0.95.

Details

Used when the same subjects are tested in each dataframe. The wide format for the dataframe means that the subjects constitute the rows, and the multiple trials per subject constitute the columns of the dataframe.

Value

A list with 3 elements:

ICC of data1 (`$icc_1`)

ICC of data2 (`$icc_2`)

Confidence interval for the difference between the ICC of data1 and the ICC of data2 (`$confidenceIntervalDifference`)

The confidence interval is a 1x2 dataframe with calls `$lowerBound` and `$upperBound` for the bounds of the interval

Examples

```
subject1_test1 <- c(46, 42, 43)
subject2_test1 <- c(34, 35, 34)
subject3_test1 <- c(51, 48, 54)
rater1Data <- data.frame(subject1_test1, subject2_test1, subject3_test1)

subject1_test2 <- c(45, 44, 44)
subject2_test2 <- c(36, 35, 37)
subject3_test2 <- c(49, 49, 51)
rater2Data <- data.frame(subject1_test2, subject2_test2, subject3_test2)

dep_ci(rater1Data, rater2Data)
dep_ci(rater1Data, rater2Data, conf_level = 0.99)
```

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dep_df1 *Testing Scores of 100 Subjects from Rater/Time 1 in Dependent Case*

Description

A dataset containing scores for 100 subjects, where each subject has 4 trials. This is to be used in an example for the case of comparing 2 dependent ICCs (function dep_ci()), where this dataset contains the scores measured by Rater 1 (or at time 1) of the 100 subjects and dataset dep_df2 contains the scores measured by Rater 2 (or at time 2) of the same 100 subjects.

Usage

```
dep_df1
```

Format

A dataframe with 100 rows and 4 columns

dep_df2 *Testing Scores of 100 Subjects from Rater/Time 2 in Dependent Case*

Description

A dataset containing scores for 100 subjects, where each subject has 4 trials. This is to be used in an example for the case of comparing 2 dependent ICCs (function dep_ci()), where this dataset contains the scores measured by Rater 2 (or at time 2) of the 100 subjects and dataset dep_df1 contains the scores measured by Rater 1 (or at time

1. of the same 100 subjects.

Usage

```
dep_df2
```

Format

A dataframe with 100 rows and 4 columns

indep_ci *Confidence Interval for the difference between two independent ICCs*

Description

Confidence Interval for the difference between two independent ICCs

Usage

```
indep_ci(data1, data2, conf_level = 0.95)
```

Arguments

data1	A dataframe in wide format
data2	A dataframe in wide format
conf_level	The confidence level of the confidence interval; defaults to 0.95 (95%).

Details

Used when a different set of subjects are tested in each dataframe. The wide format for the dataframe means that the subjects constitute the rows, and the multiple trials per subject constitute the columns of the dataframe.

Value

A list with 3 elements:

ICC of data1 (`$icc_1`)

ICC of data2 (`$icc_2`)

Confidence interval for the difference between the ICC of data1 and the ICC of data2 (`$confidenceIntervalDifference`)

The confidence interval is a 1x2 dataframe with calls `$lowerBound` and `$upperBound` for the bounds of the interval

Examples

```
subject1_test1 <- c(46, 42, 43)
subject2_test1 <- c(34, 35, 34)
subject3_test1 <- c(51, 48, 54)
rater1Data <- data.frame(subject1_test1, subject2_test1, subject3_test1)

subject4_test2 <- c(26, 25, 28)
subject5_test2 <- c(43, 45, 45)
subject6_test2 <- c(30, 31, 31)
rater2Data <- data.frame(subject4_test2, subject5_test2, subject6_test2)

indep_ci(rater1Data, rater2Data)
indep_ci(rater1Data, rater2Data, conf_level = 0.90)
```

---

indep_df1 *Testing Scores of 100 Subjects from Rater/Time 1 in Independent Case*

Description

A dataset containing scores for 100 subjects, where each subject has 4 trials. This is to be used in an example for the case of comparing 2 independent ICCs (function indep_ci()), where this dataset contains the scores measured by Rater 1 (or at time 1) of the 100 subjects and dataset indep_df2 contains the scores measured by Rater 2 (or at time 2) of 80 different subjects.

Usage

```
indep_df1
```

Format

A dataframe with 100 rows and 4 columns

indep_df2 *Testing Scores of 80 Subjects from Rater/Time 2 in Independent Case*

Description

A dataset containing scores for 80 subjects, where each subject has 4 trials. This is to be used in an example for the case of comparing 2 independent ICCs (function indep_ci()), where this dataset contains the scores measured by Rater 2 (or at time 2) of the 80 subjects and dataset indep_df1 contains the scores measured by Rater 1 (or at time

1. of 100 different subjects.

Usage

```
indep_df2
```

Format

A dataframe with 80 rows and 4 columns

Index

∗ **datasets**
dep_df1, 3
dep_df2, 4
indep_df1, 5
indep_df2, 6

compicc, 2

dep_ci, 2
dep_df1, 3
dep_df2, 4

indep_ci, 4
indep_df1, 5
indep_df2, 6