Package ‘samplesize’

October 14, 2022

Type Package

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

Version 0.2-4

Date 2016-12-22

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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

Date/Publication 2016-12-24 11:24:04

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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

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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)

Ralph Scherer

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References


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

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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


Examples

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

```r
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")
```
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 adjusting for ties. Statistics in Medicine 2008; 27:462-468
Examples

```r
n.wilcox.ord
```

## example out of:
## 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

```r
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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