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LOCATING HEALTHCARE CENTERS IN URMIA TOWNSHIP

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ABSTRACT

In Most cities, failure in appropriate allocation of space and optimal movement of service and important facilities in the cities, particularly healthcare centers and the number of factors contributing to locating of these centers, have led to increasing problems for cities and citizens. Thus, the necessity of appropriately locating and distributing healthcare centers by considering the population of each area in a city is one of the most important concerns of that city. In Urmia, this problem is further complicated due to several reasons including the city's high population concentration and different land uses that are adjacent to each other. The main purpose of this study is to evaluate the way healthcare centers are distributed throughout Urmia Township and to determine the areas lacking these services by taking into account positioning standards and procedures for healthcare centers.

Keywords: Healthcare Utilization, Urmia, Locating

INTRODUCTION

The first few years of the 21st century have been accompanied by profound changes in human life. These changes have affected human life in the form of globalization, economy, culture and social relations. These changes are reflected in spatial manifestations, especially in cities [12]. It has been predicted that more than 5 billion

people will be living in urban regions of the world by 2025; more than 80 percent of these people will be residing in cities of less developed countries and this will pose as a challenge for urban planners and managers [8]. Population of Iranian cities has also increased dramatically in recent decades due to migration and increasing population

growth. The migrating population has mainly settled in suburbs and this has hindered cities' functionality. Urmia Township has not been an exception; population growth and increased migration from neighboring towns and other reasons have led to unplanned physical growth in some urban areas. Healthcare centers are vital elements in every city. Determining the appropriate location for this type of usage with regard to population and requirements of every region is very important. In locating healthcare centers in Urmia Township, we will analyze the spatial distribution of healthcare centers in this township and identify and describe the disadvantages of establishing healthcare use in the existing circumstances with respect to the determined criteria.

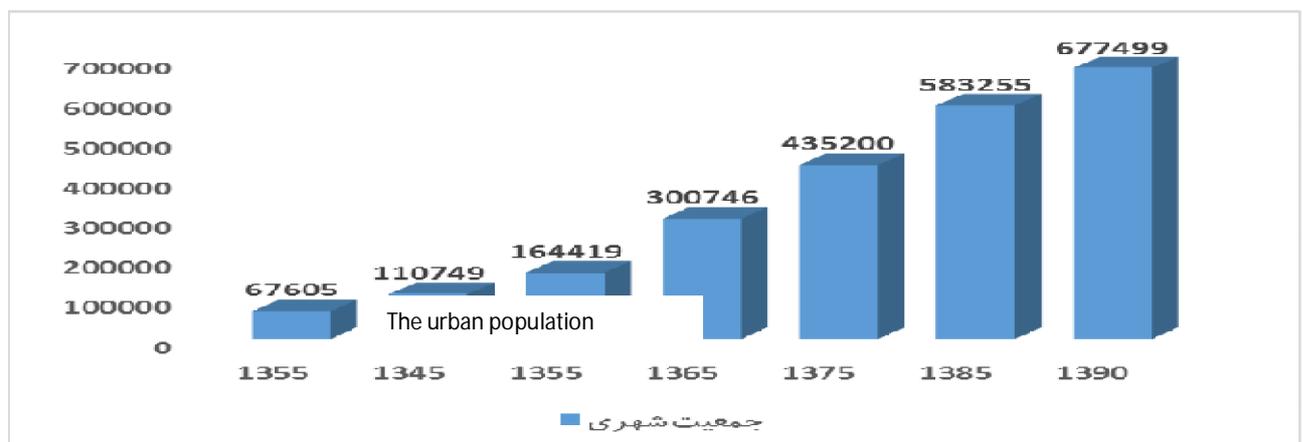
West Azerbaijan Province

With a total area of approximately 4360 square kilometers (excluding Urmia Lake),

West Azerbaijan Province is located in north west of Iran between the latitude of 35 degrees and 58 minutes to 30 degrees and 46 minutes from the equator and the eastern longitude of 44 degrees and 3 minutes to 47 degrees and 73 minutes from Greenwich Meridian.

According to the 2011 census of the Iranian National Statistics Center, the population of West Azerbaijan is 3,080,576 accounting for 4.1 percent of the total population of the country. 62.73 percent of the same reside in urban centers and 37.27 percent live in rural areas. This province has 17 townships, 40 divisions, 38 towns, 113 rural divisions and 2873 villages.

Urmia Township's Population Development Trend Diagram



Source: Public Census, 1956-2011

Locating Criteria for Healthcare centers

Every settlement includes service providing facilities such as business, administrative, and welfare (education, healthcare) centers. Assuming there is some form of organization in that settlement, these centers must be distributed on land in appropriate relation to each other.

Individual or social health depends on the presence of facilities such as hospitals that provide health services. Urban planners and decision makers are responsible for optimal

determination of hospital locations so that all patients can have convenient access to them. In addition, planners try to optimize healthcare center distribution in the urban area and to locate them appropriately in terms of access and adjacency to other land uses and also in compliance with urban criteria and regulations. One basic solution for tackling this problem is using GIS technique. In addition to quick access to the required information, this technique allows us to analyze spatial and non-spatial data.

Characteristics according to general criteria	Title
<ul style="list-style-type: none"> • Minimum 10000 households • Maximum 14000 households • Population to be covered by an average capacity of 300 beds: 10000 households 	Service provider considerations
<ul style="list-style-type: none"> • Distance with residential neighborhoods 1-1.5 kilometers 	Access radius
<ul style="list-style-type: none"> • The area required for each bed is at least 50 square meters and a total area of 370 square meters and 1.73hospital beds are required for every 1000 people. • 10,000 square meters are added for every 100 beds and 150 square meters are added for every additional bed. • Minimum exclusive area for each hospital is 25000 square meters. 	Space per capita and the required space
<ul style="list-style-type: none"> • Must be located on main avenues of the first degree 	Type of Communication
<ul style="list-style-type: none"> • Maximum distance with residential areas 2 km • Minimum distance with bothersome industrial workshops 1 km. • Must be located on main avenues of the first degree. • Must be built on flat lands. • Must not be in noise-producing neighborhoods. 	Design Regulations
<ul style="list-style-type: none"> • Being adjacent to the uses of the area’s center • Being adjacent to the area’s greenery • Being close to fire station 	Adaptation Priority

Healthcare Use

Iranian Statistics Center refers to facilities such as hospitals, maternity hospital and hospices equipped with beds as healthcare institutions. These institutions are divided into the following categories:

- a. Healthcare institutions affiliated with the Ministry of Health and Medical Education;
- b. Private healthcare institutions;
- c. Other healthcare institutions such as those affiliated with the Social

- Security Organization, charity institutes, etc;
- d. Maternity hospital; a unit equipped with at least 15 beds, one operating room, and doctors specialized in gynecology and maternity;
 - e. Hospice; a unit equipped with at least 15 beds and necessary public facilities and services and at least one specialized unit with specialists in related fields; e.g., institutions for mentally ill, disabled and drug-abusive people;
 - f. Hospital; a medical unit which is a concentration of diagnostic, medical, health, educational and research facilities in order to improve outpatients and inpatients and provides comfort and security for its patients and staff.

In Iran, a hospital is a unit with at least 15 beds with necessary medical equipments, facilities and general services and at least two internal and surgery units along with a team of specialized doctors. If the hospital has more than 30 beds, it must be equipped with radiology and laboratory units. In hospitals with multiple units, each unit's capacity should not exceed 35 beds; maximum number of beds in a public room should be 6 beds. Each hospital must have one operating

room. Today, maternity and public hospitals are integrated and they are rarely separate.

Health services are provided within certain organizations the most important of which are hospitals. Medical organizations produce medical and health services and they are similar to other social organizations in terms of responsibilities and complexity.

Importance of Healthcare Use

An important urban land use is the space allocated to healthcare services. Healthcare use mainly includes clinics, hospitals, drugstores, practitioners' offices, etc; healthcare uses are associated with the physical and mental health of their users. If healthcare facilities are inappropriately located, they will incur economic and financial damages. Hospital, as the first level of healthcare service to which patients are referred, and with its defined responsibilities, is the most important healthcare institution in any country.

Space Per Capita and Standards

The space per capita recommended by the Ministry of Housing and Urban Development for this type of land use is between 0.75 and 1.5 square meters. The following are suggested for healthcare facilities in Iranian cities, with respect to population regulations and criteria:

Types of Healthcare Centers and the Covered Population

Clinic: Minimum 2000 households and maximum 4000 households.

Local Hospital: population to be covered 30 to 50 thousand people with 30 to 45 beds.

Regional Hospital (1): population to be covered 50 to 70 thousand people with 65 to 96 beds.

Regional Hospital (2): population to be covered 70 to 120 thousand people with 95 to 170 beds.

Provincial Hospital (1): population to be covered 120 to 200 thousand people with 200 to 240 beds.

Provincial Hospital (2): population to be covered 200 to 400 thousand people with 350 to 700 beds.

Nationwide Hospital: with unique service in the center of the country to the center of one of the 5 zones.

Healthcare Center Standards in terms of Access

Radius off Accessibility for Hospitals:

- Distance to residential neighborhoods 1-1.5 kilometers.
- Effective Operational Radius 4 kilometers (60 and 25 kilometers) and at regional level.

Minimum Exclusive Land Piece

Minimum exclusive land piece for a clinic: 2500 square kilometers

Minimum exclusive land piece for a hospital: 25000 square kilometers

Location

Clinics: They must be located close to the regional center;

Hospitals: They must be located close to the urban center. The hospital must be located in the vicinity of population dispersal center.

For specialized hospitals that are specifically built for infectious diseases (such as tuberculosis), the hospital must be located in suburbs and in an open environment. The location and situation of infectious hospitals should not be in the direction of wind blowing to public places.

Transportation Network

Some of the regulations related to transportation for healthcare centers:

- Routes leading to hospital are important at the time of unexpected and emergency situations.
- They must be close to public road. If the hospital's location is not accessible by patients, visitors and staff, significant expenses will be incurred on the society.
- It should have the highest access possible to fast traffic network.

- It must be located on first degree main avenues.
- It must have access to 16-meter streets.

Adaptability and Inadaptability Criteria

- The location where healthcare center is build has to be without any noise, smoke, foul smells and other disturbing elements.
- Hospital location must be away from city traffic, industrial areas, factories, etc.
- The location chosen for hospital must not be in vicinity of noisy uses such as sport stadiums, manufacturing workshops, and military and police barracks or stations with too much noise.
- It should be away from flooding threats.
- It should be away from gas stations.
- It should be away from slaughterhouses, bus terminals and repair shops.
- Hospital's location should not neighbor cemeteries.
- It must be in the vicinity of the central uses of the area.
- It must be in the vicinity of fire stations.

Wind: healthcare centers should be located in such a way that adverse effects of wind are reduced and its beneficial effects are increased so that wind flow is used in an optimal way for air conditioning.

Investigating the Present Situation

As the center of West Azerbaijan Province, Urmia Township has faced excessive population growth and as a result, unplanned physical growth in some urban areas. However, no suitable space is selected in terms of optimal spatial distribution and fair locating for public service uses, particularly healthcare services quick and timely access to which are very important. Usually, establishment of many urban (and mostly for-profit) elements mainly depends on economic mechanisms and free competition. The main responsibility of urban planners and decision makers is to determine the optimal location for such centers so that all urban citizens may have easy access to them. Furthermore, planner strive to optimize the distribution of service centers in urban environments and this distribution is proportionate to population distribution and the level of demand in different areas of the city.

Important Health Centers and Hospitals in Urmia

Azerbaijan Hospital

Located on ShahidBeheshti Avenue in Urmia City, this private hospital was established in 1993 with 200 permanent beds and it currently has 138 operational beds.

Imam Khomeini Hospital

Located on Ershad Boulevard in Urmia City, this medical-educational hospital was established in 1996 with the capacity of 298 permanent beds and it currently has 370 operational beds.

Imam Reza Hospital

Located on Molavi Avenue in Urmia City, this social security medical hospital was established in 1997 with the capacity of 256 permanent beds and it currently has 128 operational beds.

Shafa Hospital

Located on Imam Avenue in Urmia City, this private medical hospital was established in 1967 with the capacity of 60 permanent beds and it currently has 60 operational beds.

Solat Hospital

Located on Imam Avenue in Urmia City, this private medical hospital was established in 1968 with the capacity of 65 permanent beds and it currently has 68 operational beds.

Taleghani Hospital

Located on Kashani Avenue in Urmia City, this educational-medical hospital was established in 1980 with the capacity of 450

permanent beds and it currently has 250 operational beds.

Psychological Center Hospital

This hospital was built in 1991 with the capacity of 80 permanent beds and it currently has 92 operational beds.

Motahhari Hospital

This hospital is located on Bakeri Junction; it is a medical-educational hospital built in 1928 with a capacity of 400 permanent beds and it currently has 277 operational beds.

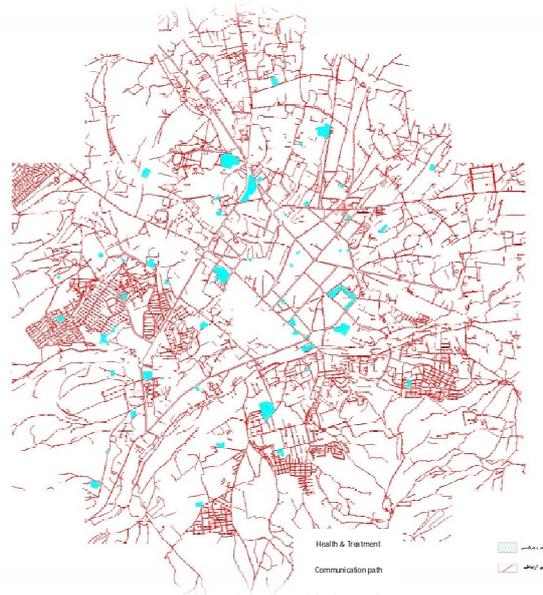
In urban planning, land uses that are within the range of each other's influence must be compatible in terms of their functions and activities. In fact, many land uses cannot be adjacent to other land uses due to healthcare centers' characteristics in terms of residence and peace, not being affected by any air and sound pollution and being in the vicinity of greeneries, etc.

Being Close to Downtowns

Places where humans live are the most important part of a city and account for a considerable portion of land use levels. More than 60 percent of city area in small cities and more than 40 percent of the same in large cities are under residential use. Therefore, one of the conditions considered in locating healthcare centers is human residence in the city. Thus, land value for building healthcare centers and hospital is reduced by moving

away from downtowns and neighborhood centers. That is because providing timely and fast services as well as fair distribution of healthcare centers are some of the goals and criteria for locating such uses.

Access to the Network of Main and Minor Roads



Map: Access to Network of Main and Minor Roads

Distance from Industrial Workshops

Industry is a land use incompatible with healthcare centers and it creates issues such as noisiness and atmospheric pollutions. Furthermore, these types of uses cause environmental pollution. As a result, keeping distance from them is one of the important principles of locating healthcare centers.

Closeness to the City's Green Spaces

Greenery land use is compatible with healthcare centers because in addition to its beneficial effects on patients' mind and

Timely and quick access to healthcare centers is considered families' basic healthcare needs because timely transfer of patients to these centers is vitally important. Otherwise, irreparable damages will inflict the patient.

spirit, it contributes to reduction of atmospheric pollution. Also in a larger scale, green spaces reduce sound pollution.

CONCLUSION

Healthcare and medical service uses are in a favorable state and with good productivity only when they are maximally compatible and in harmony with their surrounding environment. In many developing countries such as Iran, healthcare centers are usually established without need assessment and serious study.

Considering the analyses performed here, some strategies are suggested for reducing healthcare service issues in Urmia:

1. Avoiding issuance of establishment permit for incompatible land uses including industrial workshops in the vicinity of medical activities
2. Considering all parameters influencing the locating of healthcare centers in order to increase accuracy in determining optimal urban service locations.

Therefore, considering the investigations carried out on the existing situations, some drawbacks were identified and strategies offered.

Drawbacks

1. Locating and establishment of hospitals does not seem to be suitable in terms of preserving distance between hospitals and also in terms of access roads.
2. Concentration of clinics and healthcare centers at the center of the city with short distance, while there are no clinics in other parts of the city. New clinics are not built by planning and taking into account the aforementioned items and new residential areas are deprived of suitable health facilities.

3. The ultra-regional hospital as the most important and most equipped hospital in the city and the region has not been built in a suitable location.

Strategies

1. It appears plausible to move some of the clinics downtown to other areas that enjoy suitable expanse and population concentration, but have suitable access routes and are also away from traffic and crowdedness.
2. Establishing an ultra-regional hospital by considering the necessary standards.

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