Spatial Clusters of Diseases: Remodeling the Concept

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Abstract

In this article, we propose an alternative way of testing spatial clustering for common diseases. In order to detect a hot spot, we treat a global cluster statistic from a localized perspective, and define an area with positively correlated neighboring regions as a cluster. The proposed test uses the maximum likelihood method to detect the existence of a cluster, and it does not require the calculation of the mean and variance as most spatial statistic tests do. Using the spatial chi-square test of Rogerson (*R*) as a benchmark, our subsequent simulations and case study show that when the existence or nonexistence of spatial clusters are apparent, our test result is consistent with R. However, when a low value region surrounded by high value neighbors is considered, the result from R finds a cluster, while our result finds no cluster.