

Clinical Trials & Survival Analysis

Sample Size Tips

These notes are intended to help in deciding which formula to use for calculating power and sample sizes. Essentially the answer is decided by correctly choosing which test is required for performing the analysis.

For most circumstances arising in this course there are two choices to be made

- (i) Whether to use a t-test or a test of proportions (i.e. a binomial test)
- (ii) Whether the test is one sample or two samples

Additionally there may be cases where you need to choose between a two-sided and a one-sided alternative but for the purposes of this course the recommendation is **always** use a two-sided test.

Key words to choose a test of proportions:

Any mention of rate, proportion, percentage means you need a test of proportions – either two sample formula at the top of P72 or one-sample in P77 (the one with θ and θ_0). In **R** you need to use `power.prop.test()`.

Key words to choose t-test:

Any mention of standard deviation, means, average,.... Then choose a t-test and formula on the bottom of P75 for a two sample test or the second formula on P77 for the one-sample test. In **R** you need `power.t.test()`

Key words to choose a two sample test:

Any mention of placebo group and active group or experimental group usually means you have two groups and therefore need a two sample test with formulae on P72 and P75. In **R** you can include `type="two.sample"` but you do not need to since this is the default.

Any mention of prevalence, change from base line or paired test means you need a one-sample test and the formulae on P77. In **R** you **must** include `type="one.sample"` in `power.t.test()` **ONLY**. One-sample tests are not available in `power.prop.test()` but can be handled by `power.exe` available from the course web page or in S=Plus or Minitab.

Other points

Note that for two sample tests the formulae and **R** give the number for *each* group so the total number required is **twice** this number.

Note that to allow for $\alpha\%$ drop outs you **do not** inflate by $100\alpha\%$ but by $100/(1-\alpha)\%$, e.g. for a 10% drop out inflate by $100/0.9=11.1\%$.