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WICHAI MAHUTDEJKUL : A COMPARISON ON TWO SURVIVAL DISTRIBUTIONS WITH NONPARAMETRIC TEST STATISTICS. ADVISOR : ASSO.PROF. SORACHAI BHISALBUTRA, Ph.D. 263 PP. ISBN 974-582-072-5

The objective of this study was to compare the power of nonparametric tests for comparing two survival distributions by using Generalized wilcoxon test (Gh), Log rank with permutation test (Lrp) and Peto-Prentice test (PP). The population distribution of this study were made on Exponential distribution, Weibull distribution and Lognormal distribution. The sample sizes of two sample groups are equal and unequal. In addition, the study was performed on two cases, complete data and censored data. In case of censored data, the pattern of censoring was random censoring and right censoring. The simulation were made by using Monte carlo technique and repeat 500 times to calculate the probability of type I error and the power of test.
The result shows that in case of complete data, Log rank with permutation test has the highest power when the population has either the Exponential distribution or the Weibull distribution. Peto-Prentice test has the highest power when the population has the Lognormal distribution. In case of random censored data, Log rank with permutation test cannot control type I error when the equal sample size is 20, 30 and 50 and the sample size is $n_1 = 10$ $n_2 = 20$ and $n_1 = 10$ $n_2 = 50$ While the percentage of censored data of both groups is 30% at the significant level of 0.05. When considering the power of test, Log rank with permutation test has high power of test when the data has low percent of censored data for the population with Exponential distribution and Weibull distribution. But in case of high percent of censored data, Peto-Prentice test has higher power than Log rank with permutation test. For Lognormal distribution, Peto-Prentice test has high power of test in almost all cases. For right censored data, Log rank with permutation test cannot control type I error in any cases. In general, Peto-Prentice test has the highest power among those three tests.

When the type of censored data is random, it has higher power of test than right censored data and we found that the high percentage of censored data will make the power of test will less than the low percentage of cencored data. When sample size is increased, the power of test will increase also, and the peto-Prentice test is the best test.