

Department of Mathematics and Statistics Colloquium

Overdispersion Models for the Violation of Nitrate Concentration Limits in Mid-Atlantic Region Watersheds

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Abstract: We investigate possible approaches for the spatial analysis of the number of violations when the nitrate concentration exceeded beyond the regulatory limits. We consider a spatial analysis where the basic unit of analysis is a watershed. We study distributional properties of the number of 'hot' [defined as a well that exceeds the regulatory nitrate limit] wells in a watershed. Because of possible within-watershed correlation, models based on the beta-binomial distribution and a more recently introduced finite mixture distribution, are possible candidates to model such data. We will introduce these overdispersion models in a logistic regression relating the number of violations to various explanatory variables such as land cover pattern and geology type. Advantages and disadvantages of modeling data at the watershed level will also be discussed.

**Monday, September 19 at 3:45 in Roop 103
refreshments at 3:30**