

Study about the Homogeneity of the Dispersion in a Completely Randomized Design with Data of Proportions and Counts

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When you analyze data in the presence of over dispersion, the usual practice is to assume a common dispersion parameter to all the observations; however, there are situations where the assumption of homogeneity of the dispersion parameter is not justifiable.

In this paper we present theoretical developments that allow contrasting the assumption of homogeneity of the dispersion parameter between treatments, in a completely randomized design, with the responses of proportions and counts, modeled through the distributions beta-binomial and negative binomial respectively. The hypothesis is contrasted through the proof of the verisimilitude reason.

Under the assumption that the beta-binomial and the negative binomial models are correct, it is proposed an adjustment of a generalized linear weighted model as an alternative for the data analysis of counts and proportions when over dispersion is present.

Besides, it is also evaluated, through simulation, the performance of the proposed proofs in terms of its power.

Key Words: Over dispersion, counts, proportions, beta-binomial distribution, negative binomial distribution.