Behavior of nonparametric tests in longitudinal designs

Stefanie Hayoz, stefanie.hayoz@stat.unibe.ch

Institute of Mathematical Statistics and Actuarial Science.
University of Bern, Switzerland

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Abstract

Nonparametric procedures need less model assumptions than the analogous parametric ones. Moreover the nonparametric procedures are more robust against deviations from the model assumptions. It is well known that the Friedman test is used to analyze the treatment effect in the randomized complete block design (see e.g. [3]). The Friedman test could also be used in a longitudinal design to analyze the time effect. Alternatives are an ANOVA type test (see e.g. [1]) and the parametric ANOVA test for repeated measures (see e.g. [2]). The three tests are compared with respect to the power and the control of the nominal level by means of a simulation study. This study incorporates different covariance structures are used to model the dependence among the repeated measurements and the results are based on 40'000 replications for each situation considering small sample sizes.

References

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