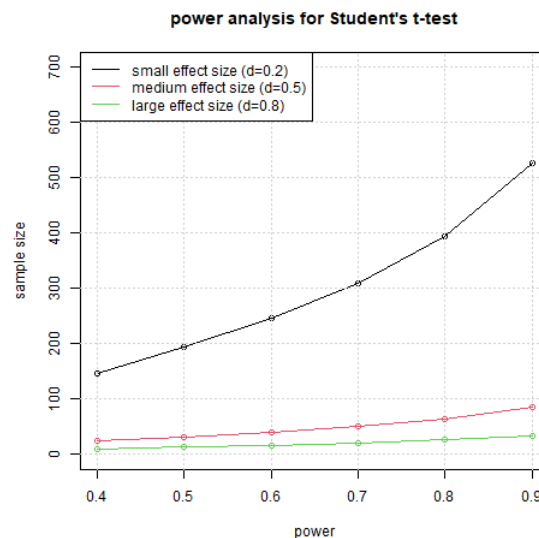
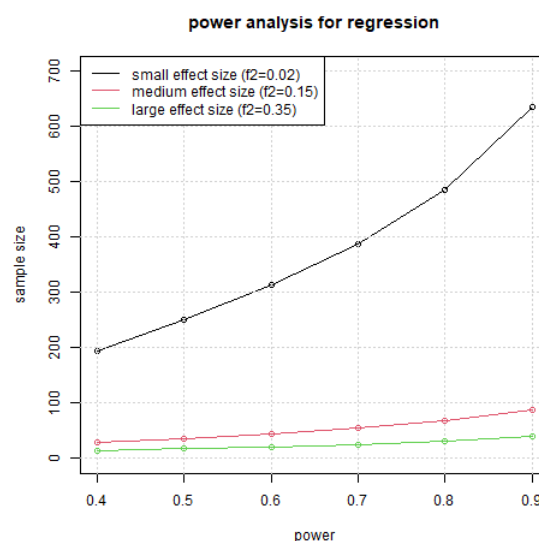


Sample size calculations

Sample size calculations (or statistical power analysis) assume that continuous-valued data and relevant statistical tests are all parametric. Regarding bivariate comparisons or comparisons with Student's t-test of any outcome score between two groups, the figure below reveals that under an optimistic scenario with effect size of 0.8 (effect size being the standardized means difference), 34 subjects suffice for a 90% statistical power. That means, 17 subjects per group suffice for a joint adequate minimization of errors of types I and II, in our analysis (one may observe the green bottom line in the illustration that follows). The statistical significance level is, as usual, assumed as equal to 5% (i.e., confidence level equal to 95%).



In order to use ANCOVA, for the sake of completeness of the analysis, ANCOVA typically corresponds to a linear regression model, which uses two predictors: the group and the t0 score (the target is obviously the t1 score). The figure below shows that under an optimistic scenario with effect size of 0.35 (effect size being f^2), 40 subjects suffice for a 90% statistical power, which denotes 20 subjects per group, so as to obtain minimal errors of type I and II (one may detect the green bottom line in the figure that follows). The statistical significance level is, as usual, assumed as equal to 5% (i.e., confidence level equal to 95%).



Reference of all of the above is given in Cohen's book: Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Routledge. <https://doi.org/10.4324/9780203771587>.