



## Bayesian Sample Size Calculation in Two Arms Randomized Clinical Trials

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Sample size determination plays a critical role in the design aspect of studies in many fields, and especially in the planning of phase II or proof-of-concept clinical trials. The majority of statistical designs are based on frequentist statistical approaches, which often suffer from several practical limitations, including the need to choose values for the parameters of interest without accounting for the uncertainty in these estimates. A number of researchers have discussed alternative designs from a Bayesian perspective. However, these sample size calculation methods have been developed specifically to single-arm trials. In this article, we propose a more general framework of Bayesian sample size determination which extends to two-arm trials with binomial response by considering the complexity of parameters from two different populations. We investigate the operating characteristics of our Bayesian approach through simulation studies.

**Keywords:** Bayesian; sample size; binomial; prior.