
ELEANOR PULLENAYEGUM, The Hospital for Sick Children

A proposed workflow for handling longitudinal data with irregular assessment times

Studies with longitudinal data often feature irregular observation times; a common cause of this is that data are collected as part of usual societal operations rather than for the purposes of research. For example, electronic health records (EHRs) are often used to study disease processes over time, or the impact of treatment on disease trajectory. When the assessment times and the outcome process are independent, failure to account for the assessment times will result in biased inferences; for example, if sicker patients visit more often, we will overestimate the burden of disease.

Although a very similar problem to missing data, the problem of irregular observation is typically ignored. When handling missing data, researchers know they need to report how much data is missing, consider the missingness mechanism, use an analytic approach suitable for their hypothesized missingness mechanism, and conduct sensitivity analysis. In this talk I will describe the irregular observation counterparts to these steps, outlining both the methods and procedures for implementing them in standard statistical software.