

Tests for the presence of heterogeneity in frailty models use an alternative hypothesis in which the heterogeneity parameter is subject to an inequality constraint. As a result, the classical likelihood ratio asymptotic chi-square distribution theory is no longer valid. Our main result states the limiting distribution of the likelihood ratio and score statistic for the one-sided testing problem. The resulting distribution is a mixture of chi-square distributed random variables. The results are shown for gamma and positive stable frailty distributions, and hold when covariate information is present. A data example illustrates the tests. We also assess, in a simulation study, the performance of the tests regarding the significance level and power.