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Jamye Nichelle Curry* (jcurry4@ggc.edu). *A Test for the Two-sample Problem using a Rank-based Approach.*

Rank-based formulations are investigated for the two-sample problem. Two nonparametric statistical procedures are proposed. One formulation is based on the average of between-group distances of ranks. The second formulation includes the difference between the average of between-group distances of ranks and the average of within-group distances of ranks. Each formulation is closely related to the two-sample Cramér-von Mises criterion. The proposed tests are strictly nonparametric as there is no assumption made on the distribution of the populations from which the samples are drawn. The bootstrap and permutation procedures are used to estimate consistently the null distribution. A numerical study is performed to compare power performance of the rank formulations with other commonly used nonparametric and parametric procedures. An application of the proposed test is presented using microarray data for identifying differentially expressed genes across two samples in replicated microarray experiments obtained under two experimental states. (Received September 20, 2015)