

Department Seminars

A Generalized Linear Models Approach to Spatial Scan Statistics for Covariate Adjustment

Inkyung Jung, PhD

Department of Epidemiology & Biostatistics
University of Texas Health
Sciences Center, San Antonio



Abstract:

The spatial scan statistic proposed by Kulldorff (1997) is one of the most widely used methods for detecting spatial clusters and evaluating their statistical significance. However, it is not fully capable of adjusting for all types of confounding covariates. In this talk, a generalized linear models (GLM) approach to construct spatial scan statistics, which is readily in a form for covariate adjustment, is introduced. Using GLM, spatial scan statistics for different probability models can be formulated in a single framework. The test statistic is based on the log-likelihood ratio test and evaluated using Monte Carlo hypothesis testing. The proposed method is illustrated using Texas female breast cancer data concerning late versus early stage cancer cases with covariates of race/ethnicity and age group.

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