

Package: pwrAB (via r-universe)

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Type Package

Title Power Analysis for AB Testing

Version 0.1.0

Maintainer William Cha <william.minseuk.cha@gmail.com>

Description Power analysis for AB testing. The calculations are based on the Welch's unequal variances t-test, which is generally preferred over the Student's t-test when sample sizes and variances of the two groups are unequal, which is frequently the case in AB testing. In such situations, the Student's t-test will give biased results due to using the pooled standard deviation, unlike the Welch's t-test.

License GPL (>= 3)

Encoding UTF-8

LazyData true

Imports stats

URL <http://github.com/williamcha/pwrAB>

BugReports <http://github.com/williamcha/pwrAB/issues>

Depends R (>= 3.3.1)

RoxygenNote 6.0.1

Suggests testthat

Repository <https://chawm.r-universe.dev>

RemoteUrl <https://github.com/chawm/pwrab>

RemoteRef HEAD

RemoteSha 29f1f76f1f6b0534630bc01742b5785a15c7065a

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 AB_t2n

Two-Sample t-Test Power Analysis

Description

AB_t2n performs the power analysis for AB testing. It uses the Welch's t-test, which allows for the standard deviation to vary across groups.

Usage

```
AB_t2n(N = NULL, percent_B = NULL, mean_diff = NULL, sd_A, sd_B,
       sig_level = NULL, power = NULL, alternative = c("two_sided", "less",
       "greater"), max_sample = 1e+07)
```

Arguments

| | |
|-------------|---|
| N | Total number of observations (sum of observations for groups A and B) |
| percent_B | Percentage of total observations allocated to group B (between 0 and 1 - e.g. input .5 for 50%) |
| mean_diff | Difference in means of the two groups, with mean_B - mean_A |
| sd_A | Standard deviation of group A |
| sd_B | Standard deviation of group B |
| sig_level | Significance level (Type I error probability) |
| power | Power of test (1 minus Type II error probability) |
| alternative | Character string specifying the alternative hypothesis, must be one of "two_sided" (default), "greater" or "less" |
| max_sample | Maximum sample size that is searched for |

Details

Exactly one of the parameters 'N', 'percent_B', 'mean_diff', 'sig_level', and 'power' must be passed as NULL, and the omitted parameter is determined from the others. sd_A and sd_B must be specified. When 'percent_B' is the parameter omitted, two solutions may exist, in which case the smaller value will be returned

Value

Object of class "power.htest", a list of the arguments (including the computed one).

Examples

```
# Search for power given other parameters
AB_t2n(N = 3000, percent_B = .3, mean_diff = .15, sd_A = 1,
sd_B = 2, sig_level = .05, alternative = 'two_sided')

# Search for sample size required to satisfy other parameters
AB_t2n(percent_B = .3, mean_diff = .15, sd_A = 1,
sd_B = 2, sig_level = .05, power = .8, alternative = 'two_sided')
```

AB_t2n_prop

Two-Sample t-Test Power Analysis for Proportions

Description

AB_t2n_prop performs the power analysis for AB testing, and when dependent variables are proportions (between 0 and 1). It uses the Welch's t-test, which allows for the standard deviation to vary across groups.

Usage

```
AB_t2n_prop(prop_A = NULL, prop_B = NULL, N = NULL, percent_B = NULL,
sig_level = NULL, power = NULL, alternative = c("two_sided", "less",
"greater"), max_sample = 1e+07)
```

Arguments

| | |
|-------------|---|
| prop_A | Proportion of successes in group A (between 0 and 1) |
| prop_B | Proportion of successes in group B (between 0 and 1) |
| N | Total number of observations (sum of observations for groups A and B) |
| percent_B | Percentage of total observations allocated to group B (between 0 and 1 - e.g. input .5 for 50%) |
| sig_level | Significance level (Type I error probability) |
| power | Power of test (1 minus Type II error probability) |
| alternative | Character string specifying the alternative hypothesis, must be one of "two_sided" (default), "greater" or "less" |
| max_sample | Maximum sample size that is searched for |

Details

Exactly one of the parameters 'prop_A', 'prop_B', 'N', 'percent_B', 'sig_level', and 'power' must be passed as NULL, and the omitted parameter is determined from the others. The standard deviations for each group are calculated using the formula $\sqrt{\text{prop} * (1 - \text{prop})}$. When 'percent_B' is the parameter omitted, two solutions may exist, in which case the smaller value will be returned. For two_sided tests, when 'prop_A' or 'prop_B' is omitted, two solutions may exist, in which case both will be reported

Value

Object of class "power.htest", a list of the arguments (including the computed one).

Examples

```
# Search for power given other parameters
AB_t2n_prop(prop_A = .2, prop_B = .25,
            N = 3000, percent_B = .3,
            sig_level = .05, alternative = 'two_sided')

# Search for proportion in group B required to satisfy other parameters
AB_t2n_prop(prop_A = .2, N = 3000, percent_B = .3,
            power = .8, sig_level = .05,
            alternative = 'two_sided')
```

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