

Analyzing Cancer Mortality with Missing Cause-of-Failure

Ananda Sen

*Center for Statistical Consultation and Research and Department of Statistics,
University of Michigan, Ann Arbor, USA*

Analyzing survival data with competing risks has received considerable attention in the statistical literature. Earlier work in this area focused on the situation with known cause of death. A challenging twist to this problem arises when the cause of death can only be narrowed down to a set of potential causes that do not necessarily act independently. We shall review the issues and existing methodologies to handle competing risks survival data with missing cause of failure. A model will be proposed under a semiparametric Bayesian framework that attempts to address some of the methodological challenges. The model will be used to analyze survival data on breast cancer patients that appear in Detroit SEER registry. While the application focus is mortality data from cancer clinical trials, much of the discourse applies also to reliability analysis under multiple failure modes.