

JOINT MODELS OF LONGITUDINAL AND SURVIVAL DATA WITH BOTH RETROSPECTIVELY AND PROSPECTIVELY MEASURED LONGITUDINAL DATA

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Recently, the use of joint models of longitudinal and survival data has become more frequent in many biomedical settings. In particular, in AIDS studies one often wants to model the effect of CD4+ cell count or HIV viral load on a time to event outcome. However, in many observational studies the absence of a standard follow-up schedule to measure CD4+ cell count or HIV viral load poses problems for fitting such models. Further, in some circumstances, these CD4+ cell count and HIV viral load measurements pre-date the times in which the cohort is defined and one begins following subjects to observe the survival outcome. Using these retrospectively measured data can potentially improve prediction of survival, though careful consideration of the introduction of this retrospective information must be undertaken to help ensure that it does not introduce bias. We examine this issue for joint models of longitudinal and survival data motivated from a cohort of HIV positive illicit drug users.