

# Joint Analysis of Longitudinal Latent Health Related Quality of Life and a Survival Process.

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**Abstract:** In this work, joint analysis of a longitudinal latent multidimensional variable and an event time is considered. The latent variable is measured through a Rasch model using data from questionnaires assessed at several time visits. The responses of our model are two way correlated. First, at a given visit, the responses to questions (items) of a single individual are correlated and second, they are repeated over the visits, they, also become correlated. It is, however, well known that a full likelihood analysis for such mixed models is hampered by the need for numerical integrations. To overcome such integration problems, generalized estimating equations approach is used, following useful approximations. Fixed effects parameters and variance components are estimated consistently by asymptotical normal statistics. A second level of difficulty is the occurrence of death or missing response at dropout time. The likelihood of a global solution is derived, while a full statistical inference is given when the analysis is performed in two separate steps.

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