Package 'samplesize'

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Type Package

Title a collection of sample size functions

Version 0.1-7

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Description Computes sample size for Student's t-test with equal and nonequal variances and for the Wilcoxon-Mann-Whitney test for categorical data with and without ties

License GPL (>= 2)

LazyLoad yes

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:	0.1-7
Date:	2010-03-19
License:	GPL (>=2)
LazyLoad:	yes

n.paired.t.test(): sample size for paired Student's t-test

n.indep.t.test.eq(): sample size for indepent Student's t-test with equal group size

n.indep.t.test.neq(): sample size for indepent Student's t-test with different group size

n.welch.test(): sample size for Student's 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

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.indep.t.test.eq *Sample size for independent Student's t-test with equal group size*

Description

Function computes sample size for Student's independent t-test with equal group size

Usage

```
n.indep.t.test.eq(power = 0.8, alpha = 0.95, mean.diff = 0.8, sd.est = 0.83)
```

Arguments

power	required power 1-beta
alpha	required Level I-error 1-alpha
mean.diff	required minimum difference between group means
sd.est	standard deviation in groups

Value

sample size	sample size in each group

Author(s)

Ralph Scherer

References

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

See Also

n.indep.t.test.neq(), n.paired.t.test(), n.welch.test()

Examples

```
n.indep.t.test.eq(power = 0.8, alpha = 0.95, mean.diff = 0.8, sd.est = 0.83)
```

---

n.indep.t.test.neq *Sample size for independent Student's t-test with unequal group size*

Description

Function computes sample size for independent Student's t-test with unequal group size

Usage

```
n.indep.t.test.neq(power = 0.8, alpha = 0.95, mean.diff = 0.8, sd.est = 0.83, k = 0.5)
```

Arguments

power	required power 1-beta
alpha	required Level I-error 1-alpha
mean.diff	required minimum difference between group means
sd.est	standard deviation in groups
k	n_2=n_1*k

Details

n_1= size group 1, n_2= size group 2, N=n_1+n_2

Value

N	total sample size
n.1	sample size group 1
n.2	sample size group 2

Author(s)

Ralph Scherer

References

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

See Also

n.indep.t.test.eq(), n.paired.t.test(), n.welch.test()

Examples

```
n.indep.t.test.neq(power = 0.8, alpha = 0.95, mean.diff = 0.8, sd.est = 0.83, k = 0.5)
```

---

n.paired.t.test *Sample size for paired Student's t-test*

Description

Computes sample size for paired Student's t-test with equal group size

Usage

```
n.paired.t.test(power = 0.8, alpha = 0.95, mean.diff = 0.8, sd.est = 0.83)
```

Arguments

power	required power 1-beta
alpha	required Level I-error 1-alpha
mean.diff	required minimum difference between group means
sd.est	standard deviation

Value

sample size	sample size in each group

Author(s)

Ralph Scherer

References

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

See Also

n.indep.t.test.eq(), n.indep.t.test.neq(), n.welch.test()

Examples

```
n.paired.t.test(power = 0.8, alpha = 0.95, mean.diff = 0.8, sd.est = 0.83)
```

---

n.welch.test *Sample size for Student's t-test with Welch approximation*

Description

Function computes sample size for Student's t-test with Welch approximation for unequal variances

Usage

```
n.welch.test(power = 0.8, alpha = 0.95, mean.diff = 2, sd.est1 = 1, sd.est2 = 2.65)
```

Arguments

power	required power 1-beta
alpha	required Level I-error 1-alpha
mean.diff	required minimum difference between group means
sd.est1	standard deviation in group 1
sd.est2	standard deviation in group 2

Value

`sample size`	Total sample size N
`sample size n1`	sample size in group 1
`sample size n2`	sample size in group 2

Author(s)

Ralph Scherer

References

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

See Also

n.indep.t.test.neq(), n.paired.t.test(), n.indep.t.test.eq()

Examples

```
n.welch.test(power = 0.8, alpha = 0.95, mean.diff = 2, sd.est1 = 1, sd.est2 = 2.65)
```

---

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

Description

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

Usage

```
n.wilcox.ord(beta = 0.2, alpha = 0.05, t, p, q)
```

Arguments

`beta`	required type-II-error level
`alpha`	required 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

N	Total sample size

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.
n.wilcox.ord(beta = 0.2, 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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