SITE SELECTION FOR HEALTH LAND USE THROUGH GIS CASE STUDY SHIRVAN,IRAN

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Abstract:

According to that one of the essential tasks and important in urban and regional planners, land allocation to different land uses with respect to the role and function of the city, the city's economy as well as a member of a mutual effect on each other. Issue of optimal allocation of treatment uses with considering parameters and the factors affecting in this study are taken into consideration.

According to investigations on the present situation, there are three clinics in the city of Shirvan that is looks not suitable their distribution and location view . So for future planning and development of urban landscape assessment base and also suggest suitable locations for the clinics is an essential issue.This study seeks to provide a suitable model for the optimal location of clinics is the Shirvan city. The research method is descriptive - analytic study. In the first Stage have been deal with identify and analyze the factors affecting the location, status and pay, then using software Arc GIS and the process of data collection, preparation layers, classification and value investing layers and weight and overlapping layers of information we deal with to prioritize land of Shirvan city clinics. required information is obtained through observation, field research, comprehensive plans and detailed study of the city of Shirvan. The city's land into four categories: very good, good, poor, very poor, we conclude that the segmentation is presented in the form of maps., After matching the map with the fact were detected \ ground good class, a very good health centers.

Keywords: Location (Site selection), Geographic Information System (GIS). Clinic

1. Introduction:

Due to the ever increasing rate of population and progress of human knowledge , are increasingly the need to expand health services and Where these centers locate where So there is the least time to access And also with regard to the distribution and compressed population density in urban centers , this location is so relevance of space and place in the urban area is the best location Including urban planning issues that must be considered in Shirvan's city urban population expanded dramatically in recent decades has and consequently the growth of the urban area , which happened fast and easy to use for people with health problems As well as current location by matching the centers of clinics has been

difficult for peoples well as the current location is not compatibility based on location doctrine Hence the necessity of study and research center located in the city of Shirvan level.

In fact, the main theme of urban planning is the physical organization on social justice, environmental and quality performance, so selecting of place particularly is important so one of the useful equipment in this context is a geographic information system GIS.
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Aim of done research current study will be discussed determining located health center or clinic   in the Shirvan   based on definite factors and adoption and no adoption surrounding of clinic deal with in Shirvan level and access radius   between clinics in Shirven level.

Hypotheses:

1 -seem to locate clinics in the city of Shirvan does not conform with the rules. 2 - seem to locate clinics in the city of Shirvan view access radius does not match with the principles of access to health care.

In the field of user localization using GIs is major works primarily in recent years has been done in the world, especially Iran, of which including :

Ashcan (1998) , three data company (2000) Optimal location of fire stations in have done the city of Evvoia , Kansas Virginias , using GIs. David Evans (2004) have investigated the role of GIs in crisis management , that found it be effective in reducing damage events . Lee via ' (2011) have done Optimal location of fire stations in Bangladesh using GIs and AHP models. Jean Carlos Garcia (2012) have done optimal location of bike stations in Spain's cities using GIs. , Alan T. Marty (2013) have done Spatial optimization of fire stations using GIs .
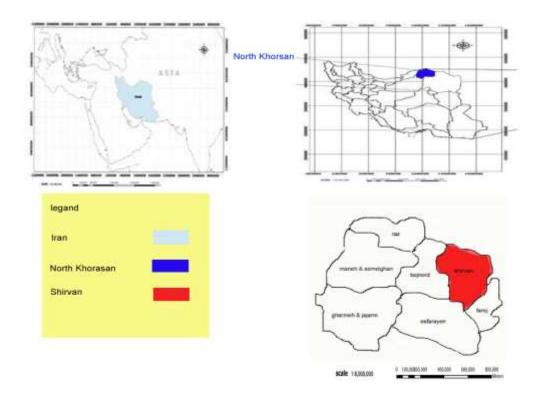
In Iran , Parhizgr Akbar .(1997) study as "providing good pattern for selecting of places in service urban centers with the research in models and (GIS) city "that result of this study will help him till using this system, do the location of fire stations Tabriz. Almaspoor Farhad " (2001)as his thesis as "application of GIS in network analysis, spatial distribution and location of pharmacies." have worked. Case study district 6 of Tehran which is related to the year 1380. The results show that the current distribution of pharmacies in the study area is not proportional to the population distribution most pharmacies are concentrated in the eastern region and their distribution show that influenced by many physicians and patterns the structure physicians .Mohammad Mohammadi (2003) defended in from his thesis entitled "assessment and locate of health care centers using GIS "case study in five cities of Tehran,. Findings shows that the area is deficient in terms of per capita health care and health care centers are not properly balanced scattered in the area. Between of the seven districts of five the region, the order of seven, four of the six have most deficiencies and so the priority should be placed on the construction of new health centers. Isa Ebrahim-Zadeh .et al .(2009)as a place for space planning and organization of health services a case study using GIS case sampling of zanjan city was approved in 2009. That the results of the study revealed the current location of most medical centers (hospitals) in zanjan does not match with academic standards and requirements of this application . Saediyan Mashallah(2011) determines the GIS role in risk management disaster related to activities the fire department knew and stated in addition, GIS can in reduce and mitigation before the incident took issue with the place be effective the optimal location for the construction of stations to also it can be play very effective during relief. Poormardiyan Ali Reza in 2011 from new york university

in his thesis entitled "the school's boundaries based on the community-based approach " examine problems within schools scheme and is helping capabilities of geographic information systems to solve this problem. He has adapted neighboring units with its schools border with .Admits that with this way decreases contrasts and the difficulties between the school and the neighborhood unit.

Material And Methods:

2-1 - Scope of research:

The study area for this research Shirvan city in North Khorasan Province. This area is located approximately in the East province to the north and south sides of the city Turkmenistan stub, from the East and West side of the city Faruj Bojnurd bordering the city is. The city between coordinates $3°37$ to $65°37$ north latitude and $2°57$ to $18°58$ 'east longitude and altitude of 1067 meters and has an area equal to 3904 square kilometers. Shirvan city in 1390 had 85,788 people.

2-2- Methods:

In this study, two different methods have been used to track documents, 1 - Studies Library: This library Azasnad taking notes and information for the study of literature and history, as well as research and data collecting demographic, economic, social, historical, and ... Has been used in conjunction with the city of Shirvan. 2 - field studies through direct observation and interviews of experts is used to evaluate the final.

3 - Analysis of data:

portal of geographic information system (GIS) that the 80 decade became global as a tool capable of collecting, sorting, storage, retrieval, processing and analysis of spatial data, with wide applications in various areas of planning, management and decision-making has been and are added increasingly on the applications accordingly, it is necessary that the various models and methods of analysis and plan in attendance was the case with the features and capabilities of GIS and use them to good way (malchfsky, 1385: 1). The purpose of this chapter is the use of this technology and powerful tool is to locate optimal health centers and clinics and hospitals in the city of shirvan.
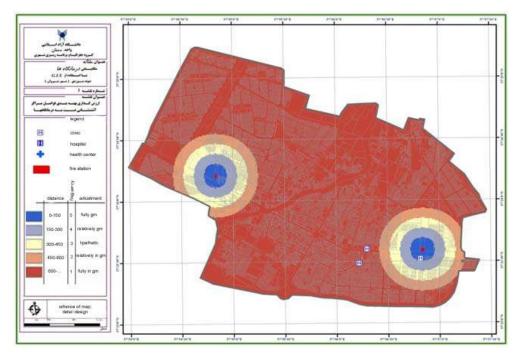
- **Identification of criteria for locating clinics:**

to assess the relative merits usually, used of the criteria. Also select a suitable location for a clinic is no exception; so to locate the optimal position should be defined criteria and conditions located databases health care is selected as the best location. On the basis of this research is to locate clinics have used of information layers of information follow : be appropriate to the 1 - to fire stations, 2 - cultural centers, 3 - administrative centers, 4 – educational centers (elementary, middle, high school), 5 - the green spaces , 6 - sports centers and 7 – gasoil of gas pump.

3-1- Evaluation of distribution and providing of maps based on assessed valuation gap between from the fire station

. In the map number (1) as (values and zonation distances derived fire stations centers then clinics) are the five zones fully compatible to completely incompatible. First area and second (fully compatible and partially compatible) with a distance of less than 150 m and 150-300 m with dark blue and light points 5 and 4 display has the highest value for their health zone, and the subsequent area (and somewhat indifferent and totally incompatible incompatible)with distance of over 300 meters with yellow and orange and red display is a minimum value for a clinic. According to the map ,from three clinic the only social security is consistent with the fire service stations and other service centers are inappropriate across the fire stations.
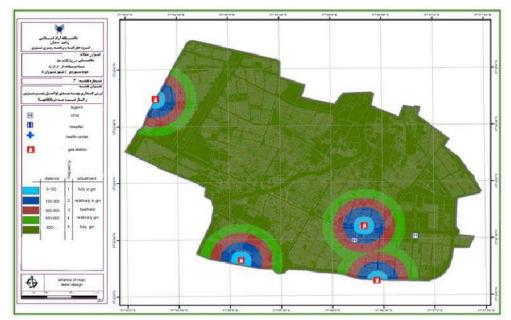
Map No. 1: Zoning valued distances relative to dispensaries Fire Stations

Source: author

3-2 – Exposure location assessment and mapping valuation distance to fuel stations: in the map number (2) as (values distances of petrol stations to clinics) zones are fully compatible to completely incompatible .In the first zone and the second interval is less than 150 m and 150-300 m and 300-450 are shown with light blue and dark blue, brown and points 1, 2 and 3 are the lowest value for the clinics in the next zone show over 450 meters away from the bright yellow and dark points 4 and 5 with the highest value for their clinics. According to this the map of the clinic 3 clinic for social security in suitable area are then fuel stations and sehar and alghadir are unsuitable areas.

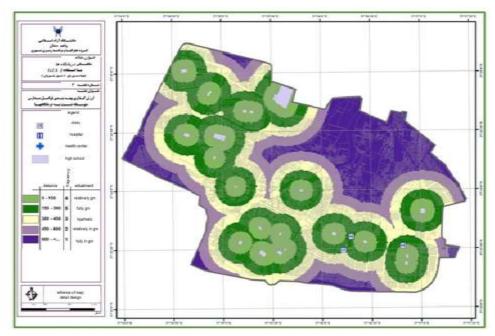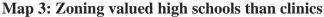**Map 2: Zoning valued distances relative to dispensaries pump gas**

Source: author

3-3 - Distribution and mapping assessment valuation distance based on the distance from educational the centers (high schools, school, elementary)

in the map number (3) as (values of distance education centers (schools) than clinics) 5 area has been compatible to very inconsistent fully the area. First zone a (relatively consistent) and second (fully compliant) with a distance less than 150 meters and 150-300 meters with bright green and dark points 4 and 5 show the highest value for a clinic and across the next gap over 300 meters with yellow, orange and red are displayed with the lowest values are for the clinic. According to this map, three clinics are in complaint areas with educational institutions (high schools)
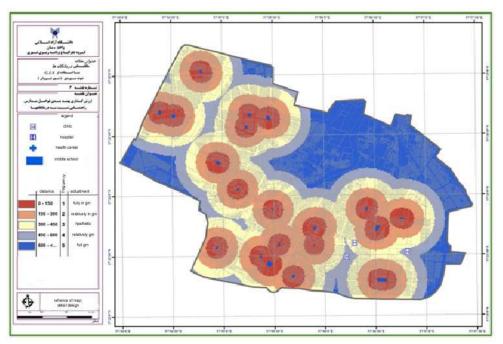
The map number (4) as (values and zonation of distance learning centers (high school) to the clinics) 5 area has been fully compatible to the area very inconsistent. Across the first, second and third with a distance of less than 150 m and 150 - 300 and 300-450 m with a dark brown and light amber and points 1, 2 and 3 show the lowest value for a clinic and across the next gap over 300 meters from the clear dark blue display is the highest value for a clinic. According to this map the two existing clinics are in fairly area included consistent sehat clinic in the area without different with training centers

In the map number (5) as (values of distance learning centers (primary) than clinics) 5 area is fully compatible to the area has been very inconsistent. First area , second and third zones of distance less than 150 m and 150-300. 300-450 meters with bright blue, pink and brown with points 1, 2 and 3 show the lowest value for a clinic and across the next gap of over 300 meters with yellow and dark blue that displayed is created the highest value for clinic. According to this map, three clinics are located in the conflict zone of educational institutions (primary)
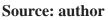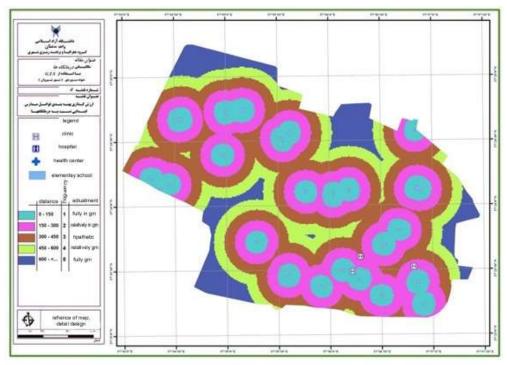
Map 3: Zoning valued high schools than clinics

Source: author

Map 4: Zoning valued distances relative to guidance schools

Source: author

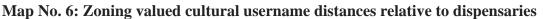**Map No. 5: Zoning valued intervals primery schools, clinics**

  Source: author

3- 4 - Assessing and mapping the distribution rate based on the distance between the centers,of,culture

the map number (6) as (values derived cultural centers then the clinics) 5 area has been fully compatible to very inconsistent the area. In the first zone and the second interval is less than 150 m and 150-300 and 300-450 are shown in yellow and orange and blue and points 1, 2 and 3

have shown the lowest value for the clinics in the next zone over 450 meters with light and dark green color and points 4 and 5 show the highest value for their clinics. According to the map, the three existing centers, clinics, cultural centers social security are appropriate and two other clinics is inappropriate in the area
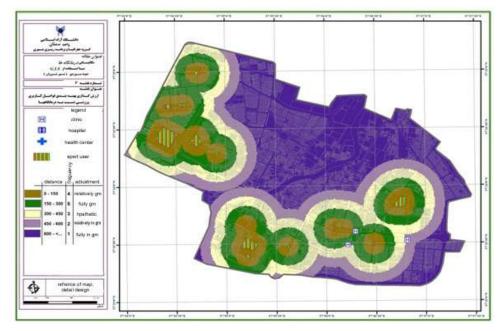
Map No. 6: Zoning valued cultural username distances relative to dispensaries

Source: author

3-5 - Assessment of distribution and mapping rate based on the distance between the centers,sports

the map number (7)as (value derived distances to clinics, sports centers) 5 area is fully compatible to the area has been very inconsistent. In first zone (somewhat compatible) and second (fully compliant) with a distance of less than 150 m and 150-300, and the brown and green and points 4 and 5 show the highest value for a clinic to be derived later (indifferent and rather inconsistent and totally incompatible) distance are shown over 450 meters and white and light and dark violet points 1, 2 and 3 that have the lowest value for their clinics According to the maps of the three clinics, two clinics are located suitable towards sports centers and a clinic of social security is relatively inconsistent.

Map No. 7: Zoning valued distances relative to dispensaries Sport User

Source: author

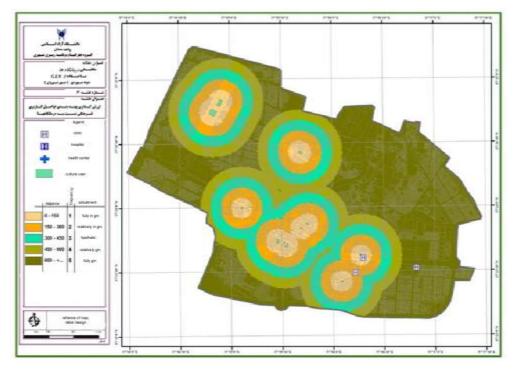### 3-6 - Assessment the distribution and mapping rate distance based on the distance from administrative centers

The map number (8) as (values and zonation of distances administrative center to center spacing) 5 area is fully compatible to the area has been very inconsistent. One zone (completely disagree) and second (somewhat compatible) and three zone (no difference) with a distance of less than 150 m and 150-300 and 300-450 m and points 1, 2 and 3 show the lowest values for clinic be derived later (relatively consistent and

fully compliant) with a distance of over 450 meters point 4 and 5 show the highest value for their health. According to this map, three clinics in the area of administrative centers are fully compatible.
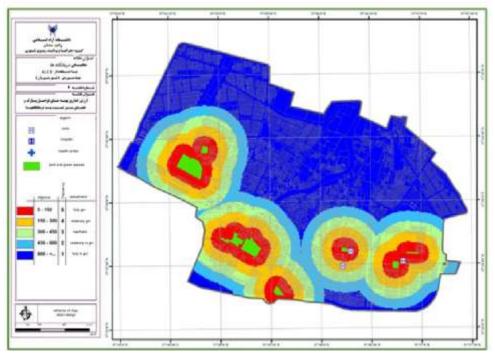
Map No. 8: Zoning valued distances relative to dispensaries Official User

Source: author

3-7 - Assessment the distribution and mapping rate based on the distance from the green spaces
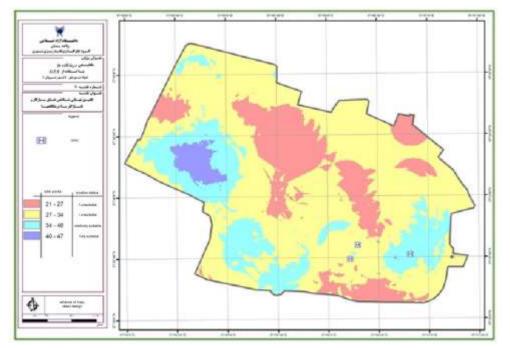
The map number (9) as (values derived from the green space at the center) 5 is fully compatible to the area has been very inconsistent. In the first zone (relatively consistent) and second (fully compliant) with a distance of less than 150 m and 150-300, and the red and yellow show and points 4 and 5 has the highest value for the health and future zoning (no difference and rather a fairly inconsistent and totally incompatible) with more than 450 meters are shown light and dark blue and green and dark points 1, 2 and 3 that the lowest value for their health. According to this map, three clinics in the area of green spaces are quite consistent and relatively consistent.

Map No. 9: Zoning valued distances relative to dispensaries Park Green conference space

Source: author

3-8 - The ultimate combination of location parameters clinics

the ultimate combination of the clinics are located.'s map (10) as (the ultimate combination of compatible and incompatible with the clinic) is. This map is based on a combination of parameters compatible and incompatible are obtained (subject to appropriate training facilities and sports centers and office centers, cultural centers and green spaces and fuel stations and fire stations) shirvan city with boolean logic is given into four zones of completely appropriate with the dark blue to quite inappropriate with the pink color. That the perfect area are the best place to build of clinics.
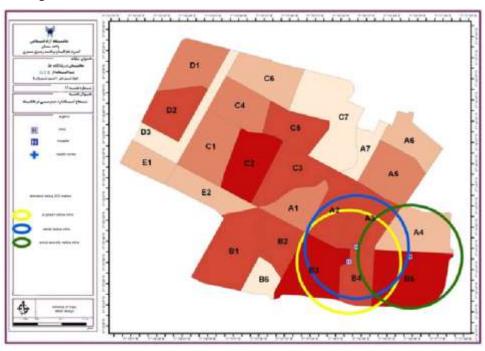
Map No. 10: The ultimate fusion of compatible and incompatible with the clinic
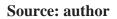
Source: author

3-9 - Radius of the clinic access

According to the map, (11) 750-meter and radius standard access to the clinic for each clinic is the radius we have reached the conclusion that the three existing centers of shirvan city has a total population of about 83,000 people

able to cover the entire population of the city is 28,136. It is important to note that these maps states this means that much of the population in all three clinics are covering radius and 10,004 others are covering radius of a clinic. According to this map, we can say that the spatial distribution clinics of the city of shirvan as and their spatial distribution is not no justice for citizens to follow. As seen in the map of where all three clinics are concentrated in the city's east side and the central and western parts of the city in terms of access to clinics are strong restrictions and the population of only 28,136 people, the city's population of 83,000 people within range clinics are standard radius access clinics are not any good citizens.

Map No. 11: Standard radius clinic

Source: author

4 – Reply to assumptions:

4-1 - seems to clinics are not compatible in the city center near shirvan applications. Thus, the administrative and cultural center of map distances from fire stations and education and sports, and is characterized by green spaces and fire stations locate clinics of the city of shirvan are not respected the vicinity of a user-friendly compatible and incompatible principles. so it is confirmed in shirvan.

4-2 - looks clinics of radii access does not conform with location the rules. The place where all three clinics are concentrated on the eastern side of the city

and the central and western parts of the city in terms of access to clinics are strong restrictions and the population of only 28,136 people from   the city's population of 83,000 people within range clinics are standard restriction statistical words can say about 75 percent of the population are outside the clinics located within the standard range the results show access clinics radius for residents is not any suitable . According to existing studies radius access based on population coverage in the city of shirvan to clinics do not match due to improper and inadequate spatial distribution center location with the principles.Thus, the second hypothesis is confirmed in shirvan.

5-Conclusions:

there are different factors in locate of care centers involved in the study and analysis of all of them is not possible with traditional methods. However, the location of these factors caused the loss of a significant share of material resources and the loss of environmental resources and large volumes of heavy damage that imposes to the people and urban management. The usage of geographic information systems is essential analyze the large volume of data.

With according current statues and distant plans were identified fire Station and official centers and cultural and education and exercising care centers and pediatric clinics in to location has not been met . therefore the ultimate fusion of compatible and incompatible education in the final map to the right location unsuitable - care centers and pediatric clinics were identified in Shirvan . In other words the optimum locations for setting desired in the present or prospective program is current time or future planning .

From aspects the radius of the access to network are not enough health for the city in terms of population covered, but failed to meet the needs of the population due to its focus on the health of the distance to each other, while the Dispensaries deficiency, location inadequate they need new locations this user has created., and thus the only hospital in the city where hospitals lack completely incompatible. Shirvan city needs a place in which the hospital is located on the western side of the city needs.

6- Suggestions:

• Transfer the health clinic to another location with good compatibility with other urban land.
• Create a new hospital in the West of the city, based on location.
• City development and attention to creating new places of health and thus maintain the desired application according to the proposed plan ¬ emphasized the need for the future.
• In order to achieve practical use and application of the proposed locations using GIS technologies.

• attention to this subject and location, the path toward greater use of GIS and its applications in urban management. In the city of Shirvan.

• Proposed maps used in urban management and health services according to the Urban Justice

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