Distribution free test for unequal observation of panel count data with application in medical follow-up study

ABSTRACT

Objectives: In medical follow-up study, patients are treated with different treatments may have different follow-up schedule and the number of patients assigned in each treatment group may not be balanced. To address this, a nonparametric test procedure is proposed. Methods/Statistical Analysis: The proposed test statistics is constructed based on the integrated weighted differences between the mean cumulative function of the recurrences event with condition on treatment group. For performance evaluation, the empirical power of proposed test statistics are evaluated via Monte Carlo simulation study conducted using R statistical software. Findings: Based on simulation results, the proposed method gives a good power for both identical and unequal follow-up processes, even when the sample sizes are imbalanced. Applications/Improvement: The proposed test procedure is also applied to a set of panel count data arises from the National Cooperative Gallstone Study to compare the treatment efficiency. The proposed test procedure able to detect treatment differences and is in line with earlier research.

Keyword: Panel count data; Nonparametric test; Treatment comparisons; Unequal observation processes