Package 'pwr2ppl'

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Type Package

Title Power Analyses for Common Designs (Power to the People)

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Author Chris Aberson

Maintainer Chris Aberson <chris.aberson@gmail.com>

Description Statistical power analysis for designs including t-tests, correlations, multiple regression, ANOVA, mediation, and logistic regression. Functions accompany Aberson (2019) <doi:10.4324/9781315171500>.

License GPL (>= 2)

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Imports car (>= 3.0-0), MASS (>= 7.3-51), dplyr (>= 0.8.0), tidyr (>= 0.8.0), ez (>= 0.4.3), nlme (>= 3.1-139), phia (>= 0.2-0), afex (>= 0.22-1), MBESS (>= 4.5.0), lavaan (>= 0.6-2), stats (>= 3.5.0), semTools (>= 0.5), quantreg (>= 5.50), broom (>= 0.7.00), lmtest (>= 0.9-30), lmPerm, pls

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anc — *Compute Power for One or Two Factor ANCOVA with a single covariate Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user Factor A can have up to four levels, Factor B, if used, can only be two*

Description

Compute Power for One or Two Factor ANCOVA with a single covariate Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user Factor A can have up to four levels, Factor B, if used, can only be two

Usage

```
anc(
  m1.1,
  m2.1,
  m1.2,
  m2.2,
  m3.1 = NULL,
  m3.2 = NULL,
  m4.1 = NULL,
  m4.2 = NULL,
  s1.1 = NULL,
  s2.1 = NULL,
  s1.2 = NULL,
  s2.2 = NULL,
  s3.1 = NULL,
  s3.2 = NULL,
  s4.1 = NULL,
  s4.2 = NULL,
  r,
  s = NULL,
  alpha = 0.05,
  factors,
  levelsA = NULL,
  n
)
```

Arguments

`m1.1`	Cell mean for First level of Factor A, First level of Factor B
`m2.1`	Cell mean for Second level of Factor A, First level of Factor B
`m1.2`	Cell mean for First level of Factor A, Second level of Factor B
`m2.2`	Cell mean for Second level of Factor A, Second level of Factor B
`m3.1`	Cell mean for Third level of Factor A, First level of Factor B

m3.2	Cell mean for Third level of Factor A, Second level of Factor B
m4.1	Cell mean for Fourth level of Factor A, First level of Factor B
m4.2	Cell mean for Fourth level of Factor A, Second level of Factor B
s1.1	Cell standard deviation for First level of Factor A, First level of Factor B
s2.1	Cell standard deviation for Second level of Factor A, First level of Factor B
s1.2	Cell standard deviation for First level of Factor A, Second level of Factor B
s2.2	Cell standard deviation for Second level of Factor A, Second level of Factor B
s3.1	Cell standard deviation for Third level of Factor A, First level of Factor B
s3.2	Cell standard deviation for Third level of Factor A, Second level of Factor B
s4.1	Cell standard deviation for Fourth level of Factor A, First level of Factor B
s4.2	Cell standard deviation for Fourth level of Factor A, Second level of Factor B
r	Correlation between covariate and dependent variable.
s	Overall standard deviation. Sets all cell sds equal
alpha	Type I error (default is .05)
factors	Number of factors (1 or 2)
levelsA	levels for factor A (up to four)
n	Sample Size per cell

Value

Power for One or Two Factor ANCOVA with a single covariate

Examples

```
anc(m1.1=.85,m2.1=2.5, s1.1 = 1.7, s2.1=1,
m1.2=0.85, m2.2= 2.5, s1.2 = 1.7, s2.2=1,
m3.1=0.0,m3.2=2.5, s3.1 = 1.7, s3.2=1,
m4.1=0.6, m4.2 = 2.5, s4.1 = 1.7, s4.2=1, r= 0.4,
n=251, factors =2,levelsA = 4)
```

---

anova1f_3 — *Compute power for a One Factor ANOVA with three levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor ANOVA with three levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
anova1f_3(
  m1 = NULL,
  m2 = NULL,
  m3 = NULL,
  s1 = NULL,
  s2 = NULL,
  s3 = NULL,
  n1 = NULL,
  n2 = NULL,
  n3 = NULL,
  alpha = 0.05
)
```

Arguments

`m1`	Mean of first group
`m2`	Mean of second group
`m3`	Mean of third group
`s1`	Standard deviation of first group
`s2`	Standard deviation of second group
`s3`	Standard deviation of third group
`n1`	Sample size for first group
`n2`	Sample size for second group
`n3`	Sample size for third group
`alpha`	Type I error (default is .05)

Value

Power for the One Factor ANOVA

Examples

```
anova1f_3(m1=80, m2=82, m3=82, s1=10, s2=10, s3=10, n1=60, n2=60, n3=60)
```

`anova1f_3c` *Compute power for a One Factor ANOVA with three levels and contrasts. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor ANOVA with three levels and contrasts. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
anova1f_3c(
  m1 = NULL,
  m2 = NULL,
  m3 = NULL,
  s1 = NULL,
  s2 = NULL,
  s3 = NULL,
  n1 = NULL,
  n2 = NULL,
  n3 = NULL,
  alpha = 0.05,
  c1 = 0,
  c2 = 0,
  c3 = 0
)
```

Arguments

`m1`	Mean of first group
`m2`	Mean of second group
`m3`	Mean of third group
`s1`	Standard deviation of first group
`s2`	Standard deviation of second group
`s3`	Standard deviation of third group
`n1`	Sample size for first group
`n2`	Sample size for second group
`n3`	Sample size for third group
`alpha`	Type I error (default is .05)
`c1`	Weight for Contrast 1 (default is 0)
`c2`	Weight for Contrast 2 (default is 0)
`c3`	Weight for Contrast 3 (default is 0)

Value

Power for the One Factor ANOVA

Examples

```
anova1f_3c(m1=80, m2=82, m3=82, s1=10, s2=10, s3=10,
n1=60, n2=60, n3=60, c1=2, c2=-1, c3=-1, alpha=.05)
```

anova1f_4 *Compute power for a One Factor Between Subjects ANOVA with four levels Takes means, sds, and sample sizes for each group*

Description

Compute power for a One Factor Between Subjects ANOVA with four levels Takes means, sds, and sample sizes for each group

Usage

```
anova1f_4(
  m1 = NULL,
  m2 = NULL,
  m3 = NULL,
  m4 = NULL,
  s1 = NULL,
  s2 = NULL,
  s3 = NULL,
  s4 = NULL,
  n1 = NULL,
  n2 = NULL,
  n3 = NULL,
  n4 = NULL,
  alpha = 0.05
)
```

Arguments

m1	Mean of first group
m2	Mean of second group
m3	Mean of third group
m4	Mean of fourth group
s1	Standard deviation of first group
s2	Standard deviation of second group
s3	Standard deviation of third group
s4	Standard deviation of forth group
n1	Sample size for first group
n2	Sample size for second group
n3	Sample size for third group
n4	Sample size for fourth group
alpha	Type I error (default is .05)

Value

Power for the One Factor Between Subjects ANOVA

Examples

```
anova1f_4(m1=80, m2=82, m3=82, m4=86, s1=10, s2=10, s3=10,
s4=10, n1=60, n2=60, n3=60, n4=60)
```

---

anova1f_4c

Compute power for a One Factor ANOVA with four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

---

Description

Compute power for a One Factor ANOVA with four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
anova1f_4c(
  m1 = NULL,
  m2 = NULL,
  m3 = NULL,
  m4 = NULL,
  s1 = NULL,
  s2 = NULL,
  s3 = NULL,
  s4 = NULL,
  n1 = NULL,
  n2 = NULL,
  n3 = NULL,
  n4 = NULL,
  alpha = 0.05,
  c1 = 0,
  c2 = 0,
  c3 = 0,
  c4 = 0
)
```

Arguments

m1	Mean of first group
m2	Mean of second group
m3	Mean of third group
m4	Mean of fourth group

s1	Standard deviation of first group
s2	Standard deviation of second group
s3	Standard deviation of third group
s4	Standard deviation of forth group
n1	Sample size for first group
n2	Sample size for second group
n3	Sample size for third group
n4	Sample size for fourth group
alpha	Type I error (default is .05)
c1	Weight for Contrast 1 (default is 0)
c2	Weight for Contrast 2 (default is 0)
c3	Weight for Contrast 3 (default is 0)
c4	Weight for Contrast 4 (default is 0)

Examples

```
anova1f_4c(m1=80, m2=82, m3=82, m4=86, s1=10, s2=10,
s3=10, s4=10, n1=60, n2=60, n3=60, n4=60,
c1=1, c2=1, c3=-1, c4=-1, alpha=.05)
anova1f_4c(m1=80, m2=82, m3=82, m4=86, s1=10, s2=10,
s3=10, s4=10, n1=60, n2=60, n3=60, n4=60,
c1=1, c2=-1, c3=-0, c4=0, alpha=.05)
anova1f_4c(m1=80, m2=82, m3=82, m4=86, s1=10, s2=10,
s3=10, s4=10, n1=60, n2=60, n3=60, n4=60,
c1=0, c2=0, c3=1, c4=-1, alpha=.05)
#'@return Power for the One Factor ANOVA
```

---

anova2x2 *Compute power for a Two by Two Between Subjects ANOVA. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a Two by Two Between Subjects ANOVA. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
anova2x2(
  m1.1 = NULL,
  m1.2 = NULL,
  m2.1 = NULL,
  m2.2 = NULL,
```

```
  s1.1 = NULL,
  s1.2 = NULL,
  s2.1 = NULL,
  s2.2 = NULL,
  n1.1 = NULL,
  n1.2 = NULL,
  n2.1 = NULL,
  n2.2 = NULL,
  alpha = 0.05,
  all = "OFF"
)
```

Arguments

`m1.1`	Cell mean for First level of Factor A, First level of Factor B
`m1.2`	Cell mean for First level of Factor A, Second level of Factor B
`m2.1`	Cell mean for Second level of Factor A, First level of Factor B
`m2.2`	Cell mean for Second level of Factor A, Second level of Factor B
`s1.1`	Cell standard deviation for First level of Factor A, First level of Factor B
`s1.2`	Cell standard deviation for First level of Factor A, Second level of Factor B
`s2.1`	Cell standard deviation for Second level of Factor A, First level of Factor B
`s2.2`	Cell standard deviation for Second level of Factor A, Second level of Factor B
`n1.1`	Cell sample size for First level of Factor A, First level of Factor B
`n1.2`	Cell sample size for First level of Factor A, Second level of Factor B
`n2.1`	Cell sample size for Second level of Factor A, First level of Factor B
`n2.2`	Cell sample size for Second level of Factor A, Second level of Factor B
`alpha`	Type I error (default is .05)
`all`	Power(ALL) - Power for detecting all predictors in the model at once (default is "OFF")

Value

Power for the Two Factor ANOVA

Examples

```
anova2x2(m1.1=0.85, m1.2=0.85, m2.1=0.00, m2.2=0.60,
s1.1=1.7, s1.2=1.7, s2.1=1.7, s2.2=1.7,
n1.1=100, n1.2=100, n2.1=100, n2.2=100, alpha=.05)
anova2x2(m1.1=0.85, m1.2=0.85, m2.1=0.00, m2.2=0.60,
s1.1=1.7, s1.2=1.7, s2.1=1.7, s2.2=1.7,
n1.1=100, n1.2=100, n2.1=100, n2.2=100,
alpha=.05, all="ON")
```

`anova2x2_se` *Compute power for Simple Effects in a Two by Two Between Subjects ANOVA with two levels for each factor. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for Simple Effects in a Two by Two Between Subjects ANOVA with two levels for each factor. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
anova2x2_se(
  m1.1 = NULL,
  m1.2 = NULL,
  m2.1 = NULL,
  m2.2 = NULL,
  s1.1 = NULL,
  s1.2 = NULL,
  s2.1 = NULL,
  s2.2 = NULL,
  n1.1 = NULL,
  n1.2 = NULL,
  n2.1 = NULL,
  n2.2 = NULL,
  alpha = 0.05
)
```

Arguments

`m1.1`	Cell mean for First level of Factor A, First level of Factor B
`m1.2`	Cell mean for First level of Factor A, Second level of Factor B
`m2.1`	Cell mean for Second level of Factor A, First level of Factor B
`m2.2`	Cell mean for Second level of Factor A, Second level of Factor B
`s1.1`	Cell standard deviation for First level of Factor A, First level of Factor B
`s1.2`	Cell standard deviation for First level of Factor A, Second level of Factor B
`s2.1`	Cell standard deviation for Second level of Factor A, First level of Factor B
`s2.2`	Cell standard deviation for Second level of Factor A, Second level of Factor B
`n1.1`	Cell sample size for First level of Factor A, First level of Factor B
`n1.2`	Cell sample size for First level of Factor A, Second level of Factor B
`n2.1`	Cell sample size for Second level of Factor A, First level of Factor B
`n2.2`	Cell sample size for Second level of Factor A, Second level of Factor B

`alpha`	Type I error (default is .05) examples anova2x2_se(m1.1=0.85, m1.2=0.85, m2.1=0.00, m2.2=0.60, s1.1=1.7, s1.2=1.7, s2.1=1.7, s2.2=1.7, n1.1=250, n1.2=250, n2.1=250, n2.2=250, alpha=.05)

Value

Power for Simple Effects Tests in a Two By Two ANOVA

`Assumptions` *Compute power for Multiple Regression with Violated assumptions (Beta)*

Description

Compute power for Multiple Regression with Violated assumptions (Beta)

Usage

```
Assumptions(
  ry1 = NULL,
  ry2 = NULL,
  ry3 = NULL,
  ry4 = NULL,
  ry5 = NULL,
  r12 = NULL,
  r13 = NULL,
  r14 = NULL,
  r15 = NULL,
  r23 = NULL,
  r24 = NULL,
  r25 = NULL,
  r34 = NULL,
  r35 = NULL,
  r45 = NULL,
  sy = NULL,
  s1 = NULL,
  s2 = NULL,
  s3 = NULL,
  s4 = NULL,
  s5 = NULL,
  ky = NULL,
  k1 = NULL,
  k2 = NULL,
  k3 = NULL,
  k4 = NULL,
  k5 = NULL,
  n = NULL,
```

```
  alpha = 0.05,
  test = NULL,
  nruns = 500
)
```

Arguments

ry1	Correlation between DV (y) and first predictor (1)
ry2	Correlation between DV (y) and second predictor (2)
ry3	Correlation between DV (y) and third predictor (3)
ry4	Correlation between DV (y) and fourth predictor (4)
ry5	Correlation between DV (y) and fifth predictor (5)
r12	Correlation between first (1) and second predictor (2)
r13	Correlation between first (1) and third predictor (3)
r14	Correlation between first (1) and fourth predictor (4)
r15	Correlation between first (1) and fifth predictor (5)
r23	Correlation between second (2) and third predictor (3)
r24	Correlation between second (2) and fourth predictor (4)
r25	Correlation between second (2) and fifth predictor (5)
r34	Correlation between third (3) and fourth predictor (4)
r35	Correlation between third (3) and fifth predictor (5)
r45	Correlation between fourth (4) and fifth predictor (5)
sy	Skew of outcome variable
s1	Skew of first predictor
s2	Skew of second predictor
s3	Skew of third predictor
s4	Skew of fourth predictor
s5	Skew of fifth predictor
ky	Kurtosis of outcome variable
k1	Kurtosis of first predictor
k2	Kurtosis of second predictor
k3	Kurtosis of third predictor
k4	Kurtosis of fourth predictor
k5	Kurtosis of fifth predictor
n	Sample size
alpha	Type I error (default is .05)
test	type of test (none, sqrt, log, inv, robust, boot, quantile, hc0, hc1, hc2, hc3)
nruns	number of runs, default is 500

Value

Power for Resampled Multiple Regression with Non Normal Variables

Examples

```
Assumptions(ry1=.0,ry2=.3,r12=.3,sy=1,s1=2,s2=2,ky=1,k1=1,k2=1,n=100,nruns=20,test="sqrt")
```

`Assumptions_resample` *Compute power for Multiple Regression with Violated assumptions using Resamples*

Description

Compute power for Multiple Regression with Violated assumptions using Resamples

Usage

```
Assumptions_resample(
  ry1 = NULL,
  ry2 = NULL,
  ry3 = NULL,
  ry4 = NULL,
  ry5 = NULL,
  r12 = NULL,
  r13 = NULL,
  r14 = NULL,
  r15 = NULL,
  r23 = NULL,
  r24 = NULL,
  r25 = NULL,
  r34 = NULL,
  r35 = NULL,
  r45 = NULL,
  sy = NULL,
  s1 = NULL,
  s2 = NULL,
  s3 = NULL,
  s4 = NULL,
  s5 = NULL,
  ky = NULL,
  k1 = NULL,
  k2 = NULL,
  k3 = NULL,
  k4 = NULL,
  k5 = NULL,
  n = NULL,
```

```
  alpha = 0.05,
  test = "boot",
  reps = 200,
  boots = 500
)
```

Arguments

ry1	Correlation between DV (y) and first predictor (1)
ry2	Correlation between DV (y) and second predictor (2)
ry3	Correlation between DV (y) and third predictor (3)
ry4	Correlation between DV (y) and fourth predictor (4)
ry5	Correlation between DV (y) and fifth predictor (5)
r12	Correlation between first (1) and second predictor (2)
r13	Correlation between first (1) and third predictor (3)
r14	Correlation between first (1) and fourth predictor (4)
r15	Correlation between first (1) and fifth predictor (5)
r23	Correlation between second (2) and third predictor (3)
r24	Correlation between second (2) and fourth predictor (4)
r25	Correlation between second (2) and fifth predictor (5)
r34	Correlation between third (3) and fourth predictor (4)
r35	Correlation between third (3) and fifth predictor (5)
r45	Correlation between fourth (4) and fifth predictor (5)
sy	Skew of outcome variable
s1	Skew of first predictor
s2	Skew of second predictor
s3	Skew of third predictor
s4	Skew of fourth predictor
s5	Skew of fifth predictor
ky	Kurtosis of outcome variable
k1	Kurtosis of first predictor
k2	Kurtosis of second predictor
k3	Kurtosis of third predictor
k4	Kurtosis of fourth predictor
k5	Kurtosis of fifth predictor
n	Sample size
alpha	Type I error (default is .05)
test	type of test ("boot","jack","perm")
reps	number of replications, default is 200 - use larger for final analyses
boots	number of bootstrap samples. Default is 500. Use larger for final.

Value

Power for Multiple Regression with Non Normal Variables via resample

Examples

```
Assumptions_resample(ry1=.0,ry2=.3,r12=.3,sy=1,s1=2,s2=2,ky=1,k1=1,k2=1,n=100)
```

`Chi2x2` *Compute power for an Chi Square 2x2 Takes proportions for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for an Chi Square 2x2 Takes proportions for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
Chi2x2(r1c1, r1c2, r2c1, r2c2, n, alpha = 0.05)
```

Arguments

`r1c1`	Proportion of overall scores in Row 1, Column 1
`r1c2`	Proportion of overall scores in Row 1, Column 2
`r2c1`	Proportion of overall scores in Row 2, Column 1
`r2c2`	Proportion of overall scores in Row 2, Column 2
`n`	Total sample size
`alpha`	Type I error (default is .05)

Value

Power for 2x2 Chi Square

Examples

```
Chi2x2(r1c1=.28,r1c2=.22,r2c1=.38,r2c2=.12,n=100)
```

`Chi2X3` *Compute power for an Chi Square 2x3 Takes proportions for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for an Chi Square 2x3 Takes proportions for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
Chi2X3(r1c1, r1c2, r1c3, r2c1, r2c2, r2c3, n, alpha = 0.05)
```

Arguments

`r1c1`	Proportion of overall scores in Row 1, Column 1
`r1c2`	Proportion of overall scores in Row 1, Column 2
`r1c3`	Proportion of overall scores in Row 1, Column 3
`r2c1`	Proportion of overall scores in Row 2, Column 1
`r2c2`	Proportion of overall scores in Row 2, Column 2
`r2c3`	Proportion of overall scores in Row 2, Column 3
`n`	Total sample size
`alpha`	Type I error (default is .05)

Value

Power for 2x3 Chi Square

Examples

```
Chi2X3(r1c1=.25,r1c2=.25,r1c3=.10, r2c1=.10,r2c2=.25,r2c3=.05,n=200)
```

`ChiES` *Compute power for Chi Square Based on Effect Size Takes phi, degrees of freedom, and a range of sample sizes. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for Chi Square Based on Effect Size Takes phi, degrees of freedom, and a range of sample sizes. Alpha is .05 by default, alternative values may be entered by user

Usage

```
ChiES(phi, df, nlow, nhigh, by = 1, alpha = 0.05)
```

Arguments

phi	phi coefficient (effect size for 2x2)
df	degrees of freedom
nlow	starting sample size
nhigh	ending sample size
by	Incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)
alpha	Type I error (default is .05)

Value

Power for Chi Square Based on Effect Size

Examples

```
ChiES(phi=.3,df=1,nlow=10,nhigh=200,by=10, alpha = .01)
```

ChiGOF — *Compute power for an Chi Square Goodness of Fit Takes proportions for up to six group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for an Chi Square Goodness of Fit Takes proportions for up to six group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
ChiGOF(
  groups,
  po1,
  po2,
  po3 = NULL,
  po4 = NULL,
  po5 = NULL,
  po6 = NULL,
  n,
  alpha = 0.05
)
```

Arguments

groups	Number of groups
po1	Proportion observed Group 1
po2	Proportion observed Group 2
po3	Proportion observed Group 3
po4	Proportion observed Group 4
po5	Proportion observed Group 5
po6	Proportion observed Group 6
n	Total sample size
alpha	Type I error (default is .05)

Value

Power for Chi Square Goodness of Fit

Examples

```
ChiGOF(po1=.25, po2=.20, po3=.20, po4=.35, groups=4,n=100)
```

---

corr *Compute power for Pearson's Correlation Takes correlation and range of values*

Description

Compute power for Pearson's Correlation Takes correlation and range of values

Usage

```
corr(r, nlow, nhigh, alpha = 0.05, tails = 2, by = 1)
```

Arguments

r	Correlation
nlow	Starting sample size
nhigh	Ending sample size
alpha	Type I error (default is .05)
tails	one or two-tailed tests (default is 2)
by	Incremental increase in sample size from low to high

Value

Power for Pearson's Correlation

Examples

```
corr(r=.30, nlow=60, nhigh=100,by=2)
```

depb *Power for Comparing Dependent Coefficients in Multiple Regression with Two or Three Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)*

Description

Power for Comparing Dependent Coefficients in Multiple Regression with Two or Three Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)

Usage

```
depb(ry1, ry2, ry3 = NULL, r12, r13 = NULL, r23 = NULL, n = NULL, alpha = 0.05)
```

Arguments

ry1	Correlation between DV (y) and first predictor (1)
ry2	Correlation between DV (y) and second predictor (2)
ry3	Correlation between DV (y) and third predictor (3)
r12	Correlation between first (1) and second predictor (2)
r13	Correlation between first (1) and third predictor (3)
r23	Correlation between second (2) and third predictor (3)
n	Total Sample size
alpha	Type I error (default is .05)

Value

Power for Comparing Dependent Coefficients in Multiple Regression with Two or Three Predictors

Examples

```
depb(ry1=.40, ry2=.40, ry3=-.40, r12=-.15, r13=-.60, r23=.25,n=110, alpha=.05)
```

`depcorr0` *Compute Power for Comparing Two Dependent Correlations, No Variables in Common Takes correlations and range of values. First variable in each pair is termed predictor, second is DV*

Description

Compute Power for Comparing Two Dependent Correlations, No Variables in Common Takes correlations and range of values. First variable in each pair is termed predictor, second is DV

Usage

```
depcorr0(
  r12,
  rxy,
  r1x,
  r1y,
  r2x,
  r2y,
  nlow,
  nhigh,
  alpha = 0.05,
  tails = 2,
  by = 1
)
```

Arguments

`r12`	Correlation between the predictor and DV (first set of measures)
`rxy`	Correlation between the predictor and DV (second set of measures)
`r1x`	Correlation between the predictor (first measure) and the predictor variable (first measure)
`r1y`	Correlation between the predictor (first measure) and the dependent variable (second measure)
`r2x`	Correlation between the DV (first measure) and the predictor variable (first measure)
`r2y`	Correlation between the DV (first measure) and the dependent variable (second measure)
`nlow`	Starting sample size
`nhigh`	Ending sample size
`alpha`	Type I error (default is .05)
`tails`	one or two-tailed tests (default is 2)
`by`	Incremental increase in sample size from low to high

Value

Power for Comparing Two Dependent Correlations, No Variables in Common

Examples

```
depcorr0(r12=.4,rxy=.7,r1x=.3,r1y=.1,r2x=.45,r2y=.35,nlow=20,nhigh=200,by=10, tails=2)
```

---

depcorr1 — *Compute Power for Comparing Two Dependent Correlations, One Variable in Common Takes correlations and range of values*

Description

Compute Power for Comparing Two Dependent Correlations, One Variable in Common Takes correlations and range of values

Usage

```
depcorr1(r1y, r2y, r12, nlow, nhigh, alpha = 0.05, tails = 2, by = 1)
```

Arguments

`r1y`	Correlation between the first predictor and the dependent variable
`r2y`	Correlation between the second predictor and the dependent variable
`r12`	Correlation between the first predictor and the second predictor
`nlow`	Starting sample size
`nhigh`	Ending sample size
`alpha`	Type I error (default is .05)
`tails`	one or two-tailed tests (default is 2)
`by`	Incremental increase in sample size from low to high

Value

Power for Comparing Dependent Correlations, One Variable in Common

Examples

```
depcorr1(r1y=.3,r2y=.04,r12 = .2, nlow=100,nhigh=300,by=10, tails=2)
```

`d_prec` *Compute Precision Analyses for Standardized Mean Differences*

Description

Compute Precision Analyses for Standardized Mean Differences

Usage

```
d_prec(d, nlow, nhigh, propn1 = 0.5, ci = 0.95, tails = 2, by = 1)
```

Arguments

d	Standardized means difference between groups
nlow	starting total sample size
nhigh	ending total sample size
propn1	Proportion in First Group
ci	Type of Confidence Interval (e.g., .95)
tails	number of tails for test (default is 2)
by	Incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)

Value

Precision Analyses for Standardized Mean Differences

Examples

```
d_prec(d=.4,nlow=100, nhigh=2000, propn1=.5, ci=.95, by=100)
```

`indb` *Power for Comparing Independent Coefficients in Multiple Regression with Two or Three Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)*

Description

Power for Comparing Independent Coefficients in Multiple Regression with Two or Three Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)

Usage

```
indb(
  ry1_1,
  ry2_1,
  ry3_1 = NULL,
  r12_1,
  r13_1 = NULL,
  r23_1 = NULL,
  n1,
  ry1_2,
  ry2_2,
  ry3_2 = NULL,
  r12_2,
  r13_2 = NULL,
  r23_2 = NULL,
  n2,
  alpha = 0.05
)
```

Arguments

ry1_1	Correlation between DV (y) and first predictor (1), first test
ry2_1	Correlation between DV (y) and second predictor (2), first test
ry3_1	Correlation between DV (y) and third predictor (3), first test
r12_1	Correlation between first (1) and second predictor (2), first test
r13_1	Correlation between first (1) and third predictor (3), first test
r23_1	Correlation between second (2) and third predictor (3), first test
n1	Sample size first test
ry1_2	Correlation between DV (y) and first predictor (1), second test
ry2_2	Correlation between DV (y) and second predictor (2), second test
ry3_2	Correlation between DV (y) and third predictor (3), second test
r12_2	Correlation between first (1) and second predictor (2), second test
r13_2	Correlation between first (1) and third predictor (3), second test
r23_2	Correlation between second (2) and third predictor (3), second test
n2	Sample size second test
alpha	Type I error (default is .05)

Value

Power for Comparing Independent Coefficients in Multiple Regression

Examples

```
indb(ry1_1=.40, ry2_1=.40, ry3_1 =-.40, r12_1=-.15,r13_1=-.60, r23_1=.25,
ry1_2=.40, ry2_2=.10, ry3_2 =-.40, r12_2=-.15,r13_2=-.60, r23_2=.25,
n1=50,n2=50, alpha=.05)
```

indcorr — *Compute Power for Comparing Two Independent Correlations Takes correlations and range of values*

Description

Compute Power for Comparing Two Independent Correlations Takes correlations and range of values

Usage

```
indcorr(r1, r2, nlow, nhigh, propn1 = 0.5, alpha = 0.05, tails = 2, by = 1)
```

Arguments

`r1`	Correlation for Group 1
`r2`	Correlation for Group 2
`nlow`	Starting sample size
`nhigh`	Ending sample size
`propn1`	Proportion of sample in first group (default is .50 for equally size groups)
`alpha`	Type I error (default is .05)
`tails`	one or two-tailed tests (default is 2)
`by`	Incremental increase in sample size from low to high

Value

Power for Comparing Two Independent Correlations

Examples

```
indcorr(r1=.3,r2=.1,nlow=200,nhigh=800,by=50, tails=1)
```

indR2 — *Power for Comparing Independent R2 in Multiple Regression with Two or Three Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)*

Description

Power for Comparing Independent R2 in Multiple Regression with Two or Three Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)

Usage

```
indR2(
  ry1_1,
  ry2_1,
  ry3_1 = NULL,
  r12_1,
  r13_1 = NULL,
  r23_1 = NULL,
  n1,
  ry1_2,
  ry2_2,
  ry3_2 = NULL,
  r12_2,
  r13_2 = NULL,
  r23_2 = NULL,
  n2,
  alpha = 0.05,
  tails = 2
)
```

Arguments

ry1_1	Correlation between DV (y) and first predictor (1), first test
ry2_1	Correlation between DV (y) and second predictor (2), first test
ry3_1	Correlation between DV (y) and third predictor (3), first test
r12_1	Correlation between first (1) and second predictor (2), first test
r13_1	Correlation between first (1) and third predictor (3), first test
r23_1	Correlation between second (2) and third predictor (3), first test
n1	Sample size first test
ry1_2	Correlation between DV (y) and first predictor (1), second test
ry2_2	Correlation between DV (y) and second predictor (2), second test
ry3_2	Correlation between DV (y) and third predictor (3), second test
r12_2	Correlation between first (1) and second predictor (2), second test
r13_2	Correlation between first (1) and third predictor (3), second test
r23_2	Correlation between second (2) and third predictor (3), second test
n2	Sample size second test
alpha	Type I error (default is .05)
tails	number of tails for test (default is 2)

Value

Power for Comparing R2 Coefficients in Multiple Regression

Examples

```
indR2(ry1_1=.40, ry2_1=.40, ry3_1 =-.40, r12_1=-.15,r13_1=-.60, r23_1=.25,
ry1_2=.40, ry2_2=.10, ry3_2 =-.40, r12_2=-.15,r13_2=-.60, r23_2=.25,
n1=115,n2=115, alpha=.05)
```

`indt` *Compute power for an Independent Samples t-test Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for an Independent Samples t-test Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
indt(
  m1 = NULL,
  m2 = NULL,
  s1 = NULL,
  s2 = NULL,
  n1 = NULL,
  n2 = NULL,
  alpha = 0.05
)
```

Arguments

`m1`	Mean of first group
`m2`	Mean of second group
`s1`	Standard deviation of first group
`s2`	Standard deviation of second group
`n1`	Sample size for first group
`n2`	Sample size for second group
`alpha`	Type I error (default is .05)

Value

Power for Independent Samples t-test

Examples

```
indt(m1=22,m2=20,s1=5,s2=5,n1=99,n2=99)
indt(m1=1.3, m2=0, s1=4,s2=1,n1=78,n2=234)
```

lmm1F *Compute power for a One Factor Within Subjects Linear Mixed Model with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor Within Subjects Linear Mixed Model with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
lmm1F(
  m1,
  m2,
  m3 = NA,
  m4 = NA,
  s1,
  s2,
  s3 = NULL,
  s4 = NULL,
  r12,
  r13 = NULL,
  r14 = NULL,
  r23 = NULL,
  r24 = NULL,
  r34 = NULL,
  n,
  alpha = 0.05
)
```

Arguments

m1	Mean of first time point
m2	Mean of second time point
m3	Mean of third time point
m4	Mean of fourth time point
s1	Standard deviation of first time point
s2	Standard deviation of second time point
s3	Standard deviation of third time point
s4	Standard deviation of forth time point
r12	correlation Time 1 and Time 2

r13	correlation Time 1 and Time 3
r14	correlation Time 1 and Time 4
r23	correlation Time 2 and Time 3
r24	correlation Time 2 and Time 4
r34	correlation Time 3 and Time 4
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for the One Factor Within Subjects Linear Mixed Model

Examples

```
lmm1F(m1=-.25,m2=.00,m3=.10,m4=.15,s1=.4,s2=.5,s3=.6,s4=.7,
r12=.50, r13=.30, r14=.15, r23=.5, r24=.30, r34=.50, n=25)
lmm1F(m1=-.25,m2=.00,m3=.10,m4=.15,s1=.4,s2=.5,s3=2.5,s4=2.0,
r12=.50, r13=.30, r14=.10, r23=.5, r24=.30, r34=.40, n=100)
```

`lmm1Ftrends` *Compute power for a One Factor Within Subjects LMM Trends with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor Within Subjects LMM Trends with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
lmm1Ftrends(
  m1,
  m2,
  m3 = NA,
  m4 = NA,
  s1,
  s2,
  s3 = NULL,
  s4 = NULL,
  r12,
  r13 = NULL,
  r14 = NULL,
  r23 = NULL,
  r24 = NULL,
```

```
  r34 = NULL,
  n,
  alpha = 0.05
)
```

Arguments

m1	Mean of first time point
m2	Mean of second time point
m3	Mean of third time point
m4	Mean of fourth time point
s1	Standard deviation of first time point
s2	Standard deviation of second time point
s3	Standard deviation of third time point
s4	Standard deviation of forth time point
r12	correlation Time 1 and Time 2
r13	correlation Time 1 and Time 3
r14	correlation Time 1 and Time 4
r23	correlation Time 2 and Time 3
r24	correlation Time 2 and Time 4
r34	correlation Time 3 and Time 4
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for the One Factor Within Subjects LMM Trends

Examples

```
lmm1Ftrends(m1=-.25,m2=-.15,m3=-.05,m4=.05,s1=.4,s2=.5,s3=.6,s4=.7,
r12=.50, r13=.30, r14=.15, r23=.5, r24=.30, r34=.50, n=25)
```

---

lmm1w1b

Compute power for a One Factor Within Subjects and One Factor Between LMM with up to two by four levels (within). Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

---

Description

Compute power for a One Factor Within Subjects and One Factor Between LMM with up to two by four levels (within). Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
lmm1w1b(
  m1.1,
  m2.1,
  m3.1 = NA,
  m4.1 = NA,
  m1.2,
  m2.2,
  m3.2 = NA,
  m4.2 = NA,
  s1.1 = NA,
  s2.1 = NA,
  s3.1 = NA,
  s4.1 = NA,
  s1.2 = NA,
  s2.2 = NA,
  s3.2 = NA,
  s4.2 = NA,
  r1.2_1 = NULL,
  r1.3_1 = NULL,
  r1.4_1 = NULL,
  r2.3_1 = NULL,
  r2.4_1 = NULL,
  r3.4_1 = NULL,
  r1.2_2 = NULL,
  r1.3_2 = NULL,
  r1.4_2 = NULL,
  r2.3_2 = NULL,
  r2.4_2 = NULL,
  r3.4_2 = NULL,
  r = NULL,
  s = NULL,
  n,
  alpha = 0.05
)
```

Arguments

m1.1	Mean of first level Within Factor, 1st level Between Factor
m2.1	Mean of second level Within Factor, 1st level Between Factor
m3.1	Mean of third level Within Factor, 1st level Between Factor
m4.1	Mean of fourth level Within Factor, 1st level Between Factor
m1.2	Mean of first level Within Factor, 2nd level Between Factor
m2.2	Mean of second level Within Factor, 2nd level Between Factor
m3.2	Mean of third level Within Factor, 2nd level Between Factor
m4.2	Mean of fourth level Within Factor, 2nd level Between Factor

s1.1	Standard deviation of first level Within Factor, 1st level Between Factor
s2.1	Standard deviation of second level Within Factor, 1st level Between Factor
s3.1	Standard deviation of third level Within Factor, 1st level Between Factor
s4.1	Standard deviation of forth level Within Factor, 1st level Between Factor
s1.2	Standard deviation of first level Within Factor, 2nd level Between Factor
s2.2	Standard deviation of second level Within Factor, 2nd level Between Factor
s3.2	Standard deviation of third level Within Factor, 2nd level Between Factor
s4.2	Standard deviation of forth level Within Factor, 2nd level Between Factor
r1.2_1	correlation Within Factor Level 1 and Within Factor, Level 2, 1st level Between
r1.3_1	correlation Within Factor Level 1 and Within Factor, Level 3, 1st level Between
r1.4_1	correlation Within Factor Level 1 and Within Factor, Level 4, 1st level Between
r2.3_1	correlation Within Factor Level 1 and Within Factor, Level 3, 1st level Between
r2.4_1	correlation Within Factor Level 1 and Within Factor, Level 4, 1st level Between
r3.4_1	correlation Within Factor Level 1 and Within Factor, Level 4, 1st level Between
r1.2_2	correlation Within Factor Level 1 and Within Factor, Level 2, 2nd level Between
r1.3_2	correlation Within Factor Level 1 and Within Factor, Level 3, 2nd level Between
r1.4_2	correlation Within Factor Level 1 and Within Factor, Level 4, 2nd level Between
r2.3_2	correlation Within Factor Level 1 and Within Factor, Level 3, 2nd level Between
r2.4_2	correlation Within Factor Level 1 and Within Factor, Level 4, 2nd level Between
r3.4_2	correlation Within Factor Level 1 and Within Factor, Level 4, 2nd level Between
r	sets same correlations between DVs on all factor levels (seriously, just use this)
s	sets same standard deviation for factor levels (see comment above)
n	n for each between group level
alpha	Type I error (default is .05)

Value

Power for the One Factor Within Subjects and One Factor Between LMM

Examples

```
lmm1w1b(m1.1 = -.25, m2.1=0, m3.1=0.10, m4.1=.15,
m1.2=-.25,m2.2=-.25,m3.2=-.25, m4.2=-.25,
s1.1 = .4, s2.1=.5, s3.1=0.6, s4.1=.7,
s1.2=.4,s2.2=.5,s3.2=.6, s4.2=.7,n = 50,
r1.2_1=.5,r1.3_1=.3,r1.4_1=.15,r2.3_1=.5,r2.4_1=.3,r3.4_1=.5,
r1.2_2=.5,r1.3_2=.3,r1.4_2=.15, r2.3_2=.5,r2.4_2=.3,r3.4_2=.5)
lmm1w1b(m1.1 = -.25, m2.1=0, m3.1=0.10, m4.1=.15,
m1.2=-.25,m2.2=-.25,m3.2=-.25, m4.2=-.25, s=.4, r = .5, n=100)
```

`lmm2F` *Compute power for a Two Factor Within Subjects Using Linear Mixed Models with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a Two Factor Within Subjects Using Linear Mixed Models with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
lmm2F(
  m1.1,
  m2.1,
  m3.1 = NA,
  m4.1 = NA,
  m1.2,
  m2.2,
  m3.2 = NA,
  m4.2 = NA,
  s1.1 = NA,
  s2.1 = NA,
  s3.1 = NA,
  s4.1 = NA,
  s1.2 = NA,
  s2.2 = NA,
  s3.2 = NA,
  s4.2 = NA,
  r12 = NULL,
  r13 = NULL,
  r14 = NULL,
  r15 = NULL,
  r16 = NULL,
  r17 = NULL,
  r18 = NULL,
  r23 = NULL,
  r24 = NULL,
  r25 = NULL,
  r26 = NULL,
  r27 = NULL,
  r28 = NULL,
  r34 = NULL,
  r35 = NULL,
  r36 = NULL,
```

```
    r37 = NULL,
    r38 = NULL,
    r45 = NULL,
    r46 = NULL,
    r47 = NULL,
    r48 = NULL,
    r56 = NULL,
    r57 = NULL,
    r58 = NULL,
    r67 = NULL,
    r68 = NULL,
    r78 = NULL,
    r = NULL,
    s = NULL,
    n,
    alpha = 0.05
  )
```

Arguments

m1.1	Mean of first level factor 1, 1st level factor two
m2.1	Mean of second level factor 1, 1st level factor two
m3.1	Mean of third level factor 1, 1st level factor two
m4.1	Mean of fourth level factor 1, 1st level factor two
m1.2	Mean of first level factor 1, 2nd level factor two
m2.2	Mean of second level factor 1, 2nd level factor two
m3.2	Mean of third level factor 1, 2nd level factor two
m4.2	Mean of fourth level factor 1, 2nd level factor two
s1.1	Standard deviation of first level factor 1, 1st level factor two
s2.1	Standard deviation of second level factor 1, 1st level factor two
s3.1	Standard deviation of third level factor 1, 1st level factor two
s4.1	Standard deviation of forth level factor 1, 1st level factor two
s1.2	Standard deviation of first level factor 1, 2nd level factor two
s2.2	Standard deviation of second level factor 1, 2nd level factor two
s3.2	Standard deviation of third level factor 1, 2nd level factor two
s4.2	Standard deviation of forth level factor 1, 2nd level factor two
r12	correlation Factor 1, Level 1 and Factor 1, Level 2
r13	correlation Factor 1, Level 1 and Factor 1, Level 3
r14	correlation Factor 1, Level 1 and Factor 1, Level 4
r15	correlation Factor 1, Level 1 and Factor 2, Level 1
r16	correlation Factor 1, Level 1 and Factor 2, Level 2
r17	correlation Factor 1, Level 1 and Factor 2, Level 3

r18	correlation Factor 1, Level 1 and Factor 2, Level 4
r23	correlation Factor 1, Level 2 and Factor 1, Level 3
r24	correlation Factor 1, Level 2 and Factor 1, Level 4
r25	correlation Factor 1, Level 2 and Factor 2, Level 1
r26	correlation Factor 1, Level 2 and Factor 2, Level 2
r27	correlation Factor 1, Level 2 and Factor 2, Level 3
r28	correlation Factor 1, Level 2 and Factor 2, Level 4
r34	correlation Factor 1, Level 3 and Factor 1, Level 4
r35	correlation Factor 1, Level 3 and Factor 2, Level 1
r36	correlation Factor 1, Level 3 and Factor 2, Level 2
r37	correlation Factor 1, Level 3 and Factor 2, Level 3
r38	correlation Factor 1, Level 3 and Factor 2, Level 4
r45	correlation Factor 1, Level 4 and Factor 2, Level 1
r46	correlation Factor 1, Level 4 and Factor 2, Level 2
r47	correlation Factor 1, Level 4 and Factor 2, Level 3
r48	correlation Factor 1, Level 4 and Factor 2, Level 4
r56	correlation Factor 2, Level 1 and Factor 2, Level 2
r57	correlation Factor 2, Level 1 and Factor 2, Level 3
r58	correlation Factor 2, Level 1 and Factor 2, Level 4
r67	correlation Factor 2, Level 2 and Factor 2, Level 3
r68	correlation Factor 2, Level 2 and Factor 2, Level 4
r78	correlation Factor 2, Level 3 and Factor 2, Level 4
r	sets same correlations between DVs on all factor levels (seriously, just use this)
s	sets same standard deviation for factor levels (see comment above)
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for the Two Factor Within Subjects LMM

Examples

```
lmm2F(m1.1=-.25,m2.1=0,m1.2=-.25,m2.2=.10,s1.1=.4,s2.1=.5,s1.2=.4,s2.2=.5,r=.5,n=200)
```

lmm2Fse *Compute power for a Two Factor Within Subjects Using Linear Mixed Models with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a Two Factor Within Subjects Using Linear Mixed Models with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
lmm2Fse(
  m1.1,
  m2.1,
  m3.1 = NA,
  m4.1 = NA,
  m1.2,
  m2.2,
  m3.2 = NA,
  m4.2 = NA,
  s1.1 = NA,
  s2.1 = NA,
  s3.1 = NA,
  s4.1 = NA,
  s1.2 = NA,
  s2.2 = NA,
  s3.2 = NA,
  s4.2 = NA,
  r12 = NULL,
  r13 = NULL,
  r14 = NULL,
  r15 = NULL,
  r16 = NULL,
  r17 = NULL,
  r18 = NULL,
  r23 = NULL,
  r24 = NULL,
  r25 = NULL,
  r26 = NULL,
  r27 = NULL,
  r28 = NULL,
  r34 = NULL,
  r35 = NULL,
  r36 = NULL,
```

```
  r37 = NULL,
  r38 = NULL,
  r45 = NULL,
  r46 = NULL,
  r47 = NULL,
  r48 = NULL,
  r56 = NULL,
  r57 = NULL,
  r58 = NULL,
  r67 = NULL,
  r68 = NULL,
  r78 = NULL,
  r = NULL,
  s = NULL,
  n,
  alpha = 0.05
)
```

Arguments

m1.1	Mean of first level factor 1, 1st level factor two
m2.1	Mean of second level factor 1, 1st level factor two
m3.1	Mean of third level factor 1, 1st level factor two
m4.1	Mean of fourth level factor 1, 1st level factor two
m1.2	Mean of first level factor 1, 2nd level factor two
m2.2	Mean of second level factor 1, 2nd level factor two
m3.2	Mean of third level factor 1, 2nd level factor two
m4.2	Mean of fourth level factor 1, 2nd level factor two
s1.1	Standard deviation of first level factor 1, 1st level factor two
s2.1	Standard deviation of second level factor 1, 1st level factor two
s3.1	Standard deviation of third level factor 1, 1st level factor two
s4.1	Standard deviation of forth level factor 1, 1st level factor two
s1.2	Standard deviation of first level factor 1, 2nd level factor two
s2.2	Standard deviation of second level factor 1, 2nd level factor two
s3.2	Standard deviation of third level factor 1, 2nd level factor two
s4.2	Standard deviation of forth level factor 1, 2nd level factor two
r12	correlation Factor 1, Level 1 and Factor 1, Level 2
r13	correlation Factor 1, Level 1 and Factor 1, Level 3
r14	correlation Factor 1, Level 1 and Factor 1, Level 4
r15	correlation Factor 1, Level 1 and Factor 2, Level 1
r16	correlation Factor 1, Level 1 and Factor 2, Level 2
r17	correlation Factor 1, Level 1 and Factor 2, Level 3

r18	correlation Factor 1, Level 1 and Factor 2, Level 4
r23	correlation Factor 1, Level 2 and Factor 1, Level 3
r24	correlation Factor 1, Level 2 and Factor 1, Level 4
r25	correlation Factor 1, Level 2 and Factor 2, Level 1
r26	correlation Factor 1, Level 2 and Factor 2, Level 2
r27	correlation Factor 1, Level 2 and Factor 2, Level 3
r28	correlation Factor 1, Level 2 and Factor 2, Level 4
r34	correlation Factor 1, Level 3 and Factor 1, Level 4
r35	correlation Factor 1, Level 3 and Factor 2, Level 1
r36	correlation Factor 1, Level 3 and Factor 2, Level 2
r37	correlation Factor 1, Level 3 and Factor 2, Level 3
r38	correlation Factor 1, Level 3 and Factor 2, Level 4
r45	correlation Factor 1, Level 4 and Factor 2, Level 1
r46	correlation Factor 1, Level 4 and Factor 2, Level 2
r47	correlation Factor 1, Level 4 and Factor 2, Level 3
r48	correlation Factor 1, Level 4 and Factor 2, Level 4
r56	correlation Factor 2, Level 1 and Factor 2, Level 2
r57	correlation Factor 2, Level 1 and Factor 2, Level 3
r58	correlation Factor 2, Level 1 and Factor 2, Level 4
r67	correlation Factor 2, Level 2 and Factor 2, Level 3
r68	correlation Factor 2, Level 2 and Factor 2, Level 4
r78	correlation Factor 2, Level 3 and Factor 2, Level 4
r	sets same correlations between DVs on all factor levels (seriously, just use this)
s	sets same standard deviation for factor levels (see comment above)
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for Simple Effects in Two Factor Within Subjects LMM

Examples

```
lmm2Fse(m1.1=-.25,m2.1=0,m3.1=.10,m4.1=.15,m1.2=-.25,m2.2=.10,m3.2=.30,m4.2=.35,
s1.1=.4,s2.1=.5,s3.1=2.5,s4.1=2.0,s1.2=.4,s2.2=.5,s3.2=2.5,s4.2=2.0,r=.5,n=220)
```

`LRcat` *Compute Power for Logistic Regression with a Single Categorical Predictor*

Description

Compute Power for Logistic Regression with a Single Categorical Predictor

Usage

```
LRcat(p0 = NULL, p1 = NULL, prop = 0.5, alpha = 0.05, power, R2 = 0)
```

Arguments

`p0`	Probability of a Desirable Outcome in the Control Condition
`p1`	Probability of a Desirable Outcome in the Treatment Condition
`prop`	Proportion in the Treatment Condition
`alpha`	Type I error (default is .05)
`power`	Desired Power
`R2`	How Well Predictor of Interest is Explained by Other Predictors (default is 0)

Value

Power for Logistic Regression with a Single Categorical Predictor

Examples

```
LRcat(p0=.137,p1=.611,prop =.689,power=.95)
```

`LRcont` *Compute Power for Logistic Regression with Continuous Predictors*

Description

Compute Power for Logistic Regression with Continuous Predictors

Usage

```
LRcont(OR = NA, r = NA, ER = NULL, alpha = 0.05, power = NULL, R2 = 0)
```

Arguments

`OR`	Odds Ratio for Predictor of Interest
`r`	Correlation for Predictor of Interest
`ER`	Event Ratio Probability of a Desirable Outcome Overall
`alpha`	Type I error (default is .05)
`power`	Desired Power
`R2`	How Well Predictor of Interest is Explained by Other Predictors (default is 0)

Value

Power for Logistic Regression with Continuous Predictors

Examples

```
LRcont(OR = 4.05, ER = .463,power=.95)
```

MANOVA1f — *Compute power for a One Factor MANOVA with up to two levels and up to four measures. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor MANOVA with up to two levels and up to four measures. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
MANOVA1f(
  m1.1,
  m2.1,
  m3.1 = NA,
  m4.1 = NA,
  m1.2,
  m2.2,
  m3.2 = NA,
  m4.2 = NA,
  s1.1 = NA,
  s2.1 = NA,
  s3.1 = NA,
  s4.1 = NA,
  s1.2 = NA,
  s2.2 = NA,
```

```
    s3.2 = NA,
    s4.2 = NA,
    r1.2_1 = NULL,
    r1.3_1 = NULL,
    r1.4_1 = NULL,
    r2.3_1 = NULL,
    r2.4_1 = NULL,
    r3.4_1 = NULL,
    r1.2_2 = NULL,
    r1.3_2 = NULL,
    r1.4_2 = NULL,
    r2.3_2 = NULL,
    r2.4_2 = NULL,
    r3.4_2 = NULL,
    r = NULL,
    s = NULL,
    n,
    alpha = 0.05
  )
```

Arguments

m1.1	Mean of first DV, 1st level Between Factor
m2.1	Mean of second DV, 1st level Between Factor
m3.1	Mean of third DV, 1st level Between Factor
m4.1	Mean of fourth DV, 1st level Between Factor
m1.2	Mean of first DV, 2nd level Between Factor
m2.2	Mean of second DV, 2nd level Between Factor
m3.2	Mean of third DV, 2nd level Between Factor
m4.2	Mean of fourth DV, 2nd level Between Factor
s1.1	Standard deviation of first DV, 1st level Between Factor
s2.1	Standard deviation of second DV, 1st level Between Factor
s3.1	Standard deviation of third DV, 1st level Between Factor
s4.1	Standard deviation of forth DV, 1st level Between Factor
s1.2	Standard deviation of first DV, 2nd level Between Factor
s2.2	Standard deviation of second DV, 2nd level Between Factor
s3.2	Standard deviation of third DV, 2nd level Between Factor
s4.2	Standard deviation of forth DV, 2nd level Between Factor
r1.2_1	correlation DV 1 and DV 2, 1st level Between
r1.3_1	correlation DV 1 and DV 3, 1st level Between
r1.4_1	correlation DV 1 and DV 4, 1st level Between
r2.3_1	correlation DV 1 and DV 3, 1st level Between
r2.4_1	correlation DV 1 and DV 4, 1st level Between

r3.4_1	correlation DV 1 and DV 4, 1st level Between
r1.2_2	correlation DV 1 and DV 2, 2nd level Between
r1.3_2	correlation DV 1 and DV 3, 2nd level Between
r1.4_2	correlation DV 1 and DV 4, 2nd level Between
r2.3_2	correlation DV 1 and DV 3, 2nd level Between
r2.4_2	correlation DV 1 and DV 4, 2nd level Between
r3.4_2	correlation DV 1 and DV 4, 2nd level Between
r	sets same correlations between DVs on all factor levels (seriously, just use this)
s	sets same standard deviation for factor levels (see comment above)
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for the One Factor Within Subjects and One Factor Between ANOVA

Examples

```
MANOVA1f(n=40,m1.1=0,m2.1=1,m3.1=2.4,m4.1=-0.7,
m1.2=-0.25,m2.2=-2,m3.2=2,m4.2=-1,
s1.1=.4,s2.1=5,s3.1=1.6,s4.1=1.2,
s1.2=.4,s2.2=5,s3.2=1.6,s4.2=1.2,
r1.2_1=.1,r1.3_1=.1,r1.4_1=.1,
r2.3_1=.35,r2.4_1=.45,r3.4_1=.40,
r1.2_2=.1,r1.3_2=.1,r1.4_2=.1,
r2.3_2=.35,r2.4_2=.45,r3.4_2=.40,alpha=.05)
MANOVA1f(n=40,m1.1=0,m2.1=1,m3.1=2.4,m4.1=-0.7,
m1.2=-0.25,m2.2=-2,m3.2=2,m4.2=-1,
s=.4,r=.5,alpha=.05)
```

---

md_prec *Compute Precision Analyses for Mean Differences*

Description

Compute Precision Analyses for Mean Differences

Usage

```
md_prec(m1, m2, s1, s2, nlow, nhigh, propn1 = 0.5, ci = 0.95, by = 1)
```

Arguments

m1	Mean of first group
m2	Mean of second group
s1	Standard deviation of first group
s2	Standard deviation of second group
nlow	starting sample size
nhigh	ending sample size
propn1	Proportion in First Group
ci	Type of Confidence Interval (e.g., .95)
by	Incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)

Value

Precision Analyses for Mean Differences

Examples

```
md_prec(m1=2,m2 =0, s1=5, s2=5,nlow=100, nhigh =1600, propn1=.5, ci=.95, by=100)
md_prec(m1=0,m2 =0, s1=5, s2=5,nlow=100, nhigh =40000, propn1=.5, ci=.95, by=1000)
```

---

med — *Compute Power for Mediated (Indirect) Effects Requires correlations between all variables as sample size. This approach calculates power for the Sobel test. The medjs function calculates power based on joint significance (recommended)*

Description

Compute Power for Mediated (Indirect) Effects Requires correlations between all variables as sample size. This approach calculates power for the Sobel test. The medjs function calculates power based on joint significance (recommended)

Usage

```
med(
  rxm1,
  rxm2 = 0,
  rxm3 = 0,
  rxm4 = 0,
  rxy,
  rym1,
  rym2 = 0,
  rym3 = 0,
```

```
  rym4 = 0,
  rm1m2 = 0,
  rm1m3 = 0,
  rm1m4 = 0,
  rm2m3 = 0,
  rm2m4 = 0,
  rm3m4 = 0,
  alpha = 0.05,
  mvars,
  n
)
```

Arguments

rxm1	Correlation between predictor (x) and first mediator (m1)
rxm2	Correlation between predictor (x) and second mediator (m2)
rxm3	Correlation between predictor (x) and third mediator (m3)
rxm4	Correlation between predictor (x) and fourth mediator (m4)
rxy	Correlation between DV (y) and predictor (x)
rym1	Correlation between DV (y) and first mediator (m1)
rym2	Correlation between DV (y) and second mediator (m2)
rym3	Correlation DV (y) and third mediator (m3)
rym4	Correlation DV (y) and fourth mediator (m4)
rm1m2	Correlation first mediator (m1) and second mediator (m2)
rm1m3	Correlation first mediator (m1) and third mediator (m3)
rm1m4	Correlation first mediator (m1) and fourth mediator (m4)
rm2m3	Correlation second mediator (m2) and third mediator (m3)
rm2m4	Correlation second mediator (m2) and fourth mediator (m4)
rm3m4	Correlation third mediator (m3) and fourth mediator (m4)
alpha	Type I error (default is .05)
mvars	Number of Mediators
n	Sample size

Value

Power for Mediated (Indirect) Effects

Examples

```
med(rxm1=.25, rxy=-.35, rym1=-.5,mvars=1, n=150)
med(rxm1=.3, rxm2=.3, rxm3=.25, rxy=-.35, rym1=-.5,rym2=-.5, rym3 = -.5,
rm1m2=.7, rm1m3=.4,rm2m3=.4, mvars=3, n=150)
```

`medjs` *Compute Power for Mediated (Indirect) Effects Using Joint Significance Requires correlations between all variables as sample size. This is the recommended approach for determining power*

Description

Compute Power for Mediated (Indirect) Effects Using Joint Significance Requires correlations between all variables as sample size. This is the recommended approach for determining power

Usage

```
medjs(
  rx1x2 = NULL,
  rx1m1,
  rx1m2 = NULL,
  rx1m3 = NULL,
  rx1m4 = NULL,
  rx1y,
  rx2m1 = NULL,
  rx2m2 = NULL,
  rx2m3 = NULL,
  rx2m4 = NULL,
  rx2y,
  rym1,
  rym2 = NULL,
  rym3 = NULL,
  rym4 = NULL,
  rm1m2 = NULL,
  rm1m3 = NULL,
  rm1m4 = NULL,
  rm2m3 = NULL,
  rm2m4 = NULL,
  rm3m4 = NULL,
  n,
  alpha = 0.05,
  mvars,
  rep = 1000,
  pred = 1
)
```

Arguments

`rx1x2`	Correlation between first predictor (x1) and second predictor (x2)
`rx1m1`	Correlation between first predictor (x1) and first mediator (m1)
`rx1m2`	Correlation between first predictor (x1) and second mediator (m2)

rx1m3	Correlation between first predictor (x1) and third mediator (m3)
rx1m4	Correlation between first predictor (x1) and fourth mediator (m4)
rx1y	Correlation between DV (y) and first predictor (x1)
rx2m1	Correlation between second predictor (x2) and first mediator (m1)
rx2m2	Correlation between second predictor (x2) and second mediator (m2)
rx2m3	Correlation between second predictor (x2) and third mediator (m3)
rx2m4	Correlation between second predictor (x2) and fourth mediator (m4)
rx2y	Correlation between DV (y) and second predictor (x2)
rym1	Correlation between DV (y) and first mediator (m1)
rym2	Correlation between DV (y) and second mediator (m2)
rym3	Correlation DV (y) and third mediator (m3)
rym4	Correlation DV (y) and fourth mediator (m4)
rm1m2	Correlation first mediator (m1) and second mediator (m2)
rm1m3	Correlation first mediator (m1) and third mediator (m3)
rm1m4	Correlation first mediator (m1) and fourth mediator (m4)
rm2m3	Correlation second mediator (m2) and third mediator (m3)
rm2m4	Correlation second mediator (m2) and fourth mediator (m4)
rm3m4	Correlation third mediator (m3) and fourth mediator (m4)
n	Sample size
alpha	Type I error (default is .05)
mvars	Number of Mediators
rep	number of repetitions (1000 is default)
pred	number of predictors (default is one)

Value

Power for Mediated (Indirect) Effects

Examples

```
medjs(rx1m1=.3, rx1m2=.3, rx1m3=.25, rx1y=-.35, rym1=-.5,rym2=-.5, rym3 = -.5,
rm1m2=.7, rm1m3=.4,rm2m3=.4, mvars=3, n=150)
```

`medjs_paths` *Compute Power for Mediated (Indirect) Effects Using Joint Significance Requires paths for all effects (and if 2 mediators, correlation) Standard deviations/variances set to 1.0 so paths are technically standardized*

Description

Compute Power for Mediated (Indirect) Effects Using Joint Significance Requires paths for all effects (and if 2 mediators, correlation) Standard deviations/variances set to 1.0 so paths are technically standardized

Usage

```
medjs_paths(
  a1,
  a2 = NULL,
  b1,
  b2 = NULL,
  rm1m2 = NULL,
  cprime,
  n,
  alpha = 0.05,
  mvars,
  rep = 1000
)
```

Arguments

`a1`	path between predictor and first mediator
`a2`	path between predictor and first mediator
`b1`	Path between first mediator and dependent variable
`b2`	Path between first mediator and dependent variable
`rm1m2`	Correlation first mediator (m1) and second mediator (m2)
`cprime`	Path between predictor and dependent variable
`n`	Sample size
`alpha`	Type I error (default is .05)
`mvars`	Number of Mediators
`rep`	number of repetitions (1000 is default)

Value

Power for Mediated (Indirect) Effects using Paths Coefficients

Examples

```
medjs_paths(a1=.25, b1=-.5,cprime=.2,mvars=1, n=150)
medjs_paths(a1=.25, a2=.1, b1=-.5,b2=-.2,cprime=.2,mvars=1, n=150)
```

---

medserial — *Compute Power for Serial Mediation Effects Requires correlations between all variables as sample size. This approach calculates power for the serial mediation using joint significance (recommended)*

Description

Compute Power for Serial Mediation Effects Requires correlations between all variables as sample size. This approach calculates power for the serial mediation using joint significance (recommended)

Usage

```
medserial(rxm1, rxm2, rxy, rm1m2, rym1, rym2, n, alpha = 0.05, rep = 1000)
```

Arguments

`rxm1`	Correlation between predictor (x) and first mediator (m1)
`rxm2`	Correlation between predictor (x) and second mediator (m2)
`rxy`	Correlation between DV (y) and predictor (x)
`rm1m2`	Correlation first mediator (m1) and second mediator (m2)
`rym1`	Correlation between DV (y) and first mediator (m1)
`rym2`	Correlation between DV (y) and second mediator (m2)
`n`	sample size
`alpha`	Type I error (default is .05)
`rep`	number of repetitions (1000 is default)

Value

Power for Serial Mediated (Indirect) Effects

Examples

```
medserial(rxm1=.3, rxm2=.3, rxy=-.35,
rym1=-.5,rym2=-.5, rm1m2=.7,n=150)
```

`medserial_paths` *Compute Power for Serial Mediation Effects Requires correlations between all variables as sample size. This approach calculates power for the serial mediation using joint significance (recommended) and path coefficients*

Description

Compute Power for Serial Mediation Effects Requires correlations between all variables as sample size. This approach calculates power for the serial mediation using joint significance (recommended) and path coefficients

Usage

```
medserial_paths(a1, a2, b1, b2, d, cprime, n, alpha = 0.05, reps = 1000)
```

Arguments

`a1`	path between predictor and first mediator
`a2`	path between predictor and first mediator
`b1`	Path between first mediator and dependent variable
`b2`	Path between first mediator and dependent variable
`d`	Path first mediator (m1) and second mediator (m2)
`cprime`	Path between predictor and dependent variable
`n`	Sample size
`alpha`	Type I error (default is .05)
`reps`	number of repetitions (1000 is default)

Value

Power for Serial Mediated (Indirect) Effects

Examples

```
medserial_paths(a1=.3, a2=.3, b1=.35,
b2=.3,d=.2,cprime=.1,n=150)
```

modmed14 *Compute Power for Conditional Process Model 14 Joint Significance Requires correlations between all variables as sample size. This is the recommended approach for determining power*

Description

Compute Power for Conditional Process Model 14 Joint Significance Requires correlations between all variables as sample size. This is the recommended approach for determining power

Usage

```
modmed14(
  rxw,
  rxm,
  rxxw = 0,
  rxy,
  rwm = 0,
  rxww = 0,
  rwy,
  rxwm = 0,
  rxwy,
  rmy,
  n,
  alpha = 0.05,
  rep = 5000
)
```

Arguments

rxw	Correlation between predictor (x) and moderator (w)
rxm	Correlation between predictor (x) and mediator (m)
rxxw	Correlation between predictor (x) and xweraction term (xw) - defaults to 0
rxy	Correlation between DV (y) and predictor (x)
rwm	Correlation between moderator (w) and mediator (m)
rxww	Correlation between moderator (w) and xweraction (xw) - defaults to 0
rwy	Correlation between DV (y) and moderator (w)
rxwm	Correlation between mediator (m) and xweraction (xw) - Key value
rxwy	Correlation between DV (y) and xweraction (xw) - defaults to 0
rmy	Correlation between DV (y) and mediator (m)
n	Sample size
alpha	Type I error (default is .05)
rep	Number of samples drawn (defaults to 5000)

Value

Power for Model 14 Conditional Processes

Examples

```
modmed14(rxw=.2, rxm=.2, rxy=.31,rwy=.35, rxwy=.2,
rmy=.32, n=200, rep=1000,alpha=.05)
```

---

modmed7 *Compute Power for Model 7 Conditional Processes Using Joint Significance Requires correlations between all variables as sample size Several values default to zero if no value provided This is the recommended approach for determining power*

Description

Compute Power for Model 7 Conditional Processes Using Joint Significance Requires correlations between all variables as sample size Several values default to zero if no value provided This is the recommended approach for determining power

Usage

```
modmed7(
  rxm,
  rxw,
  rxxw = 0,
  rxy,
  rwm,
  rwxw = 0,
  rwy = 0,
  rmxw,
  rmy,
  rxwy = 0,
  alpha = 0.05,
  rep = 1000,
  n = NULL
)
```

Arguments

rxm	Correlation between predictor (x) and mediator (m)
rxw	Correlation between predictor (x) and moderator (w)
rxxw	Correlation between predictor (x) and interaction term (xw) - defaults to 0
rxy	Correlation between DV (y) and predictor (x)
rwm	Correlation between moderator (w) and mediator (m)

rwxw	Correlation between moderator (w) and interaction (xw) - defaults to 0
rwy	Correlation between DV (y) and moderator (w)
rmxw	Correlation between mediator (m) and interaction (xw) - Key value
rmy	Correlation between DV (y) and mediator (m)
rxwy	Correlation between DV (y) and interaction (xw) - defaults to 0
alpha	Type I error (default is .05)
rep	Number of samples drawn (defaults to 5000)
n	Sample size

Value

Power for Model 7 Conditional Processes

Examples

```
modmed7(rxm=.4, rxw=.2, rxy=.3, rwm=.2, rmxw=.1, rmy=.3,n=200)
```

MRC — *Compute power for Multiple Regression with up to Five Predictors Example code below for three predictors. Expand as needed for four or five*

Description

Compute power for Multiple Regression with up to Five Predictors Example code below for three predictors. Expand as needed for four or five

Usage

```
MRC(
  ry1 = NULL,
  ry2 = NULL,
  ry3 = NULL,
  ry4 = NULL,
  ry5 = NULL,
  r12 = NULL,
  r13 = NULL,
  r14 = NULL,
  r15 = NULL,
  r23 = NULL,
  r24 = NULL,
  r25 = NULL,
  r34 = NULL,
  r35 = NULL,
  r45 = NULL,
  n = NULL,
  alpha = 0.05
)
```

Arguments

ry1	Correlation between DV (y) and first predictor (1)
ry2	Correlation between DV (y) and second predictor (2)
ry3	Correlation between DV (y) and third predictor (3)
ry4	Correlation between DV (y) and fourth predictor (4)
ry5	Correlation between DV (y) and fifth predictor (5)
r12	Correlation between first (1) and second predictor (2)
r13	Correlation between first (1) and third predictor (3)
r14	Correlation between first (1) and fourth predictor (4)
r15	Correlation between first (1) and fifth predictor (5)
r23	Correlation between second (2) and third predictor (3)
r24	Correlation between second (2) and fourth predictor (4)
r25	Correlation between second (2) and fifth predictor (5)
r34	Correlation between third (3) and fourth predictor (4)
r35	Correlation between third (3) and fifth predictor (5)
r45	Correlation between fourth (4) and fifth predictor (5)
n	Sample size
alpha	Type I error (default is .05)

Value

Power for Multiple Regression with Two to Five Predictors

Examples

```
MRC(ry1=.40,ry2=.40, r12=-.15,n=30)
MRC(ry1=.40,ry2=.40,ry3=-.40, r12=-.15, r13=-.60,r23=.25,n=24)
```

MRC_all — *Compute power for Multiple Regression with Up to Five Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)*

Description

Compute power for Multiple Regression with Up to Five Predictors Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All)

Usage

```
MRC_all(
  ry1 = NULL,
  ry2 = NULL,
  ry3 = NULL,
  ry4 = NULL,
  ry5 = NULL,
  r12 = NULL,
  r13 = NULL,
  r14 = NULL,
  r15 = NULL,
  r23 = NULL,
  r24 = NULL,
  r25 = NULL,
  r34 = NULL,
  r35 = NULL,
  r45 = NULL,
  n = NULL,
  alpha = 0.05,
  rep = 10000
)
```

Arguments

ry1	Correlation between DV (y) and first predictor (1)
ry2	Correlation between DV (y) and second predictor (2)
ry3	Correlation between DV (y) and third predictor (3)
ry4	Correlation between DV (y) and fourth predictor (4)
ry5	Correlation between DV (y) and fifth predictor (5)
r12	Correlation between first (1) and second predictor (2)
r13	Correlation between first (1) and third predictor (3)
r14	Correlation between first (1) and fourth predictor (4)
r15	Correlation between first (1) and fifth predictor (5)
r23	Correlation between second (2) and third predictor (3)
r24	Correlation between second (2) and fourth predictor (4)
r25	Correlation between second (2) and fifth predictor (5)
r34	Correlation between third (3) and fourth predictor (4)
r35	Correlation between third (3) and fifth predictor (5)
r45	Correlation between fourth (4) and fifth predictor (5)
n	Sample size
alpha	Type I error (default is .05)
rep	number of replications (default is 10000)

Value

Power for Multiple Regression (ALL)

Examples

```
MRC_all(ry1=.50,ry2=.50,ry3=.50, r12=.2, r13=.3,r23=.4,n=82, rep=10000)
```

MRC_short2 — *Compute Multiple Regression shortcuts with three predictors for Ind Coefficients Requires correlations between all variables as sample size. Means and sds are option. Also computes Power(All)*

Description

Compute Multiple Regression shortcuts with three predictors for Ind Coefficients Requires correlations between all variables as sample size. Means and sds are option. Also computes Power(All)

Usage

```
MRC_short2(
  ry1_1,
  ry2_1,
  ry3_1 = NULL,
  r12_1,
  r13_1 = NULL,
  r23_1 = NULL,
  n1,
  ry1_2,
  ry2_2,
  ry3_2 = NULL,
  r12_2,
  r13_2 = NULL,
  r23_2 = NULL,
  n2,
  alpha = 0.05,
  my_1 = 0,
  m1_1 = 0,
  m2_1 = 0,
  m3_1 = 0,
  s1_1 = 1,
  s2_1 = 1,
  s3_1 = 1,
  sy_1 = 1,
  my_2 = 0,
  m1_2 = 0,
  m2_2 = 0,
  m3_2 = 0,
```

```
    s1_2 = 1,
    s2_2 = 1,
    s3_2 = 1,
    sy_2 = 1
  )
```

Arguments

ry1_1	Correlation between DV (y) and first predictor (1), first group
ry2_1	Correlation between DV (y) and second predictor (2), first group
ry3_1	Correlation between DV (y) and third predictor (3), first group
r12_1	Correlation between first (1) and second predictor (2), first group
r13_1	Correlation between first (1) and third predictor (3), first group
r23_1	Correlation between second (2) and third predictor (3), first group
n1	Sample size, first group
ry1_2	Correlation between DV (y) and first predictor (1), second group
ry2_2	Correlation between DV (y) and second predictor (2), second group
ry3_2	Correlation between DV (y) and third predictor (3), second group
r12_2	Correlation between first (1) and second predictor (2), second group
r13_2	Correlation between first (1) and third predictor (3), second group
r23_2	Correlation between second (2) and third predictor (3), second group
n2	Sample size, second group
alpha	Type I error (default is .05)
my_1	Mean of DV (default is 0), first group
m1_1	Mean of first predictor (default is 0), first group
m2_1	Mean of second predictor (default is 0), first group
m3_1	Mean of third predictor (default is 0), first group
s1_1	Standard deviation of first predictor (default is 1), first group
s2_1	Standard deviation of second predictor (default is 1), first group
s3_1	Standard deviation of third predictor (default is 1), first group
sy_1	Standard deviation of DV (default is 1), first group
my_2	Mean of DV (default is 0), second group
m1_2	Mean of first predictor (default is 0), second group
m2_2	Mean of second predictor (default is 0), second group
m3_2	Mean of third predictor (default is 0), second group
s1_2	Standard deviation of first predictor (default is 1), second group
s2_2	Standard deviation of second predictor (default is 1), second group
s3_2	Standard deviation of third predictor (default is 1), second group
sy_2	Standard deviation of DV (default is 1), second group

Value

Multiple Regression shortcuts with three predictors for Ind Coefficients

Examples

```
MRC_short2(ry1_1=.40, ry2_1=.40, ry3_1 =-.40, r12_1=-.15,r13_1=-.60, r23_1=.25,
ry1_2=.40, ry2_2=.10, ry3_2 =-.40, r12_2=-.15,r13_2=-.60, r23_2=.25,
n1=50,n2=50,alpha=.05,my_1=1,m1_1=1,m2_1=1,m3_1=1,
sy_1=7,s1_1=1,s2_1=1,s3_1=2,
my_2=1,m1_2=1,m2_2=1,m3_2=1,sy_2=7,s1_2=1,s2_2=1,s3_2=2)
```

`MRC_shortcuts` *Compute Multiple Regression shortcuts with three predictors (will expand to handle two to five) Requires correlations between all variables as sample size. Means and sds are option. Also computes Power(All)*

Description

Compute Multiple Regression shortcuts with three predictors (will expand to handle two to five) Requires correlations between all variables as sample size. Means and sds are option. Also computes Power(All)

Usage

```
MRC_shortcuts(
  ry1 = NULL,
  ry2 = NULL,
  ry3 = NULL,
  r12 = NULL,
  r13 = NULL,
  r23 = NULL,
  n = 100,
  alpha = 0.05,
  my = 0,
  m1 = 0,
  m2 = 0,
  m3 = 0,
  s1 = 1,
  s2 = 1,
  s3 = 1,
  sy = 1
)
```

Arguments

`ry1`	Correlation between DV (y) and first predictor (1)
`ry2`	Correlation between DV (y) and second predictor (2)

ry3	Correlation between DV (y) and third predictor (3)
r12	Correlation between first (1) and second predictor (2)
r13	Correlation between first (1) and third predictor (3)
r23	Correlation between second (2) and third predictor (3)
n	Sample size
alpha	Type I error (default is .05)
my	Mean of DV (default is 0)
m1	Mean of first predictor (default is 0)
m2	Mean of second predictor (default is 0)
m3	Mean of third predictor (default is 0)
s1	Standard deviation of first predictor (default is 1)
s2	Standard deviation of second predictor (default is 1)
s3	Standard deviation of third predictor (default is 1)
sy	Standard deviation of DV (default is 1)

Value

Multiple Regression shortcuts with three predictors

Examples

```
MRC_shortcuts(ry1=.40,ry2=.40,ry3=-.40, r12=-.15, r13=-.60,r23=.25,
n=110, my=1,m1=1,m2=1,m3=1,sy=7,s1=1,s2=1,s3=2)
```

---

pairt — *Compute power for a Paired t-test Takes means, sd, and sample sizes. Alpha is .05 by default, alternative values may be entered by user. correlation (r) defaults to .50.*

Description

Compute power for a Paired t-test Takes means, sd, and sample sizes. Alpha is .05 by default, alternative values may be entered by user. correlation (r) defaults to .50.

Usage

```
pairt(m1 = NULL, m2 = NULL, s = NULL, n = NULL, r = NULL, alpha = 0.05)
```

Arguments

m1	Mean for Pre Test
m2	Mean for Post Test
s	Standard deviation
n	Sample size
r	Correlation pre-post measures (default is .50)
alpha	Type I error (default is .05)

Value

Power for the Paired t-test

Examples

```
pairt(m1=25,m2=20, s = 5, n = 25, r = .5)
```

---

prop1 *Compute power for a single sample proportion test Takes phi, degrees of freedom, and a range of sample sizes. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a single sample proportion test Takes phi, degrees of freedom, and a range of sample sizes. Alpha is .05 by default, alternative values may be entered by user

Usage

```
prop1(p1, p0, nlow, nhigh, alpha = 0.05, tails = 2, by = 1)
```

Arguments

p1	expected proportion (a.k.a. alternative proportion)
p0	null proportion
nlow	starting sample size
nhigh	ending sample size
alpha	Type I error (default is .05)
tails	number of tails for test (default is 2)
by	Incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)

Value

Power for Tests of Single Proportion

Examples

```
prop1(p1=.60, p0=.42,nlow=20,nhigh=100, tails=1, by=10)
```

`propind` *Compute power for Tests of Two Independent Proportions Takes phi, degrees of freedom, and a range of sample sizes. Alpha is .05 by default, alternative values may be entered by user This test uses what is sometimes called the chi-square test for comparing proportions*

Description

Compute power for Tests of Two Independent Proportions Takes phi, degrees of freedom, and a range of sample sizes. Alpha is .05 by default, alternative values may be entered by user This test uses what is sometimes called the chi-square test for comparing proportions

Usage

```
propind(p1, p2, nlow, nhigh, nratio = 0.5, alpha = 0.05, tails = 2, by = 1)
```

Arguments

`p1`	expected proportion Group 1
`p2`	expected proportion Group 2
`nlow`	starting sample size
`nhigh`	ending sample size
`nratio`	ratio of sample size of first group to second (default is .5 for equally sized groups)
`alpha`	Type I error (default is .05)
`tails`	number of tails for test (default is 2)
`by`	Incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)

Value

Power for Tests of Two Independent Proportions

Examples

```
propind(p1=.62, p2=.55,nlow=200,nhigh=2500, by=100,nratio=.2)
```

R2ch — *Compute power for R2 change in Multiple Regression (up to three predictors) Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All) Example code below for three predictors. Expand as needed for four or five*

Description

Compute power for R2 change in Multiple Regression (up to three predictors) Requires correlations between all variables as sample size. Means, sds, and alpha are option. Also computes Power(All) Example code below for three predictors. Expand as needed for four or five

Usage

```
R2ch(
  ry1 = NULL,
  ry2 = NULL,
  ry3 = NULL,
  r12 = NULL,
  r13 = NULL,
  r23 = NULL,
  n = NULL,
  alpha = 0.05,
  my = 0,
  m1 = 0,
  m2 = 0,
  m3 = 0,
  s1 = 1,
  s2 = 1,
  s3 = 1,
  sy = 1
)
```

Arguments

`ry1`	Correlation between DV (y) and first predictor (1)
`ry2`	Correlation between DV (y) and second predictor (2)
`ry3`	Correlation between DV (y) and third predictor (3)
`r12`	Correlation between first (1) and second predictor (2)
`r13`	Correlation between first (1) and third predictor (3)
`r23`	Correlation between second (2) and third predictor (3)
`n`	Sample size
`alpha`	Type I error (default is .05)
`my`	Mean of DV (default is 0)

m1	Mean of first predictor (default is 0)
m2	Mean of second predictor (default is 0)
m3	Mean of third predictor (default is 0)
s1	Standard deviation of first predictor (default is 1)
s2	Standard deviation of second predictor (default is 1)
s3	Standard deviation of third predictor (default is 1)
sy	Standard deviation of DV (default is 1)

Value

Power for R2 change in Multiple Regression (up to three predictors)

Examples

```
R2ch(ry1=.40,ry2=.40,ry3=-.40, r12=-.15, r13=-.60,r23=.25,n=24)
```

R2_prec *Compute Precision Analyses for R-Squared This approach simply loops a function from MBESS*

Description

Compute Precision Analyses for R-Squared This approach simply loops a function from MBESS

Usage

```
R2_prec(R2, nlow, nhigh, pred, ci = 0.95, by = 1)
```

Arguments

R2	R-squared
nlow	starting sample size
nhigh	ending sample size
pred	Number of Predictors
ci	Type of Confidence Interval (e.g., .95)
by	Incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)

Value

Precision Analyses for R-Squared

Examples

```
R2_prec(R2=.467, nlow=24, nhigh=100, pred=3, by=4)
```

regint *Compute Power for Regression Interaction (Correlation/Coefficient Approach)*

Description

Compute Power for Regression Interaction (Correlation/Coefficient Approach)

Usage

```
regint(
  Group1,
  Group2,
  sx1 = 1,
  sx2 = 1,
  sy1 = 1,
  sy2 = 1,
  nlow,
  nhigh,
  alpha = 0.05,
  Prop_n1 = 0.5,
  by = 2,
  Estimates = 1
)
```

Arguments

`Group1`	Estimates (r or b) for Group 1
`Group2`	Estimates (r or b) for Group 2
`sx1`	Standard deviation of predictor, group 1 (defaults to 1)
`sx2`	Standard deviation of predictor, group 2 (defaults to 1)
`sy1`	Standard deviation of outcome, group 1 (defaults to 1)
`sy2`	Standard deviation of outcome, group 2 (defaults to 1)
`nlow`	starting sample size
`nhigh`	ending sample size
`alpha`	Type I error (default is .05)
`Prop_n1`	Proportion of Sample in First Group (defaults to equal sample sizes)
`by`	incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)
`Estimates`	1 for Correlations (default), 2 for coefficients

Value

Power for Regression Interaction (Correlation/Coefficient Approach)

Examples

```
regint(Group1=-.26,Group2=.25, alpha=.05,Prop_n1=0.5,nlow=110, nhigh=140,by=2,Estimates=1)
```

`regintR2` *Compute Power for Regression Interaction (R2 Change Approach)*

Description

Compute Power for Regression Interaction (R2 Change Approach)

Usage

```
regintR2(R2Mod, R2Ch, mod_pred, ch_pred, nlow, nhigh, by = 1, alpha = 0.05)
```

Arguments

`R2Mod`	Full Model R2
`R2Ch`	Change in R2 Added by Interaction
`mod_pred`	Full Model Number of Predictors
`ch_pred`	Change Model Number of Predictors
`nlow`	starting sample size
`nhigh`	ending sample size
`by`	incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)
`alpha`	Type I error (default is .05)

Value

Power for Regression Interaction (R2 Change Approach)

Examples

```
regintR2(R2Mod=.092,R2Ch=.032,mod_pred=3, ch_pred=1,nlow=100,nhigh=400,by=20)
```

r_prec — *Compute Precision Analyses for Correlations This approach simply loops a function from MBESS*

Description

Compute Precision Analyses for Correlations This approach simply loops a function from MBESS

Usage

```
r_prec(r, nlow, nhigh, ci = 0.95, by = 1)
```

Arguments

`r`	Correlation
`nlow`	starting sample size
`nhigh`	ending sample size
`ci`	Type of Confidence Interval (e.g., .95)
`by`	Incremental increase in sample (e.g. nlow = 10, nhigh = 24, by = 2, produces estimates of 10, 12, and 14)

Value

Precision Analyses for Correlations

Examples

```
r_prec(r=.3, nlow=80, nhigh=400, by=20, ci=.95)
```

tfromd — *Compute power for a t test using d statistic Takes d, sample size range, type of test, and tails.*

Description

Compute power for a t test using d statistic Takes d, sample size range, type of test, and tails.

Usage

```
tfromd(d, nlow, nhigh, alpha = 0.05, test = "I", tails = 2, by = 2)
```

Arguments

d	standardize mean difference (Cohen's d)
nlow	Starting total sample size
nhigh	Ending total sample size
alpha	Type I error (default is .05)
test	"I" for independent, "P" for paired
tails	one or two-tailed tests (default is 2)
by	Incremental increase in sample size from low to high

Value

Power for the t-test from d statistic

Examples

```
tfromd(d=.2,nlow=10,nhigh=200,by=10, test="P")
tfromd(d=.2,nlow=10,nhigh=200,by=10, test="I")
```

---

win1bg1 *Compute power for a One Factor Within Subjects and One Factor Between ANOVA with up to two by four levels (within). Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor Within Subjects and One Factor Between ANOVA with up to two by four levels (within). Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
win1bg1(
  m1.1,
  m2.1,
  m3.1 = NA,
  m4.1 = NA,
  m1.2,
  m2.2,
  m3.2 = NA,
  m4.2 = NA,
  s1.1 = NA,
  s2.1 = NA,
  s3.1 = NA,
  s4.1 = NA,
```

```
  s1.2 = NA,
  s2.2 = NA,
  s3.2 = NA,
  s4.2 = NA,
  r1.2_1 = NULL,
  r1.3_1 = NULL,
  r1.4_1 = NULL,
  r2.3_1 = NULL,
  r2.4_1 = NULL,
  r3.4_1 = NULL,
  r1.2_2 = NULL,
  r1.3_2 = NULL,
  r1.4_2 = NULL,
  r2.3_2 = NULL,
  r2.4_2 = NULL,
  r3.4_2 = NULL,
  r = NULL,
  s = NULL,
  n,
  alpha = 0.05
)
```

Arguments

m1.1	Mean of first level Within Factor, 1st level Between Factor
m2.1	Mean of second level Within Factor, 1st level Between Factor
m3.1	Mean of third level Within Factor, 1st level Between Factor
m4.1	Mean of fourth level Within Factor, 1st level Between Factor
m1.2	Mean of first level Within Factor, 2nd level Between Factor
m2.2	Mean of second level Within Factor, 2nd level Between Factor
m3.2	Mean of third level Within Factor, 2nd level Between Factor
m4.2	Mean of fourth level Within Factor, 2nd level Between Factor
s1.1	Standard deviation of first level Within Factor, 1st level Between Factor
s2.1	Standard deviation of second level Within Factor, 1st level Between Factor
s3.1	Standard deviation of third level Within Factor, 1st level Between Factor
s4.1	Standard deviation of forth level Within Factor, 1st level Between Factor
s1.2	Standard deviation of first level Within Factor, 2nd level Between Factor
s2.2	Standard deviation of second level Within Factor, 2nd level Between Factor
s3.2	Standard deviation of third level Within Factor, 2nd level Between Factor
s4.2	Standard deviation of forth level Within Factor, 2nd level Between Factor
r1.2_1	correlation Within Factor Level 1 and Within Factor, Level 2, 1st level Between
r1.3_1	correlation Within Factor Level 1 and Within Factor, Level 3, 1st level Between
r1.4_1	correlation Within Factor Level 1 and Within Factor, Level 4, 1st level Between

r2.3_1	correlation Within Factor Level 1 and Within Factor, Level 3, 1st level Between
r2.4_1	correlation Within Factor Level 1 and Within Factor, Level 4, 1st level Between
r3.4_1	correlation Within Factor Level 1 and Within Factor, Level 4, 1st level Between
r1.2_2	correlation Within Factor Level 1 and Within Factor, Level 2, 2nd level Between
r1.3_2	correlation Within Factor Level 1 and Within Factor, Level 3, 2nd level Between
r1.4_2	correlation Within Factor Level 1 and Within Factor, Level 4, 2nd level Between
r2.3_2	correlation Within Factor Level 1 and Within Factor, Level 3, 2nd level Between
r2.4_2	correlation Within Factor Level 1 and Within Factor, Level 4, 2nd level Between
r3.4_2	correlation Within Factor Level 1 and Within Factor, Level 4, 2nd level Between
r	sets same correlations between DVs on all factor levels (seriously, just use this)
s	sets same standard deviation for factor levels (see comment above)
n	for each between group level
alpha	Type I error (default is .05)

Value

Power for the One Factor Within Subjects and One Factor Between ANOVA

Examples

```
win1bg1(m1.1 = -.25, m2.1=0, m3.1=0.10, m4.1=.15,
m1.2=-.25,m2.2=-.25,m3.2=-.25, m4.2=-.25,
s1.1 = .4, s2.1=.5, s3.1=0.6, s4.1=.7,
s1.2=.4,s2.2=.5,s3.2=.6, s4.2=.7,n = 50,
r1.2_1=.5,r1.3_1=.3,r1.4_1=.15,r2.3_1=.5,r2.4_1=.3,r3.4_1=.5,
r1.2_2=.5,r1.3_2=.3,r1.4_2=.15, r2.3_2=.5,r2.4_2=.3,r3.4_2=.5)
win1bg1(m1.1 = -.25, m2.1=0, m3.1=0.10, m4.1=.15,
m1.2=-.25,m2.2=-.25,m3.2=-.25, m4.2=-.25, s=.4, r = .5, n = 100)
```

---

win1F *Compute power for a One Factor Within Subjects ANOVA with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor Within Subjects ANOVA with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
win1F(
  m1,
  m2,
  m3 = NA,
  m4 = NA,
  s1,
  s2,
  s3 = NULL,
  s4 = NULL,
  r12,
  r13 = NULL,
  r14 = NULL,
  r23 = NULL,
  r24 = NULL,
  r34 = NULL,
  n,
  alpha = 0.05
)
```

Arguments

`m1`	Mean of first time point
`m2`	Mean of second time point
`m3`	Mean of third time point
`m4`	Mean of fourth time point
`s1`	Standard deviation of first time point
`s2`	Standard deviation of second time point
`s3`	Standard deviation of third time point
`s4`	Standard deviation of forth time point
`r12`	correlation Time 1 and Time 2
`r13`	correlation Time 1 and Time 3
`r14`	correlation Time 1 and Time 4
`r23`	correlation Time 2 and Time 3
`r24`	correlation Time 2 and Time 4
`r34`	correlation Time 3 and Time 4
`n`	Total sample size
`alpha`	Type I error (default is .05)

Value

Power for the One Factor Within Subjects ANOVA

Examples

```
win1F(m1=-.25,m2=.00,m3=.10,m4=.15,s1=.4,s2=.5,s3=.6,s4=.7,
r12=.50, r13=.30, r14=.15, r23=.5, r24=.30, r34=.50, n=25)
win1F(m1=-.25,m2=.00,m3=.10,m4=.15,s1=.4,s2=.5,s3=2.5,s4=2.0,
r12=.50, r13=.30, r14=.10, r23=.5, r24=.30, r34=.40, n=100)
```

---

win1Ftrends *Compute power for a One Factor Within Subjects Trends with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a One Factor Within Subjects Trends with up to four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
win1Ftrends(
  m1,
  m2,
  m3 = NA,
  m4 = NA,
  s1,
  s2,
  s3 = NULL,
  s4 = NULL,
  r12,
  r13 = NULL,
  r14 = NULL,
  r23 = NULL,
  r24 = NULL,
  r34 = NULL,
  n,
  alpha = 0.05
)
```

Arguments

m1	Mean of first time point
m2	Mean of second time point
m3	Mean of third time point
m4	Mean of fourth time point
s1	Standard deviation of first time point
s2	Standard deviation of second time point

s3	Standard deviation of third time point
s4	Standard deviation of forth time point
r12	correlation Time 1 and Time 2
r13	correlation Time 1 and Time 3
r14	correlation Time 1 and Time 4
r23	correlation Time 2 and Time 3
r24	correlation Time 2 and Time 4
r34	correlation Time 3 and Time 4
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for the One Factor Within Subjects Trends

Examples

```
win1Ftrends(m1=-.25,m2=-.15,m3=-.05,m4=.05,s1=.4,s2=.5,s3=.6,s4=.7,
r12=.50, r13=.30, r14=.15, r23=.5, r24=.30, r34=.50, n=25)
```

---

win2F — *Compute power for a Two Factor Within Subjects ANOVA with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user*

Description

Compute power for a Two Factor Within Subjects ANOVA with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
win2F(
  m1.1,
  m2.1,
  m3.1 = NA,
  m4.1 = NA,
  m1.2,
  m2.2,
  m3.2 = NA,
  m4.2 = NA,
  s1.1 = NA,
  s2.1 = NA,
  s3.1 = NA,
```

```
    s4.1 = NA,
    s1.2 = NA,
    s2.2 = NA,
    s3.2 = NA,
    s4.2 = NA,
    r12 = NULL,
    r13 = NULL,
    r14 = NULL,
    r15 = NULL,
    r16 = NULL,
    r17 = NULL,
    r18 = NULL,
    r23 = NULL,
    r24 = NULL,
    r25 = NULL,
    r26 = NULL,
    r27 = NULL,
    r28 = NULL,
    r34 = NULL,
    r35 = NULL,
    r36 = NULL,
    r37 = NULL,
    r38 = NULL,
    r45 = NULL,
    r46 = NULL,
    r47 = NULL,
    r48 = NULL,
    r56 = NULL,
    r57 = NULL,
    r58 = NULL,
    r67 = NULL,
    r68 = NULL,
    r78 = NULL,
    r = NULL,
    s = NULL,
    n,
    alpha = 0.05
  )
```

Arguments

m1.1	Mean of first level factor 1, 1st level factor two
m2.1	Mean of second level factor 1, 1st level factor two
m3.1	Mean of third level factor 1, 1st level factor two
m4.1	Mean of fourth level factor 1, 1st level factor two
m1.2	Mean of first level factor 1, 2nd level factor two
m2.2	Mean of second level factor 1, 2nd level factor two

m3.2	Mean of third level factor 1, 2nd level factor two
m4.2	Mean of fourth level factor 1, 2nd level factor two
s1.1	Standard deviation of first level factor 1, 1st level factor two
s2.1	Standard deviation of second level factor 1, 1st level factor two
s3.1	Standard deviation of third level factor 1, 1st level factor two
s4.1	Standard deviation of forth level factor 1, 1st level factor two
s1.2	Standard deviation of first level factor 1, 2nd level factor two
s2.2	Standard deviation of second level factor 1, 2nd level factor two
s3.2	Standard deviation of third level factor 1, 2nd level factor two
s4.2	Standard deviation of forth level factor 1, 2nd level factor two
r12	correlation Factor 1, Level 1 and Factor 1, Level 2
r13	correlation Factor 1, Level 1 and Factor 1, Level 3
r14	correlation Factor 1, Level 1 and Factor 1, Level 4
r15	correlation Factor 1, Level 1 and Factor 2, Level 1
r16	correlation Factor 1, Level 1 and Factor 2, Level 2
r17	correlation Factor 1, Level 1 and Factor 2, Level 3
r18	correlation Factor 1, Level 1 and Factor 2, Level 4
r23	correlation Factor 1, Level 2 and Factor 1, Level 3
r24	correlation Factor 1, Level 2 and Factor 1, Level 4
r25	correlation Factor 1, Level 2 and Factor 2, Level 1
r26	correlation Factor 1, Level 2 and Factor 2, Level 2
r27	correlation Factor 1, Level 2 and Factor 2, Level 3
r28	correlation Factor 1, Level 2 and Factor 2, Level 4
r34	correlation Factor 1, Level 3 and Factor 1, Level 4
r35	correlation Factor 1, Level 3 and Factor 2, Level 1
r36	correlation Factor 1, Level 3 and Factor 2, Level 2
r37	correlation Factor 1, Level 3 and Factor 2, Level 3
r38	correlation Factor 1, Level 3 and Factor 2, Level 4
r45	correlation Factor 1, Level 4 and Factor 2, Level 1
r46	correlation Factor 1, Level 4 and Factor 2, Level 2
r47	correlation Factor 1, Level 4 and Factor 2, Level 3
r48	correlation Factor 1, Level 4 and Factor 2, Level 4
r56	correlation Factor 2, Level 1 and Factor 2, Level 2
r57	correlation Factor 2, Level 1 and Factor 2, Level 3
r58	correlation Factor 2, Level 1 and Factor 2, Level 4
r67	correlation Factor 2, Level 2 and Factor 2, Level 3
r68	correlation Factor 2, Level 2 and Factor 2, Level 4
r78	correlation Factor 2, Level 3 and Factor 2, Level 4
r	sets same correlations between DVs on all factor levels (seriously, just use this)
s	sets same standard deviation for factor levels (see comment above)
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for the Two Factor Within Subjects ANOVA

Examples

```
win2F(m1.1=-.25,m2.1=0,m3.1=.10,m4.1=.15,m1.2=-.25,m2.2=.10,m3.2=.30,m4.2=.35,
s1.1=.4,s2.1=.5,s3.1=2.5,s4.1=2.0,s1.2=.4,s2.2=.5,s3.2=2.5,s4.2=2.0,r=.5,n=80)
win2F(m1.1=-.25,m2.1=0,m1.2=-.25,m2.2=.10,s1.1=.4,s2.1=.5,,s1.2=.4,s2.2=.5,
r12=.5,r13=.4,r14=.55,r23=.4,r24=.5,r34=.45,n=200)
```

---

win2Fse

Compute power for Simple Effects in Two Factor Within Subjects ANOVA with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

---

Description

Compute power for Simple Effects in Two Factor Within Subjects ANOVA with up to two by four levels. Takes means, sds, and sample sizes for each group. Alpha is .05 by default, alternative values may be entered by user

Usage

```
win2Fse(
  m1.1,
  m2.1,
  m3.1 = NA,
  m4.1 = NA,
  m1.2,
  m2.2,
  m3.2 = NA,
  m4.2 = NA,
  s1.1 = NA,
  s2.1 = NA,
  s3.1 = NA,
  s4.1 = NA,
  s1.2 = NA,
  s2.2 = NA,
  s3.2 = NA,
  s4.2 = NA,
  r12 = NULL,
  r13 = NULL,
  r14 = NULL,
  r15 = NULL,
  r16 = NULL,
  r17 = NULL,
```

```
  r18 = NULL,
  r23 = NULL,
  r24 = NULL,
  r25 = NULL,
  r26 = NULL,
  r27 = NULL,
  r28 = NULL,
  r34 = NULL,
  r35 = NULL,
  r36 = NULL,
  r37 = NULL,
  r38 = NULL,
  r45 = NULL,
  r46 = NULL,
  r47 = NULL,
  r48 = NULL,
  r56 = NULL,
  r57 = NULL,
  r58 = NULL,
  r67 = NULL,
  r68 = NULL,
  r78 = NULL,
  r = NULL,
  s = NULL,
  n,
  alpha = 0.05
)
```

Arguments

m1.1	Mean of first level factor 1, 1st level factor two
m2.1	Mean of second level factor 1, 1st level factor two
m3.1	Mean of third level factor 1, 1st level factor two
m4.1	Mean of fourth level factor 1, 1st level factor two
m1.2	Mean of first level factor 1, 2nd level factor two
m2.2	Mean of second level factor 1, 2nd level factor two
m3.2	Mean of third level factor 1, 2nd level factor two
m4.2	Mean of fourth level factor 1, 2nd level factor two
s1.1	Standard deviation of first level factor 1, 1st level factor two
s2.1	Standard deviation of second level factor 1, 1st level factor two
s3.1	Standard deviation of third level factor 1, 1st level factor two
s4.1	Standard deviation of forth level factor 1, 1st level factor two
s1.2	Standard deviation of first level factor 1, 2nd level factor two
s2.2	Standard deviation of second level factor 1, 2nd level factor two
s3.2	Standard deviation of third level factor 1, 2nd level factor two

s4.2	Standard deviation of forth level factor 1, 2nd level factor two
r12	correlation Factor 1, Level 1 and Factor 1, Level 2
r13	correlation Factor 1, Level 1 and Factor 1, Level 3
r14	correlation Factor 1, Level 1 and Factor 1, Level 4
r15	correlation Factor 1, Level 1 and Factor 2, Level 1
r16	correlation Factor 1, Level 1 and Factor 2, Level 2
r17	correlation Factor 1, Level 1 and Factor 2, Level 3
r18	correlation Factor 1, Level 1 and Factor 2, Level 4
r23	correlation Factor 1, Level 2 and Factor 1, Level 3
r24	correlation Factor 1, Level 2 and Factor 1, Level 4
r25	correlation Factor 1, Level 2 and Factor 2, Level 1
r26	correlation Factor 1, Level 2 and Factor 2, Level 2
r27	correlation Factor 1, Level 2 and Factor 2, Level 3
r28	correlation Factor 1, Level 2 and Factor 2, Level 4
r34	correlation Factor 1, Level 3 and Factor 1, Level 4
r35	correlation Factor 1, Level 3 and Factor 2, Level 1
r36	correlation Factor 1, Level 3 and Factor 2, Level 2
r37	correlation Factor 1, Level 3 and Factor 2, Level 3
r38	correlation Factor 1, Level 3 and Factor 2, Level 4
r45	correlation Factor 1, Level 4 and Factor 2, Level 1
r46	correlation Factor 1, Level 4 and Factor 2, Level 2
r47	correlation Factor 1, Level 4 and Factor 2, Level 3
r48	correlation Factor 1, Level 4 and Factor 2, Level 4
r56	correlation Factor 2, Level 1 and Factor 2, Level 2
r57	correlation Factor 2, Level 1 and Factor 2, Level 3
r58	correlation Factor 2, Level 1 and Factor 2, Level 4
r67	correlation Factor 2, Level 2 and Factor 2, Level 3
r68	correlation Factor 2, Level 2 and Factor 2, Level 4
r78	correlation Factor 2, Level 3 and Factor 2, Level 4
r	sets same correlations between DVs on all factor levels (seriously, just use this)
s	sets same standard deviation for factor levels (see comment above)
n	Sample size for first group
alpha	Type I error (default is .05)

Value

Power for Simple Effects for Two Factor Within Subjects ANOVA

Examples

```
win2Fse(m1.1=-.25,m2.1=0,m3.1=.10,m4.1=.15,m1.2=-.25,m2.2=.10,m3.2=.30,m4.2=.35,
s1.1=.4,s2.1=.5,s3.1=2.5,s4.1=2.0,s1.2=.4,s2.2=.5,s3.2=2.5,s4.2=2.0,r=.5,n=220)
```

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