Parametric modelling of combined failure time data from an incident cohort study and a prevalent cohort study with follow-up

James Hugh McVittie
McGill University

Abstract

A classical problem in survival analysis is to estimate the failure time distribution from right-censored observations obtained from an incident cohort study. Frequently, however, failure time data comprise two independent samples, one from an incident cohort study and the other from a prevalent cohort study with follow-up, which is known to produce length-biased observed failure times. There are drawbacks to each of these two types of study when viewed separately. We address two main questions here: (i) Can our statistical inference be enhanced by combining data from an incident cohort study with data from a prevalent cohort study with follow-up? (ii) What statistical methods are appropriate for these combined data? The theory we develop to address these questions is supported by simulations and used to estimate the duration of hospital stays.