

# **Using GIS and spatial statistics for analysing health care facilities in Jeddah city, Saudi Arabia**

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## Abstract

GIS and spatial statistical tools are used by health care planners to analyzing spatial distributions, patterns, processes, and relationships related to health supply and demand. These tools can help health planners to summarize and evaluate geographic distributions of health care facilities, identify statistically significant spatial outliers and clusters (hot spots), and assess broad health services geographic patterns and trends over time. Epidemiologists, crime analysts, demographers, emergency response planners, transportation analysts, archaeologists, wildlife biologists, retail analysts, and many other GIS practitioners increasingly can benefit from using spatial analysis tools to Summarize the key characteristics of a distribution, Identify statistically significant spatial clusters (hot spots/cold spots), Assess overall patterns of clustering or dispersion, and Model spatial relationships. The aim of this paper is to use GIS and ArcGIS spatial statistics tools for analyzing the location and distribution of health care centers at Jeddah city. A geo-database was created to cover city features including health centers, road network and city districts. The created application Identifies the geographic center (or the center of concentration) of health centers, Identifies the most centrally located health center, Measures the degree to which health centers are concentrated or dispersed around the geometric mean center, creates standard deviational ellipses to summarize the spatial characteristics of health centers, and identifies spatial clusters of health centers with high or low values. The outputs of the created application, help health care planners in Jeddah city to evaluate current health centers locations and plan for future development related to health centers supply.