On the cluster detection and methods comparison for spatial data

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Abstract

Cluster detection is one of the most important topics in spatial statistics. With increasing public health concerns about environmental risks, the development of statistical methods for analyzing spatial health events becomes immediate. The two most popular cluster detection approaches are the spatial scan statistics and spatial autocorrelation. However, the spatial scan statistics is easily affected by irregular region, and the spatial autocorrelation methods rely on weighted neighborhood matrix which is difficult to define correctly. Based on Local Moran's I statistic and scan statistics, we purpose some improved methods and apply them to real data.

Keywords: cluster detection, spatial scan statistics, spatial autocorrelation, Local Moran's I