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A Jackknife-based Versatile Test for Two-sample Problems with Right-censored Data

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Abstract

For testing the equality of two survival functions, the weighted logrank test and the weighted Kaplan–Meier test are the two most widely used methods. Actually, each of these tests has advantages and defects against various alternatives, while we cannot specify in advance the possible types of the survival differences. Hence, how to choose a single test or combine a number of competitive tests for indicating the diversities of two survival functions without suffering a substantial loss in power is an important issue. Instead of directly using a particular test which generally performs well in some situations and poorly in others, we further consider a class of tests indexed by a weighted parameter for testing the equality of two survival functions in this paper. A delete-1 jackknife method is implemented for selecting weights such that the variance of the test is minimized. Some numerical experiments are performed under various alternatives for illustrating the superiority of the proposed method. Finally, the proposed testing procedure is applied to two real-data examples as well.

Key words：Data driven; Linear combination test; Right-censored data; Weighted Kaplan-Meier test; Weighted logrank test