

Estimating Survival Curve With Unlinked Entry and Failure Times

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In monitoring a clinical trial or other observational study with a survival endpoint, sometimes the numbers of patients entering and dying at each time point are presented, but the connections between them are kept confidential. Hence the exact time to failure or censoring for each individual is missing. We refer to such a study monitoring table with missing pairing information between the entry and death times as a "broken" survival dataset. In this paper we study the problem of estimating the survival distribution from a broken survival dataset. We have developed two methods, likelihood-based estimation and self-consistency estimation, to estimate the survival curve parametrically and empirically, respectively. We use simulations to study the properties of these methods, and illustrate them with data from the STELLAR-3 trial.

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