

In the study of dose response curves, there are two main assumptions that are normally made. First, we assume that the dose response data can be modeled using linear models (linear probability models), and secondly we assume that the response is only determined by the dose and nothing else. In practical situations this is not the case.

In this project, we have considered these two assumptions and explored them in details. Particularly, we have looked at alternative models for the dose response data, and incorporated covariate effects into the dose response model. Covariates are the other factors influencing the response in addition to the dose. The incorporation of the covariates is done in two ways, through the parameters (parametric approach) and through use of the logit difference of the success rate (semi-parametric approach).

We have also suggested that we can use the non-parametric methods to analyze dose response data. In particular, we have looked at the estimation of the median dose using the smoothed responses (Graphical approach) and using the Spearman-Kärber's method.