Title: "A hierarchical conditional autoregressive model for colorectal cancer survival data".

Abstract: In this article, we propose a Bayesian hierarchical linear mixed model to cancer data with geographical characteristics. The spatial effects are captured via a conditional autoregressive (CAR) mode. The survival model is introduced to analyze the survival pattern of colorectal cancer based on geographical factors and patients' disease conditions. We propose a special case of the classic Cox model with Weibull hazard as well as a cure rate model. A CAR prior is used to capture the spatial effects, which are determined based on counties the survival subjects belong to. The computation is done via Gibbs sampling. The ratio-of-uniforms method is used to sample from a nonstandard conditional posterior density, and the adaptive reject method is used to sample from log-concave densities. The model is applied to the Colon & Rectum Cancer incidences in Iowa from the Surveillance, Epidemiology, and End Results (SEER) database. Computation is implemented in Intel Fortran on Linus platform.