Bayesian first order auto-regressive latent variable models for multiple binary sequences

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Longitudinal clinical trials often collect long sequences of binary data monitoring a disease process over time. Our application is a medical study conducted in the US by the Veterans Administration Cooperative Urological Research Group to assess the effectiveness of a chemotherapy treatment (thiotepa) in preventing recurrence on subjects affected by bladder cancer. We propose a generalized linear model with latent auto-regressive structure for longitudinal binary data following a Bayesian approach. We discuss inference as well as sensitivity to prior choices for the bladder cancer data. We find that there is a significant treatment effect in the sense that treated patients have much smaller predicted recurrence probabilities than placebo patients
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