

SURVIVAL ANALYSIS AROUND A CROSS-SECTION AND UNOBSERVED HETEROGENEITY

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Consider lifetimes originating at a series of calendar times t_1, t_2, \dots . At a certain time t_0 a cross-sectional sample is taken, generating a sample of *current durations* (backward recurrence times) of survivors until t_0 and a *prevalent cohort study* consisting of survival times left-truncated at the current durations. A Lexis diagram is helpful in visualizing this situation.

Survival analysis based on current durations and prevalent cohort studies is now well-established as long as all covariates are observed.

The general problems with *unobserved covariates* have been well understood for ordinary prospective follow-up studies, with the good help of hazard rate models incorporating frailties: as for ordinary regression models, the added noise generates attenuation in the regression parameter estimates.

For current durations and prevalent cohort studies this attenuation remains, but in addition one needs to take account of the differential selection of the survivors from initiation t_i to cross-sectional sampling at t_0 .

This talk intends to survey the recent development of these matters and the consequences for routine use of hazard rate models or accelerated failure time models in the many cases where unobserved heterogeneity may be an issue.