

Constrained NMLE in the competing risks setting: Why, What, How?

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The competing risks setting is common in medical research and requires the use of specific statistical methodologies. Competing risks data arise when subjects can experience one and only one of several distinct types of events (e.g.: stroke and death without previously experiencing a stroke). We present a new framework to make inference in the competing risks setting via constrained Nonparametric Maximum Likelihood Estimates (NMLE). The methodology borrows ideas from empirical likelihood and profile likelihood methods. It extends previous work in the context of survival analysis to the competing risks setting. We explain why this new framework can help facing different challenges commonly encountered when analyzing medical data. We argue that it can help analyzing data associated to various medical research questions, when the data originate from both clinical trials and observational studies. We present the rationale of the method and how it works in practice.