

**APPLICATION OF GEOGRAPHICAL INFORMATION SYSTEMS
IN EMERGENCY PLANNING : A Case Study of the Saudi Red
Crescent Society Centers in the City of Jeddah**

Mohammad AbdulRahman Kattan
Supervised by : Abdulkader Ali Murad

King Abdulaziz University Faculty of Environmental Design
Department of Urban & Regional Planning
Master Program

ABSTRACT: Emergency services, which commonly include Ambulance, Fire and Police services have geographical distribution characteristics of request of service on one hand, and a system of facilities deployed to respond to that request, on the other.

The purpose of this thesis is to discuss and analyze the application of Geographical Information Systems (GIS) in emergency planning, with a specific interest on ambulance services that are commonly known in Saudi Arabia as Saudi Red Crescent Society Centers (SRCSCs).

For this purpose, the existing service provision were examined by classifying the incidents locations for the month of Rajab in the year 1421, and then evaluating the existing centers catchment areas. The following analytical tool was to compare the incidents classification with the previous mentioned evaluation. The present research has proved that there is a deficiency in the spatial provision of SRCSCs in Jeddah city in four categories, population within service limit, area, buildings number, and units number. Accordingly, a particular study area was selected in the City of Jeddah. Issues at micro level were to propose a coding system for the study area, as well as identifying the optimum route to the incident location. This optimum route was compared to the actual route being used by the ambulance vehicle. The study at this micro level has proved that the optimum route identified by Arcview GIS was less by 27% of the time of the actual ambulance vehicle route. In both analytical levels, macro and micro, GIS was very powerful to input, update and manipulate the data continuously.