

# A spatial model for multivariate lattice data

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## **Abstract**

In this article, we develop Markov random field models for multivariate lattice data. Specific attention is given to building models that incorporate general forms of the spatial correlations and cross-correlations between variables at different sites. The methodology is applied to the problem of environmental equity. Using a Bayesian hierarchical model that is multivariate in form, we examine the racial distribution of residents of southern Louisiana in relation to the location of sites listed with the U.S. Environmental Protection Agency's Toxic Release Inventory.