# NONPARAMETRIC TESTS FOR DEPENDENT OBSERVATIONS OBTAINED AT VARYING TIME POINTS

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We propose new tests for two-group comparisons of repeated measures of a response where the repeated measures might be obtained at arbitrary time points that differ over individuals. The tests are almost U-statistics in that the kernel contains some unknown parameters that must be estimated from the data. Our methods are designed for testing that the response means of one group are strictly greater than those of the other group. The tests make no assumptions regarding the distribution of the repeated measures. One of the tests, however, assumes that the repeated measures can be grouped into distinct observation periods (e.g. around fixed follow-up time points) such that the covariance between scores which serve as the basis for the test statistic only depends on the period in which the observation occurred and is the same in the two groups. The tests are valid even if the probability of observing a response depends on the level of response, provided that the missing data mechanism is the same in both groups. Inference can conveniently be based on resampling, but asymptotic results for the test statistics are also available, which can be useful in power calculations. We investigate size and power of the tests and use them to assess differences in viral load decline for drug resistant and drug sensitive human immunodeficiency virus (HIV)-1 infected patients.