Public Abstract

First Name: Chao
Middle Name:
Last Name: Zhu
Degree: PhD
Degree Program: Statistics
Advisor's First Name: Jianguo
Advisor's Last Name: Sun
Co-Advisor's First Name:
Co-Advisor's Last Name:
Graduation Term: Summer
Graduation Year: 2006

Title: Nonparametric and Semiparametric Methods for Interval-censored Failure Time Data

Interval-censored failure time data commonly arise in follow-up studies such as clinical trials and epidemiology studies. By interval-censored data, we mean that the failure time of interest is not completely observed. Instead, we only know that it belongs to a certain interval. For the analysis of interval-censored data, what interests researcher most include comparisons of survival functions for different treatment groups and regression analysis. In this dissertation, we consider these research questions on two types of interval-censored data by using nonparametric and semiparametric approaches. Three new procedures, which include a goodness-of-fit test for the proportional odds model with interval-censored data, a nonparametric test for comparing two survival functions with interval-censored data in the presence of unequal censoring, and a semiparametric regression model for two-sample current status data, are established. Also, their performance is evaluated by simulation studies, which suggest that all approaches work well for practical situations. In addition, we apply new approaches to two real data sets arising from AIDS and tumorgenicity studies.