Package: pwrAB (via r-universe)

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Type Package

Title Power Analysis for AB Testing

Version 0.1.0

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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

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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(prop * (1 - 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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