

**Abstract:** Pilot and feasibility studies are routinely used to determine whether a definitive trial should be pursued; however, the methodologies used to assess feasibility endpoints are often basic (e.g., descriptive statistics compared to a threshold) and are rarely informed by the requirements of the planned future trial. We propose a new method for analyzing feasibility outcomes in pilot trials which can incorporate relationships between endpoints, utilize a preliminary study design for a future trial and allow for multiple types of feasibility endpoints (proportions, rates, continuous measures, etc). The approach specifies a Joint Feasibility Space (JFS) which is the combination of feasibility outcomes that would render a future trial feasible. We estimate the probability of being in the JFS using Bayesian methods, and use simulation to create a decision rule based on a probability cut point of being in the JFS under two scenarios. We compare our approach to other methods in the literature with simulation.