

Spatial Cluster Analysis

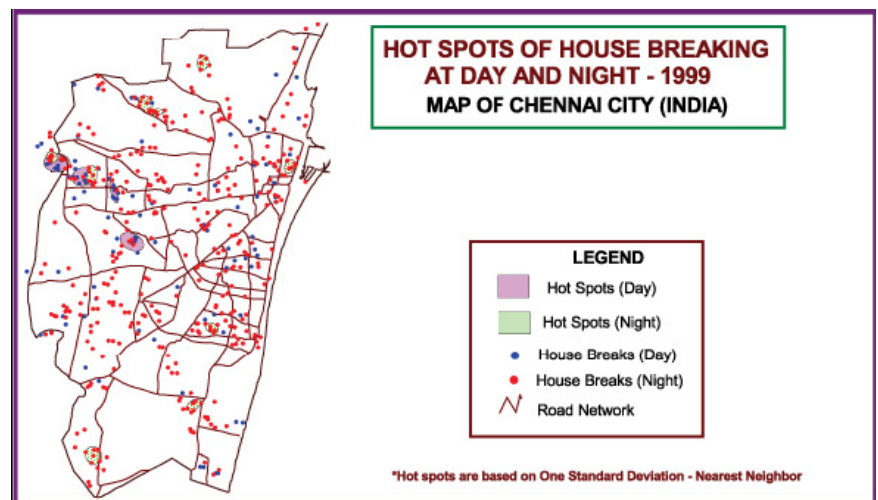
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Definition: Spatial clusters are usually thought of as being concentrations of incidents/events (points) within a limited geographical area. Spatial clustering tools can also be used to detect clustering (or spatial dependency) in area data.

Spatial clustering has been used in various areas of study, which have developed many methods of cluster analysis. Generally, these methodologies can be classified into four categories: partitioning methods, hierarchical methods, density-based methods, and grid-based methods. In order to choose the appropriate methodology, the following two factors have to be considered: (1) Application goal - the goal of an application will often affect the type of cluster algorithms being used. For example, when trying to determine a good location for a store, the shortest distance to the neighborhood is desirable. Thus, partitioning method could be applied. (2) Characteristics of the data - since the similarity between two data objects is judged by the difference in their data attributes, the types of attributes become an important issue before deciding on the method of analysis.

Application:

The application of spatial cluster analysis can be seen in a study from India examining the hot spots of house breaking demonstrated over time. The figure on the right (source CrimeStat Manual Chapter 6) shows hot spots for residential burglary for both day and night. The hot spots for daytime house breaking were confined to smaller areas in the west of the city, whereas the hot spots for nighttime break-in were seen in all parts of the city (Levine, 2004).



References/Sources:

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