

Event history analysis: Observational patterns and designs

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Defining features of event history analysis

- ▶ Censoring: incomplete observation of being at risk for events
 - ▶ Right censoring: event time is larger than the observed time, e.g. fixed study time
 - ▶ Left censoring: event time is smaller than the observed time, e.g. baboon descent
 - ▶ Interval censoring: event is known to have occurred sometime in an interval, e.g. a study of occurrence of a particular chronic disease (under illness-death model) with periodic follow-up visits.

Defining features ... contd.

- ▶ Truncation: observation conditional on being under active surveillance
 - ▶ Left truncation: observation conditional on having survived up to the entry time (i.e. when late entry)
 - ▶ Example: estimation of the age-dependent hazard of death in the atresia data
 - ▶ Cf. to length biased sampling in cross-sectional studies: longer survival times have higher probabilities of being sampled.
 - ▶ Right truncation: Observation conditional of the event occurring before the end of study
 - ▶ For example, studies of the incubation time from HIV infection to AIDS, when incubation times were observed conditional on having contracted disease (=AIDS): long times from infection to disease tend to remain unobserved (since disease has not yet occurred at the time of data collection).

Designs

- ▶ Prospective or follow-up design: incident cohort study where a cohort is followed up for observation of certain event.
- ▶ Historically Prospective design: variant of prospective design in which data are collected by recall method. Recall bias
- ▶ Retrospective design: a cross-sectional sample of diseased is taken at a fixed calendar time. disease onset time is collected retrospectively.
- ▶ Current status data: in a cross-sectional study, for all individuals only known whether or not an event has happened at age of sampling.
- ▶ Current duration data: in a cross-sectional study, for all individuals information on current status is collected along with the duration in that status.

Additional reference

Andersen PK, Keiding N. (2002). Multi-state models for event history analysis. *Statistical Methods in Medical Research*; 11: 91-115.