

**Spatial analysis of cancer patients in Wasit Governorate  
Using geographic information systems**

**Prepared by**



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## **Abstract:**

The research aims to find out the spatial distribution of cancer patients in Wasit province for the period from 2006-2016 based on unpublished data of the cases recorded in the Iraqi Ministry of Health, Cancer Council. The data has been managed, stored and analyzed through analytical and statistical tools in GIS. The results showed the presence of the spatial distribution of the cancer patients in the studied areas. The spatial pattern of this phenomenon under observation took a random pattern, but there is a tendency to spread more in the most densely populated areas. Moreover, the breast cancer and bladder cancer recorded the highest percentage than the other types of cancers that have been represented on a map. The objectives of this research have also highlighted the possibility of using GIS in public health applications.

Key word: Spatial analysis, cancer, Geographical information system

## **Research problem**

The research problem can be formulated with the following questions:

- 1- Is there a spatial discrepancy for people with cancer in Wasit Governorate, according to the administrative units?
- 2- Do the analytical tools of geographic information systems software have the ability to show spatial variation through spatial statistical analysis tools?

Second: Research hypothesis: The study is based on a set of hypotheses, the most important of which are:

- 1- The research assumes that there is a spatial variation in the size of cancer patients in the study area according to the administrative units.
- 2- The GIS software has a distinctive role in showing spatial variation through the analytical and statistical capabilities it provides in its programs.

Third: The temporal and spatial limits of the research: The time limits for research are the data of the Cancer Council of the Iraqi Ministry of Health for the period from (2006-2016). As for the spatial boundaries, they are the Wasit Governorate at the

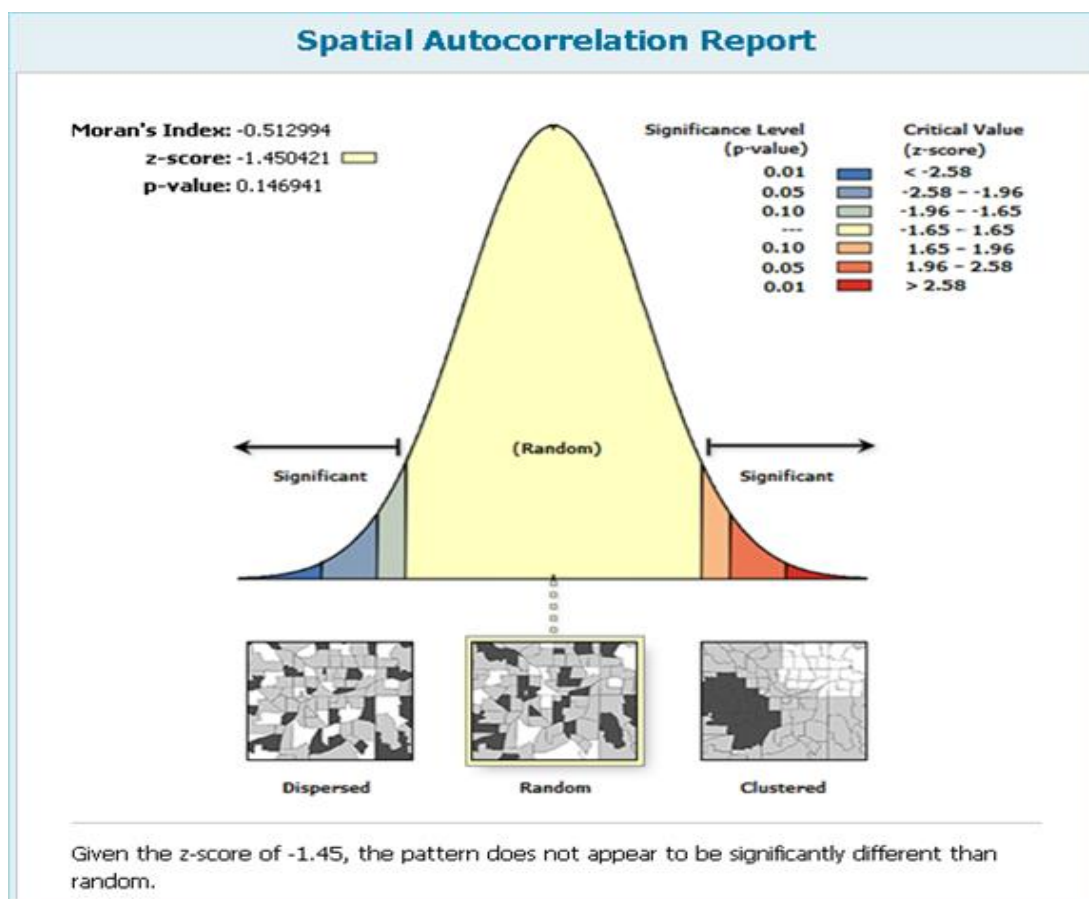
district level, which extends between two display circles ( $-32.10^{\circ}$  -  $33.3^{\circ}$ ) north and between longitudes  $44.40^{\circ}$  -  $46.40^{\circ}$  east). It includes 6 districts (Al-Suwayrah, Al-Aziziyah, Al-Nu`maniyah, Al-Kut, Al-Hayy, Badra) and Map (1).

Fourth: The importance of research:

- 1- Clarify the importance of geography in analyzing medical phenomena on a geographical basis.
- 2- Detecting the size of people with cancer and the reasons for their variation in the study area.

Fifth: Research methodology: The research methodology relied on following the spatial analytical approach for a set of data for people with cancer diseases registered with the relevant departments.

**The statistical report on the spatial distribution pattern according to the Moran Index**



## **The conclusion:**

The study concluded that Al-Kut district ranks first in the number of people with cancer among the districts of the governorate, followed by Al-Suwaira district in second place, which are considered one of the most densely populated areas, while Al-Aziziyah, Al-Numaniya, Al-Hayy and Badra came in the last ranks, and breast and bladder cancer is the most prevalent among the types of cancer. The other in the province, It also became clear that geographic information systems have an important role in showing spatial variation through analytical and statistical tools, and because of their ability to manage, store, analyze, and map diseases that are useful in explaining and answering many questions about the nature of the geographical spread of cancerous diseases in the study area.

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