Nonparametric Hypothesis Testing
In Clustered Survival Model

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A thesis submitted in partial fulfillment
of the requirements for the degree

Master of Science (Statistics)

March 2014

ABSTRACT

Nonparametric hypothesis testing procedures based on the bootstrap were developed in testing for constant clustering effect in a survival model that incorporates the clustering effect into the Cox Proportional Hazards model. In a clustered survival model, bootstrap estimators of the cluster-specific parameters are consistent. Simulation studies indicate that the procedure is correctly-sized and powerful in a reasonable wide range of data. The test procedure for constant cluster effect over time is also robust to model misspecification. In survival data characterized with large number of clusters, the test is powerful even if the data is highly heterogeneous and/or there is misspecification error.

Keywords: Bootstrap confidence interval; Survival Analysis; Clustered Data; Backfitting Algorithm; Generalized Additive Models; Nonparametric bootstrap.