

The Cox proportional hazards model is a standard tool for modelling the effect of covariates on time to event in the presence of censoring. The appropriateness of this model is conditioned by the validity of the proportional hazards assumption. The assumption is explained in the thesis and methods for its testing are described in detail. The tests are implemented in R, including self-written version of the Lin-Zhang-Davidian test. Their application is illustrated on medical data. The ability of the tests to reveal the violation of the proportional hazards assumption is investigated in a simulation study. The results suggest that the highest power is attained by the newly implemented Lin-Zhang-Davidian test in most cases. In contrast, the weighted version of the Lin-Wei-Ying test was found to have inadequate size for low sample sizes.