

A framework for determining optimal locations and distribution of health facility services using geographical information system: a case of Kibaha district, Tanzania.

Rodrick Paul Payovela

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Access to health services in most parts of Tanzania is a problem to many people especially in rural areas due to the fact that in some of the villages the existing health facilities are far from peoples' residences. Availability of health facilities near people's residence contributes significantly to a healthy community. Lack of a framework for optimal location of health facility is a challenge for health care planning. The study uses GIS techniques with Analytical Hierarchy Process (AHP) and Weighted Linear Combination (WLC) methods to determine factors affecting accessibility and utilization Health service. In an attempt to achieve the study objectives of developing a framework for optimal locations of health facilities, a Handheld Geographical Positioning System (GPS) device was used to collect coordinates of Health care facilities and Village Centers in Kibaha district. Other data collected were Kibaha care facilities and Village Centers in Kibaha district. Other data collected were Kibaha wards Shape-files and population. The data collected was loaded in Arc-Map 10.3 to create maps of residents, roads, water points and population in relation to health facilities distribution. AHP was used to determine the influence weight of factors in health facilities utilizations. The standardized maps and influence weight were combined using WLC model to obtain optimal sites for building New HFs the process resulted to a framework that guide an optimal locations for building HFs. The framework proposed was used to determine the optimal location for building HFs. The framework proposed was used to determine the optimal location for building new health facilities. A framework was tested using Kibaha data set and indicates that populated areas have a highest influence of 65% for sites selection, road infrastructures have an influence of 17% in site selection, residents have an influence of 11% and water supply have an influence of 7% in sites selection. This results implies that, the percentages are deciding priorities for areas required for building new health facility services. Using the data set of Kibaha district it clearly shows that new health facilities should be placed in areas with highest population because the utilization rate of health services is high.