Package ‘metapower’

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**homogen_power**

Compute Power for Test of Homogeneity in Meta-analysis

**Description**

Compute statistical power for the Test of Homogeneity for meta-analysis under both fixed- and random-effects models.

**Usage**

```r
homogen_power(
  effect_size,
  study_size,
  k,
  i2,
  es_type,
  p = 0.05,
  con_table = NULL
)
```

**Arguments**

- `effect_size`: Numerical value of effect size.
- `study_size`: Numerical value for number number of participants (per study).
- `k`: Numerical value for total number of studies.
- `i2`: Numerical value for Heterogeneity estimate (i^2).
- `es_type`: 'Character reflecting effect size metric: 'r', 'd', or 'or'.
- `p`: Numerical value for significance level (Type I error probability).
- `con_table`: (Optional) Numerical values for 2x2 contingency table as a vector in the following format: c(a,b,c,d).

<table>
<thead>
<tr>
<th>2x2 Table</th>
<th>Group 1</th>
<th>Group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>Not Present</td>
<td>c</td>
<td>d</td>
</tr>
</tbody>
</table>
Value

Estimated Power to detect differences in homogeneity of effect sizes for fixed- and random-effects models.

References


See Also

https://jason-griffin.shinyapps.io/shiny_metapower/

Examples

homogen_power(effect_size = .5, study_size = 10, k = 10, i2 = .50, es_type = "d")

---

mod_power

Compute Power for Categorical Moderator Analysis in Meta-analysis

Description

Computes statistical power for categorical moderator analysis under fixed and random effects models.

Usage

mod_power(
  n_groups,
  effect_sizes,
  study_size,
  k,
  i2,
  es_type,
  p = 0.05,
  con_table = NULL
)
Arguments

n_groups  Numerical value for the levels of a categorical variable.
effect_sizes  Numerical values for effect sizes of for each group.
study_size  Numerical value for number of participants (per study).
k  Numerical value for total number of studies.
i2  Numerical value for Heterogeneity estimate (i^2).
es_type  Character reflecting effect size metric: 'r', 'd', or 'or'.
p  Numerical value for significance level (Type I error probability).
con_table  (Optional) List of numerical values for 2x2 contingency tables as a vector in the following format: c(a,b,c,d). These should be specified for each group (i.e., n_groups).

2x2 Table  Group 1  Group 2
Present  a  b
Not Present  c  d

Value

Estimated Power estimates for moderator analysis under fixed- and random-effects models

See Also

https://jason-griffin.shinyapps.io/shiny_metapower/

Examples

mod_power(n_groups = 2,
effect_sizes = c(.1,.5),
study_size = 20,
k = 10,
i2 = .50,
es_type = "d")
mod_power(n_groups = 2,
con_table = list(g1 = c(6,5,4,5), g2 = c(8,5,2,5)),
study_size = 40,
k = 20,
i2 = .50,
es_type = "or")

mpower  Compute Power for Meta-analysis
mpower

Description

Computes statistical power for summary effect sizes in meta-analysis.

Usage

mpower(
  effect_size,  
  study_size,  
  k,  
  i2,  
  es_type,  
  test_type = "two-tailed",  
  p = 0.05,  
  con_table = NULL
)

Arguments

- **effect_size**: Numerical value of effect size.
- **study_size**: Numerical value for number of participants (per study).
- **k**: Numerical value for total number of studies.
- **i2**: Numerical value for Heterogeneity estimate ($i^2$).
- **es_type**: Character reflecting effect size metric: 'r', 'd', or 'or'.
- **test_type**: Character value reflecting test type: ("two-tailed" or "one-tailed").
- **p**: Numerical value for significance level (Type I error probability).
- **con_table**: (Optional) Numerical values for 2x2 contingency table as a vector in the following format: c(a,b,c,d).

  2x2 Table | Group 1 | Group 2  
  ----------------------------------  
  Present | a | b  
  Not Present | c | d

Value

Estimated Power

References


See Also

https://jason-griffin.shinyapps.io/shiny_metapower/

Examples

mpower(effect_size = .2, study_size = 10, k = 10, i2 = .5, es_type = "d")

Description

Plots power curves for the test of homogeneity for different levels of within-study variation for fixed effects models. For random-effects models, power curves are plotted for various levels of heterogeneity.

Usage

plot_homogen_power(obj)

Arguments

obj should be an "homogen_power" object

Value

Power curve plot for the user specified input parameters

Description

Plots power curves for categorical moderator in meta-analysis

Usage

plot_mod_power(obj)

Arguments

obj This should be an 'mod_power' object

Value

Power curves for moderator analysis under fixed and random effects models
**plot_mpower**  
*Plot Power Curve for Meta-analysis*

**Description**
Plots power curves for fixed effects models with various effect size magnitudes. Also plots power curves for various levels of heterogeneity (e.g., $i^2 = 75$).

**Usage**
```r
plot_mpower(obj)
```

**Arguments**
- `obj` This should be an "mpower" object

**Value**
Power curve plot for the user specified input parameters

---

**plot_subgroup_power**  
*Plot Power Curve for Subgroup analysis*

**Description**
Plots power curves to detect subgroup differences in meta-analysis.

**Usage**
```r
plot_subgroup_power(obj)
```

**Arguments**
- `obj` This should be an 'subgroup_power' object

**Value**
Power curves to detect subgroup differences for fixed and random effects models
subgroup_power

Compute Power for Subgroup Analysis in Meta-analysis

Description

Computes statistical power for different subgroups under fixed and random effects models.

Usage

subgroup_power(
  n_groups,
  effect_sizes,
  study_size,
  k,
  i2 = 0.5,
  es_type,
  p = 0.05,
  con_table = NULL
)

Arguments

n_groups Numerical value for the number of subgroups.
effect_sizes Numerical values for effect sizes of for each group.
study_size Numerical value for number of participants (per study).
k Numerical value for total number of studies.
i2 Numerical value for Heterogeneity estimate (i^2).
es_type Character reflecting effect size metric: 'r', 'd', or 'or'.
p Numerical value for significance level (Type I error probability).
con_table (Optional) List of numerical values for 2x2 contingency tables as a vector in the following format: c(a,b,c,d). These should be specified for each subgroup (i.e., n_groups).

Value

Estimated Power estimates for subgroup differences under fixed- and random-effects models

See Also

https://jason-griffin.shinyapps.io/shiny_metapower/
Examples

```r
cat(subgroup_power(n_groups = 2,
    effect_sizes = c(.1,.5),
    study_size = 20,
    k = 10,
    i2 = .5,
    es_type = "d")

subgroup_power(n_groups = 2,
    con_table = list(g1 = c(6,5,4,5), g2 = c(8,5,2,5)),
    study_size = 40,
    k = 20,
    i2 = .5,
    es_type = "or")```
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