Package ‘samplesize’

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Type Package

Title Sample Size Calculation for Various t-Tests and Wilcoxon-Test

Version 0.2-4

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Description Computes sample size for Student's t-test and for the Wilcoxon-Mann-Whitney test for categorical data. The t-test function allows paired and unpaired (balanced / unbalanced) designs as well as homogeneous and heterogeneous variances. The Wilcoxon function allows for ties.

License GPL (>= 2)

URL https://github.com/shearer/samplesize

BugReports https://github.com/shearer/samplesize/issues

NeedsCompilation no

Repository CRAN

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R topics documented:

samplesize-package *Computes sample size for several two-sample tests*

Description

Computes sample size for independent and paired Student's t-test, Student's t-test with Welch-approximation, Wilcoxon-Mann-Whitney test with and without ties on ordinal data

Details

Package:	samplesize
Type:	Package
Version:	0.2-4
Date:	2016-12-22
License:	GPL (>=2)
LazyLoad:	yes

n.ttest(): sample size for Student's t-test and t-test with Welch approximation

n.wilcox.ord(): sample size for Wilcoxon-Mann-Whitney test with and without ties

Author(s)

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References

Bock J., Bestimmung des Stichprobenumfangs fuer biologische Experimente und kontrollierte klinische Studien. Oldenbourg 1998

Zhao YD, Rahardja D, Qu Yongming. Sample size calculation for the Wilcoxon-Mann-Whitney test adjusting for ties. Statistics in Medicine 2008; 27:462-468

n.ttest *n.ttest computes sample size for paired and unpaired t-tests.*

Description

n.ttest computes sample size for paired and unpaired t-tests. Design may be balanced or unbalanced. Homogeneous and heterogeneous variances are allowed.

Usage

```
n.ttest(power = 0.8, alpha = 0.05, mean.diff = 0.8, sd1 = 0.83, sd2 = sd1,
        k = 1, design = "unpaired", fraction = "balanced", variance = "equal")
```

Arguments

`power`	Power (1 - Type-II-error)
`alpha`	Two-sided Type-I-error
`mean.diff`	Expected mean difference
`sd1`	Standard deviation in group 1
`sd2`	Standard deviation in group 2
`k`	Sample fraction k
`design`	Type of design. May be paired or unpaired
`fraction`	Type of fraction. May be balanced or unbalanced
`variance`	Type of variance. May be homo- or heterogeneous

Value

`Total sample size`
Sample size for both groups together

`Sample size group 1`
Sample size in group 1

`Sample size group 2`
Sample size in group 2

Author(s)

Ralph Scherer

References

Bock J., Bestimmung des Stichprobenumfangs fuer biologische Experimente und kontrollierte klinische Studien. Oldenbourg 1998

Examples

```
n.ttest(power = 0.8, alpha = 0.05, mean.diff = 0.80, sd1 = 0.83, k = 1,
design = "unpaired", fraction = "balanced", variance = "equal")

n.ttest(power = 0.8, alpha = 0.05, mean.diff = 0.80, sd1 = 0.83, sd2 =
2.65, k = 0.7, design = "unpaired", fraction = "unbalanced", variance =
"unequal")
```

`n.wilcox.ord` *Sample size for Wilcoxon-Mann-Whitney for ordinal data*

Description

Function computes sample size for the two-sided Wilcoxon test when applied to two independent samples with ordered categorical responses.

Usage

```
n.wilcox.ord(power = 0.8, alpha = 0.05, t, p, q)
```

Arguments

`power`	required Power
`alpha`	required two-sided Type-I-error level
`t`	sample size fraction n/N, where n is sample size of group B and N is the total sample size
`p`	vector of expected proportions of the categories in group A, should sum to 1
`q`	vector of expected proportions of the categories in group B, should be of equal length as p and should sum to 1

Details

This function approximates the total sample size, N, needed for the two-sided Wilcoxon test when comparing two independent samples, A and B, when data are ordered categorical according to Equation 12 in Zhao et al.(2008). Assuming that the response consists of D ordered categories $C_1, ..., C_D$. The expected proportions of these categories in two treatments A and B must be specified as numeric vectors $p_1, ..., p_D$ and $q_1, ..., q_D$, respectively. The argument t allows to compute power for an unbalanced design, where $t = n_B/N$ is the proportion of sample size in treatment B.

Value

`total sample size`	Total sample size
`m`	Sample size group 1
`n`	Sample size group 2

Author(s)

Ralph Scherer

References

Zhao YD, Rahardja D, Qu Yongming. Sample size calculation for the Wilcoxon-Mann-Whitney test adjsuting for ties. Statistics in Medicine 2008; 27:462-468

Examples

```
## example out of:
## Zhao YD, Rahardja D, Qu Yongming.
## Sample size calculation for the Wilcoxon-Mann-Whitney test adjsuting for ties.
## Statistics in Medicine 2008; 27:462-468
n.wilcox.ord(power = 0.8, alpha = 0.05, t = 0.53, p = c(0.66, 0.15, 0.19), q = c(0.61, 0.23, 0.16))
```

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