

*Cartographic Representation of the Distribution Efficiency of
Primary Education Services in Al-Maimuna District during 2021*

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ABSTRACT:

The research investigates the representation of primary education services in the maps of the Al-Maimuna district. Modern technologies have been used via the use of information and data in the maps preparation with high accuracy in drawing, design and information as well as deduction, updating and analysis. The research has revealed the total number of primary schools in the district of Al-Maimuna for the year 2021 (101) schools, the center of Al-Maimuna ranked first with the largest number of schools and then the side of Al-Salaam in second place while the area of Sayed Ahmed Rifai came in The third and last rank. The research proved that the number of primary schools is not commensurate with the number of students in the judiciary according to the global standard for the number of students in one class. Through this study, it was concluded that the district of Maimuna needs (13) schools for the purpose of achieving the ideal number of schools.

Keywords: Cartographic representation, GIS, Standards, Primary schools

1. Introduction

The map is an important means and tool for the geographer that enables him to communicate the information and data on which it is represented faster, clearer and easier in understanding and perception than the absolute numbers and long tables of the recipients of this map, and the scientists of the cartography believe that the future of maps is closely linked to the information revolution mortgaged as one of the manifestations of this revolution of developments in (GIS) on the one hand and what geographic information systems have provided in the field of designing, implementing, distributing and using maps from another side (Mohammed B. , 2000)

It prepares the use of geographic information systems (GIS). In drawing maps of the distribution of primary schools in the district of Al-Maimuna, a step of high accuracy in the field of representing the

data of the research topic on the one hand, and on the other hand determining the ideal location for the signing of schools and knowing the number of schools needed by the judiciary, as well as knowing which schools their size is commensurate with the number of their students or vice versa in the light of the analyzes prepared in geographic information systems

1.1 Statement of the Problem

What are the possibilities of analyzing educational services maps in explaining the reality of educational services in the district, Is the number of schools and their capacity commensurate with the number of their students?

1.2 Hypothesis

1- Variation geographical distribution of primary education services and their efficiency when compared to planning standards

2-The spatial distribution of educational services on maps helps to understand and perceive information and facilitates the process of data analysis.

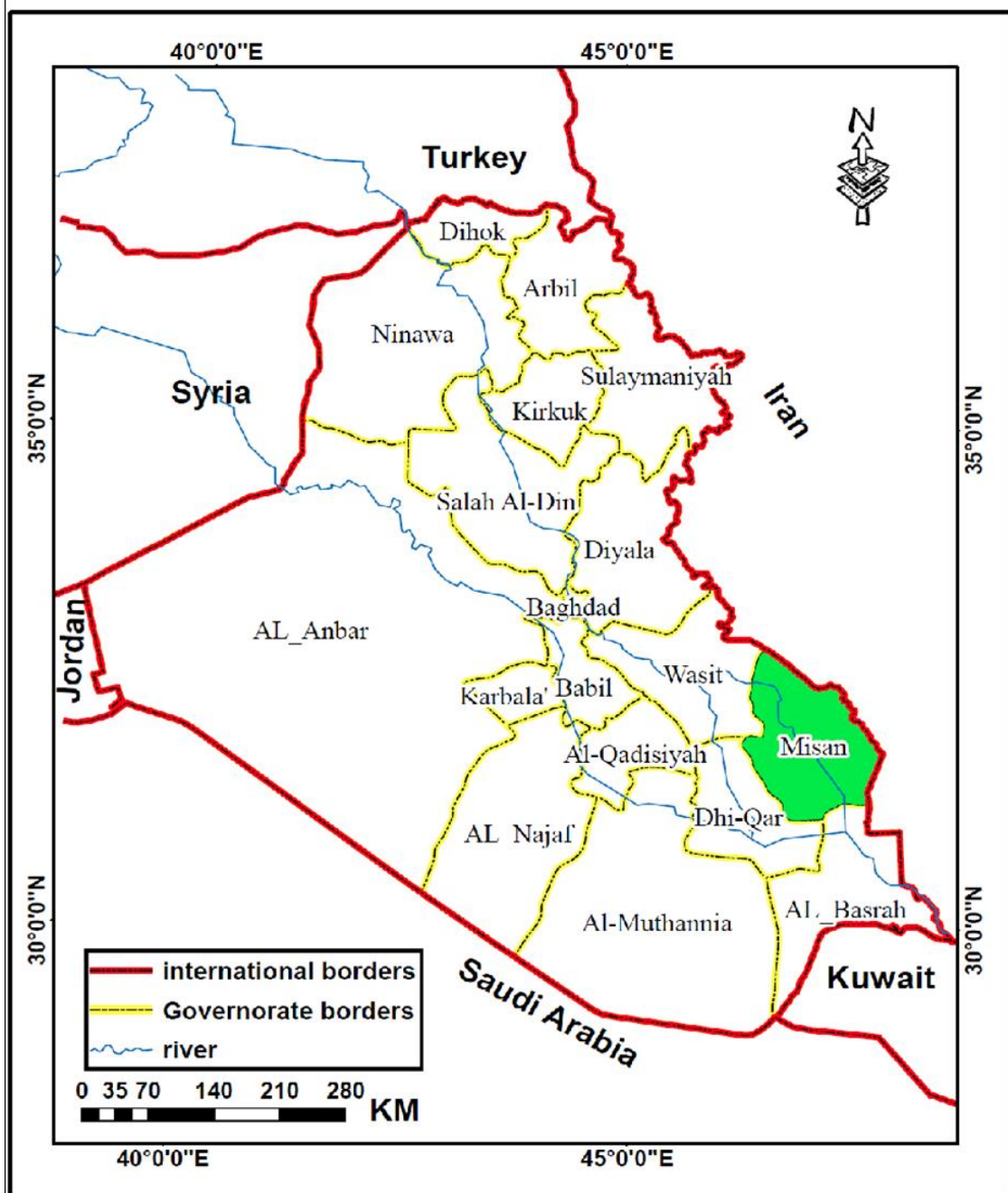
1.3 importance of research

Knowing the reality of the situation of educational institutions and their geographical distribution in Al-Maimuna district and evaluating their efficiency based on local and international standards

1.4 spatial boundaries

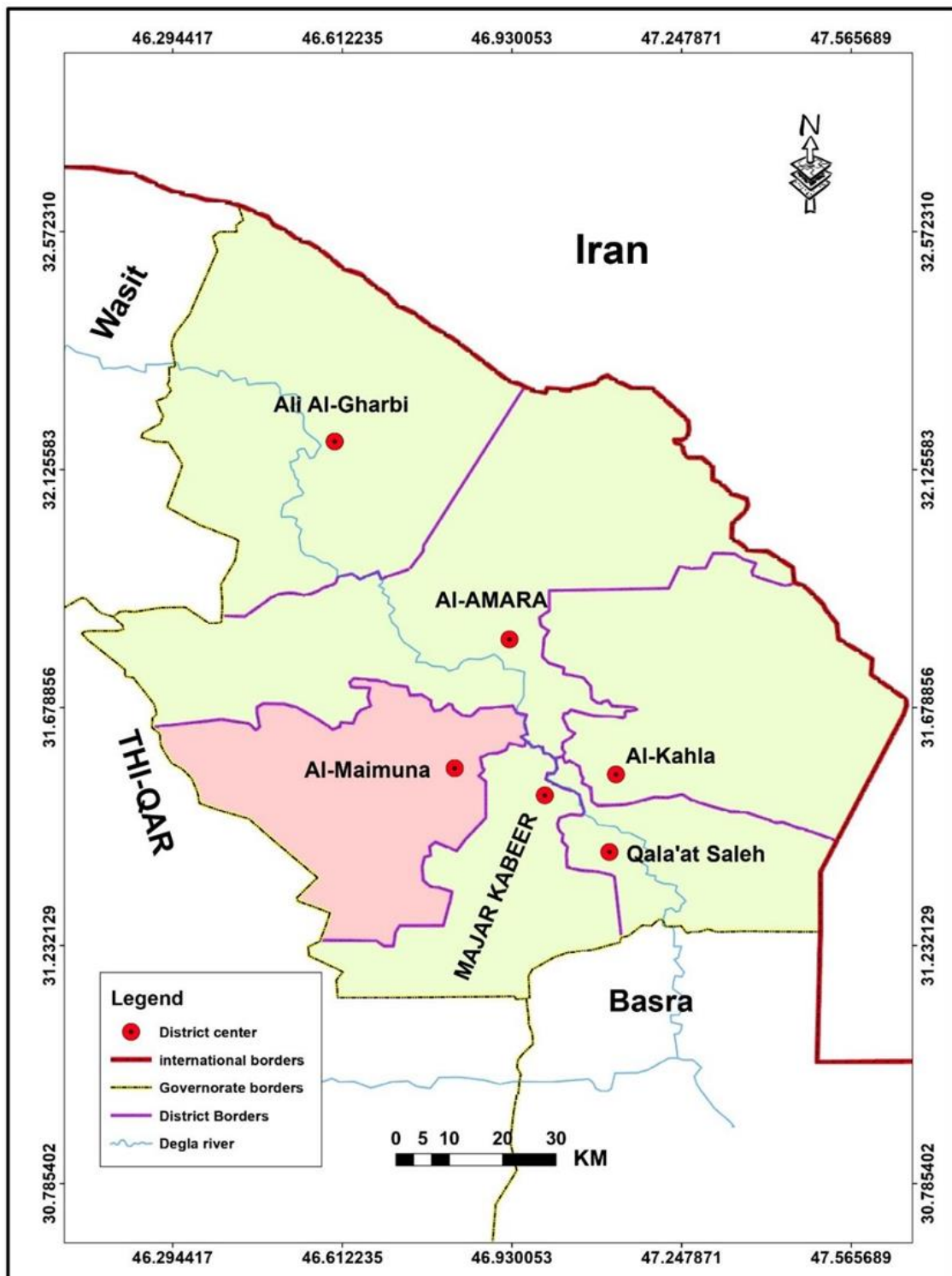
The study area, represented by the district of Al-Maimuna within Misan Governorate in southeastern Iraq, is located in the southern part of the sedimentary plain Map (1,2,3) specifically between two latitudes (91-24-31 – 4-84-31) north and two length arches (92-44-46 – 94-19-47) east, and the district of Al-Maimuna extends over an area of (2081.5 km²) and the judiciary consists administratively of two sides (Al-Salam district and Sayed Ahmed Rifai district) and the district center (Saad, 2014)

Map (1)
Location of Misan Governorate from Iraq



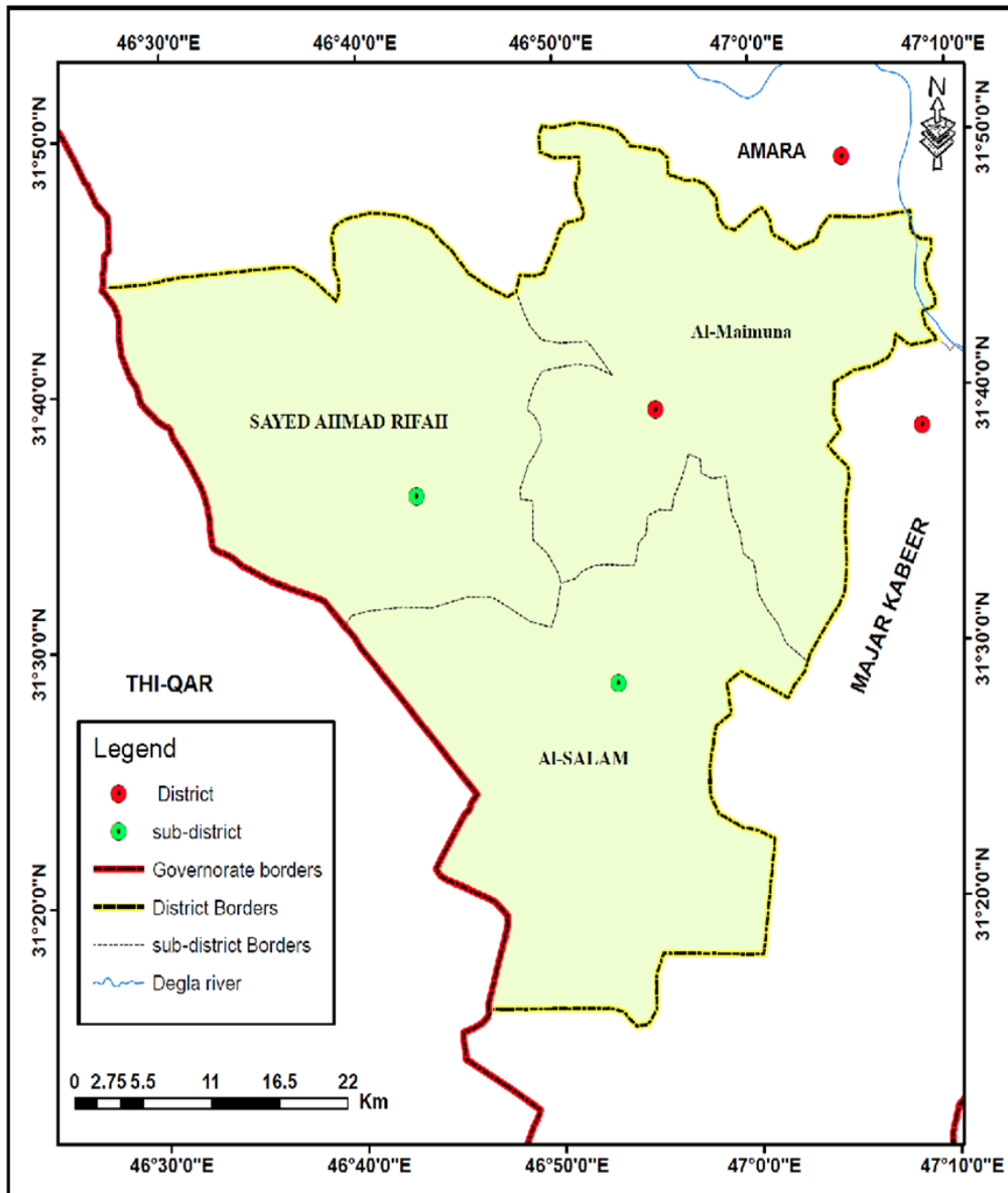
Source: Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Administrative Map of Iraq, Scale 1:1,000,000, for the year 2010

Map (2)
Al-Maimuna District Location of Misan Governorate



Source: - work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

Map (3)
Administrative divisions in Al-Maimuna district



Source: - work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

2. First Section:

2.1 The concept of primary education

This stage is the basic basis for the construction of generations, and in it education is compulsory, and is applicable to children from (6 to 11 years) for both sexes, and in which the study is six years under the law, as this stage aims to push students to develop their personalities in their physical, mental, intellectual, moral, spiritual and social aspects (1). The primary education stage comes after the kindergarten stage, and receives children who have completed six years of age and the duration of study in it (6 years) and is handled by the Ministry of Education in Iraq and the education is managed at two levels: central in terms of planning, decentralized in terms of supervision and guidance, and securing the requirements of the educational process in this stage (Al-Khikani, 2013)

2.2 International and Iraqi standards for primary education sites

The countries of the world adopt different planning standards when building primary schools so that these standards are commensurate with the specificity of each country, so it is noted that they differ from one country to another and from these standards are (Daish, 2011)

- 1- The place of the school should be in a quiet location
- 2-The location of the school should not be on the main street but on a secondary street for the purpose of maintaining the safety of students from the dangers of the method.
- 3-The location of the school should be far from the sources of noise, factories and railways.
- 4-The location of the school should be as close to residential neighborhoods as possible.
- 5-Be next to public parks, playgrounds or arenas of sports clubs.
- 6-The location of the school should be in a healthy place and the building should direct it to benefit from the sun and the clear air and in the following table shows some of the standards followed in the design of primary schools

**Table (1) of planning standards for primary schools followed in some countries of the world and Iraq
(Mohammed F. W.-H., 2010)**

Sequence	Standard	Iraq	Lebanon	Egypt	America	globally
1	Number of students	200 - 500	240 - 960	840	500 -800	250 – 1200
2	Area (Thousand m2)	2-5	5-10	8.5-10	22-110	31-79
3	Built Up Area (Thousand m2)	1.75-2.5	1.01-3.25	2.04-4.2	9-24	8.82
4	Percentage of built-up area (%)	26-35	20-32	24-42	21.8-40.9	28.5-11.2
5	The student's share of the site area (m2)	10	10-21	10-11.9	44-137.5	25-35
6	The student's share of the built up area (m2)	2.6-3.5	3.4-4.2	2.4-5	18-30	7.3-35
7	number of classes	6-16	6-24	24	20	ب38
8	Number of students in class	30	40	35	30-32	30-32
9	Distance between housing and school (m)	500-750	400-800	400-800	400-800	400-800
10	Location for streets	Sub	Sub	Sub	Sub	Sub

Source: Fariel Wassef Muhammad Al-Haj Muhammad, Evaluation and Planning of Educational Services in Tubas City with the Use of Geographic Information Systems, Unpublished Master's Thesis, An-Najah National University, 2010, p. 81

3.Second Section: Maps of the Current Distribution of Primary Schools in Al-Maimuna District

3.1 Geographical distribution of primary schools in Al-Maimuna district for the academic year 2021

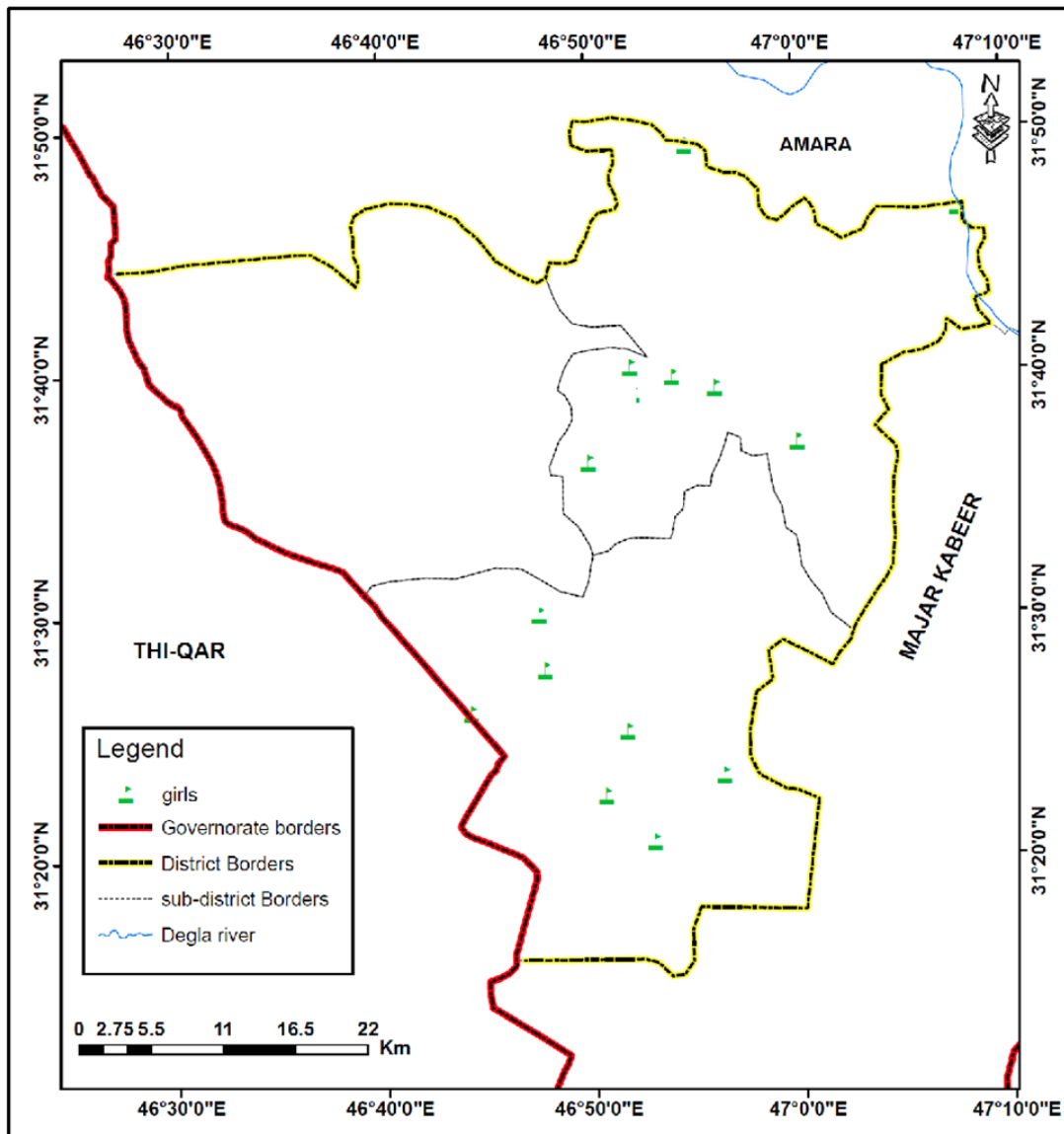
These maps are designed to show the reality of the situation of primary schools in Al-Maimuna district, which were proven on maps based on the data of the Global Signature System (GPS), which reached the total number of schools for the academic year 2021 (101) schools, occupied the center of the district of Al-Maimuna (52) schools represented by (7) schools) for girls, (7) schools for boys and (38) mixed schools, while the district of Al-Salaam occupied (31) schools with (6) schools for girls, (3) schools for boys and (25) co-educational schools, in two neighborhoods In the area of Sayed Ahmed Rifai, 18 schools were represented, represented by (18) mixed schools, look (Table 2) and Maps (4,5,6,7)

Table (2) Number of Schools and their Percentages by Gender in Al-Maimuna District for the year 2021

Gender	Sayed Ahmed Rifai	%	Al-Salam	%	Al-Maimuna	%
girls	0	0	6	19.3	7	13.46
Boys	0	0	3	10	7	13.46
mixed	18	100	22	71	38	73.08
total	18	100	31	100	52	100

Source: General Directorate of Education of Misan Governorate, Statistics Division, Unpublished Data, for the year 2021

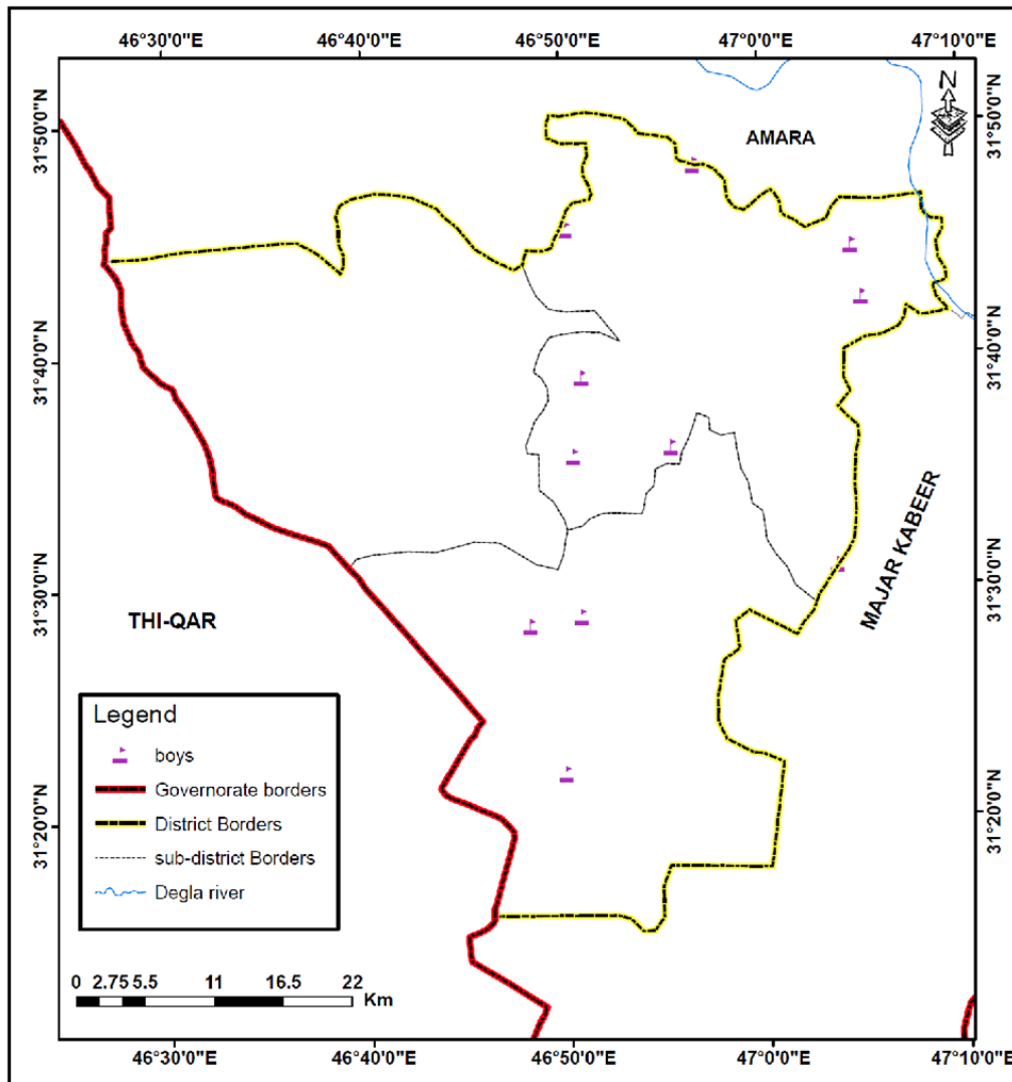
Map (4) Current Spatial Distribution of Girls' Primary Schools in Al-Maimuna District



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

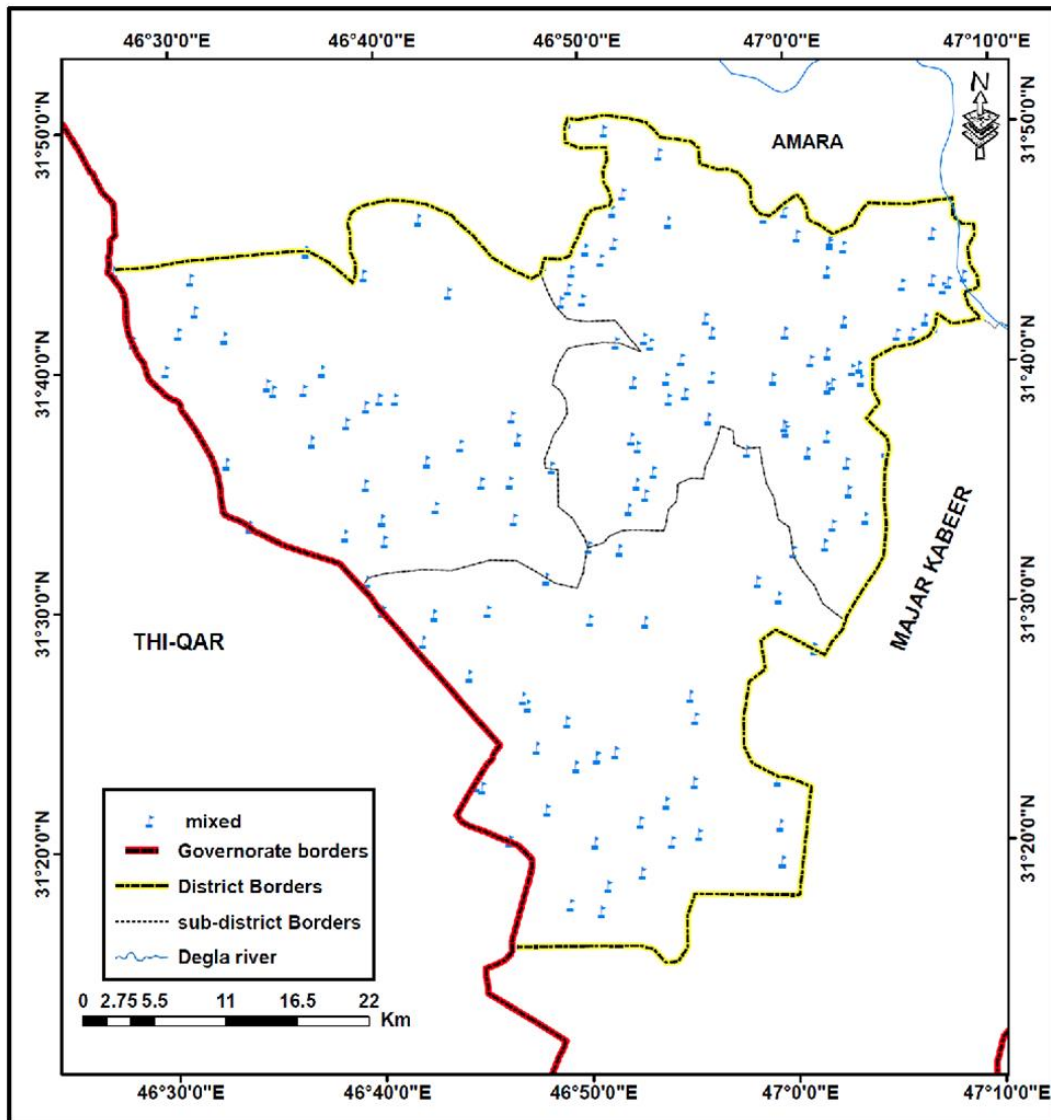
2-The work of the researcher based on Table (2)

Map (5) Current Spatial Distribution of Boys' Primary Schools in Al-Maimuna District



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.
 2-The work of the researcher based on Table (2)

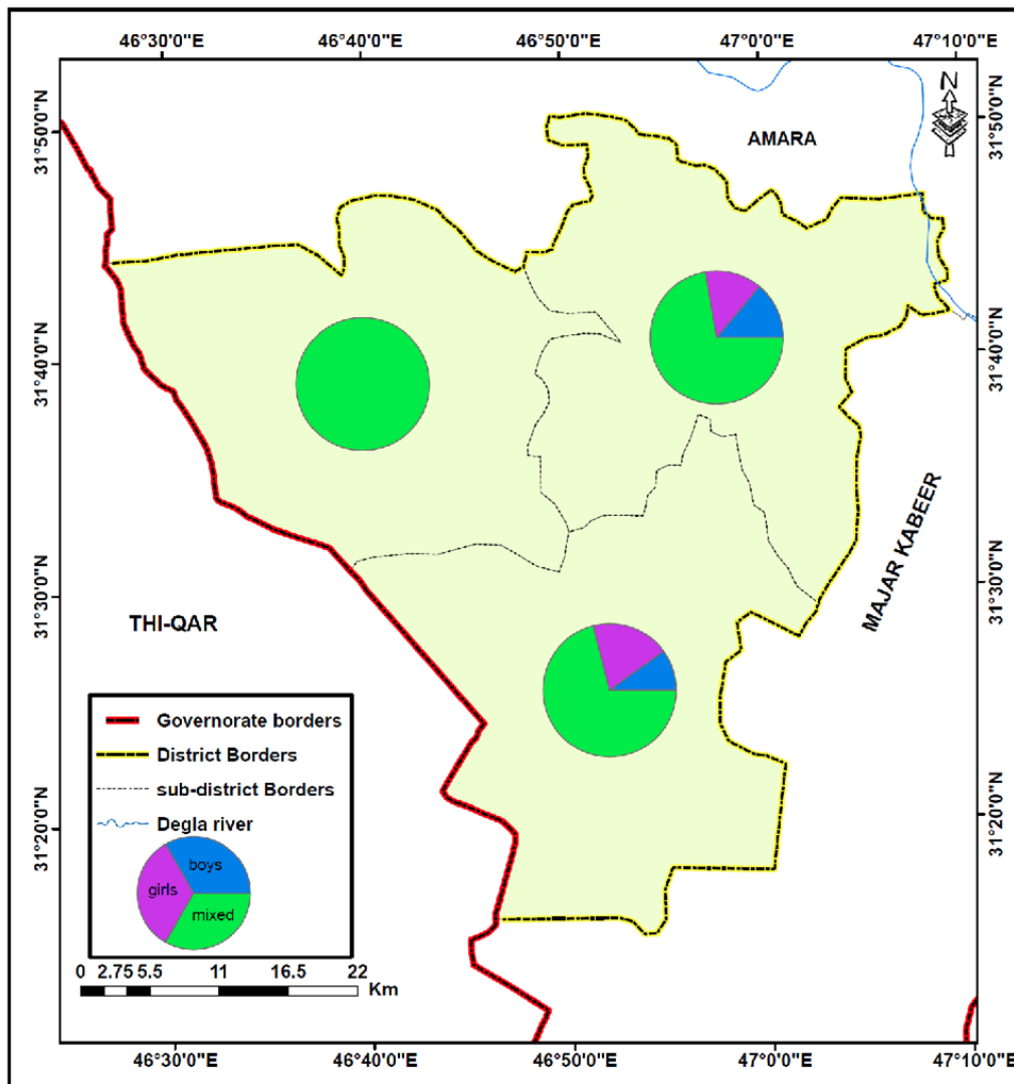
Map (6) Current Spatial Distribution of Primary Mixed Schools in Al-Maimuna District



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

2-The work of the researcher based on Table (2)

Map (7) Percentage Distribution of Primary Schools in Al-Maimuna District



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.
 2-The work of the researcher based on Table (2)

3.2 Maps of the number of students and study divisions of primary schools in Al-Maimuna district:

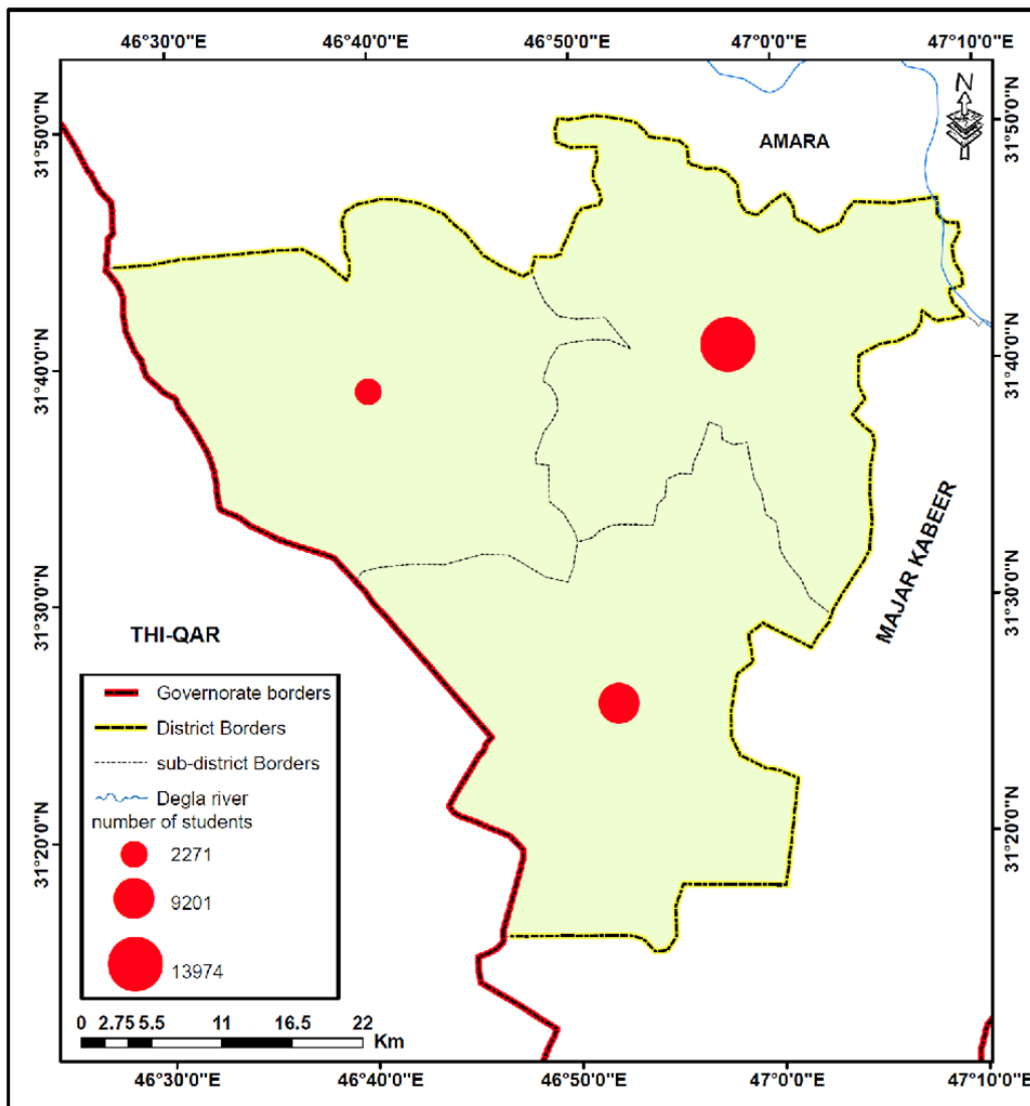
These maps were represented for the purpose of giving a visual character that represents the number of primary school students in Al-Maimuna district. These maps were prepared based on the data entered into the geographic database attached to each layer of the map. Table (3) and map (8) show the number of students in the study area for the year 2021. The map was represented by proportional cubes in the ARC GIS 10.8 program), where the size of the cube represents the number of students in each administrative unit, and it appears from the table and map, that the center Al-Maimuna district ranked first in the number of students, with a total of (13974) and a percentage of (55%), while Al-Salam district came in second place with (9201) and a percentage (36%), while Sayed Ahmed Al-Rifai district ranked third in which the number of students was recorded (2271) and at a percentage of (9%), as for the geographical distribution of the number of people in the study area, it came in a similar way to the geographical distribution of the number of schools in the district. The map was represented by the method of relative triangles, and through the analysis of the map and table (3), we find that most of the study divisions are located in the Al-Maimuna district center, with a rate of (380) academic divisions and a percentage (53%), and we can attribute the reason for this because the Al-Maimuna district center has the largest number of the schools in the study area , while it ranked second in terms of peace with a percentage of (230) divisions and a percentage of (32%). While Sayed Ahmed Al-Rifai district ranked third with (106) divisions and a percentage (15%).

Table (3) Number of students and classes and their percentages in Al-Maimuna district for the year 2021

Sequence	Name of Administrative Unit	Number of students	%	Number of classes	%
1	Al-Maimuna	13974	55	380	53
2	Al-Salam	9201	36	230	32
3	Sayed Ahmed Rifai	2271	9	106	15
	total	25.446	100	716	100

Source: General Directorate of Education of Misan Governorate, Statistics Division, Unpublished Data, for the year 2021

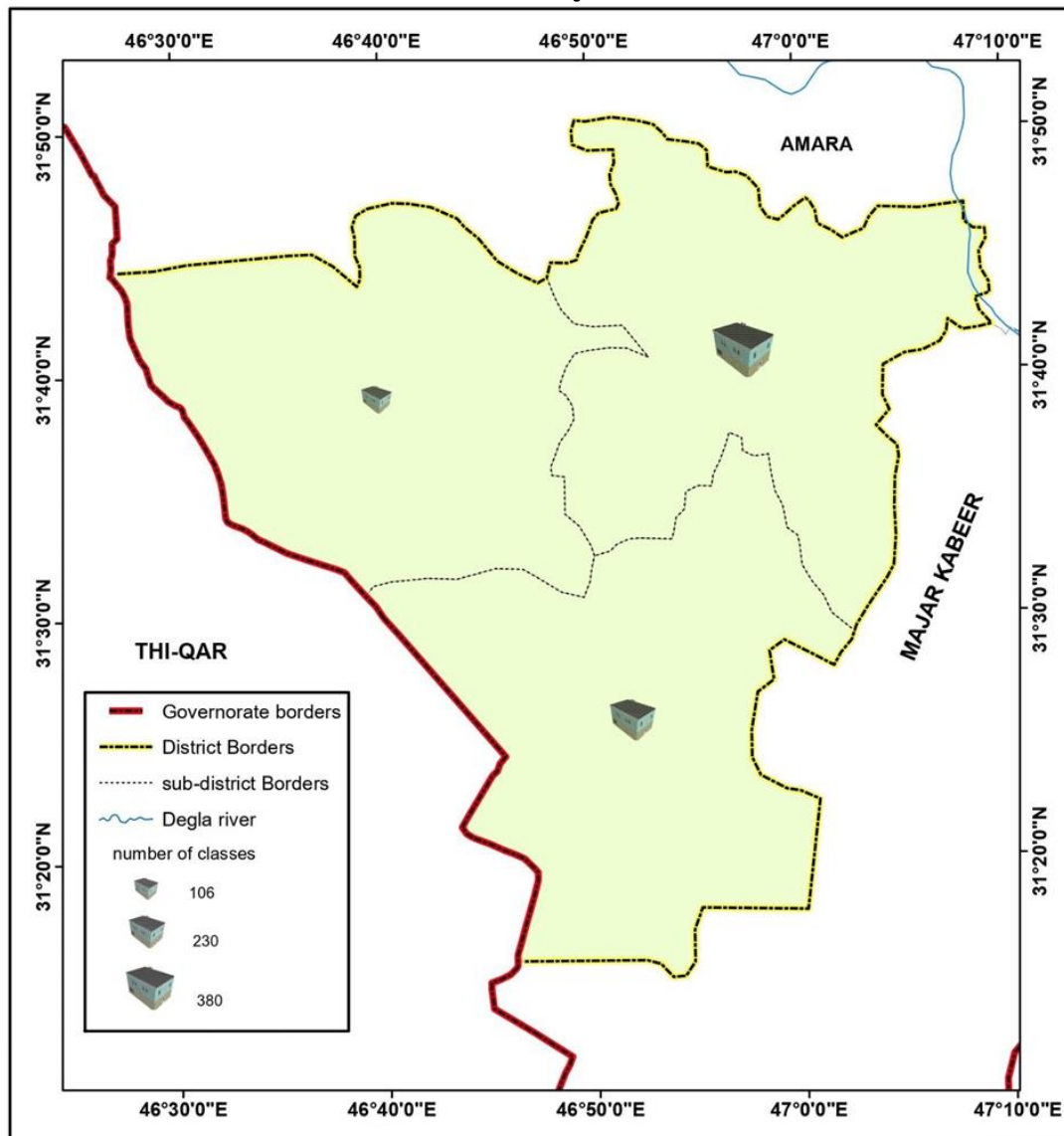
Map (8) Number of students and their percentages in Al-Maimuna district for the year 2021



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

2-The work of the researcher based on Table (3)

Map (9) Number of classes and their percentages in Al-Maimuna district for the year 2021



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

2-The work of the researcher based on Table (3)

3.3 Maps of the absorptive capacity of primary schools in Al-Maimuna district:

These maps are designed after performing some calculations within a program environment (8. Arc GIS 10) and sort them into tables and enter them within the base of geographical data attached to each layer of the map, which was obtained by making the following equations:

1-The hypothetical capacity of primary schools in the district of Al-Maimuna = the number of study divisions in the judiciary × (30) students

2-The increase in the number of students over the default capacity of the primary schools in the district of Al-Maimuna = the number of students in the district - the absorptive capacity of the primary schools in the district

3- Number of schools required in Al-Maimuna district = number of surplus students / 360 students.

Through the analysis of the maps (10, 11, 12, 13) and Table (4), it was clear from the map (10) the absorptive capacity and the numbers of surplus students of the schools in the study area, which were represented by the way of bar graphs. In Al-Maimuna district, it amounted to about (21480) students. Al-Maimuna district center ranked first, then Al-Salam district, and finally Sayed Ahmed Al-Rifai district. It is clear from the same map and Table (4), the number of surplus students, as the total number of students in excess of the absorptive capacity was (4875) Student, Al-Maimuna District Center ranked first, Al-Salam district ranked second, then Sayed Ahmed Al-Rifai district, as for map (11, 12) in which the average of students in the division showed unity and the rate of increase, and the two maps were represented by quantitative areal shading, As it was shown from map (12) that the average of students in one class is more than the ideal number, and by reading the map (12) and table (4), it was found that the rate of increase varies between administrative units, the peace district ranked first with an increase rate of (10) A student in one section, then the center of Al-Maimuna district with an increase rate of (6) students, while in the district of Sayed Ahmed Al-Rifai there was no increase in it. The reasons for this discrepancy in the rate of increase are mainly due to the continuous increase in the age group of primary school age, which to the increase in the number of students with the small number of schools in Al-Maimuna district, we note from the map (13) the number of schools to be built in the Al-Maimuna district for the year 2021. On the need of schools for the purpose of achieving the ideal number of students in one division, and the administrative units varied in their need for schools. The Al-Maimuna district

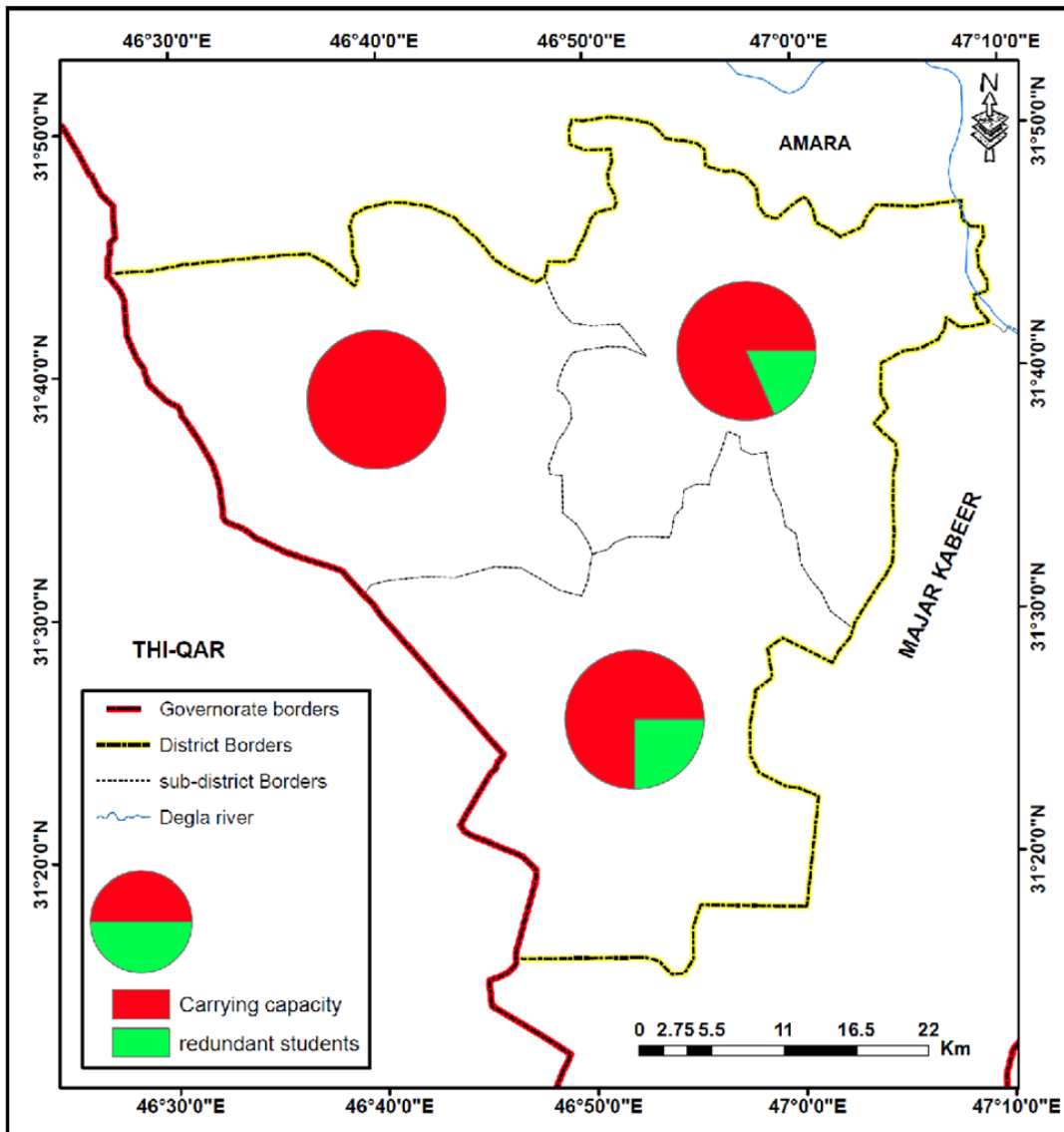
center ranked first in its need for schools, as it needs (7) schools, while it comes in second place in terms of peace, as it needs (6) schools.

Table (4) Student rate per class, rate of increase from the supposed ideal number, number of surplus students and number of schools to be built in Al-Maimuna district 2021

Sequence	Name of Administrative Unit	Number of students	Number of classes	Capacity of schools	Number of surplus students	Student average in class	Rate of increase	Number of schools required
1	Al-Maimuna	13974	380	11400	2574	36	6	7
2	Al-Salam	9201	230	6900	2301	40	10	6
3	Sayed Ahmed Rifai	2271	106	3180	0	21	0	0
	total	25.446	716	21480	4875		16	13

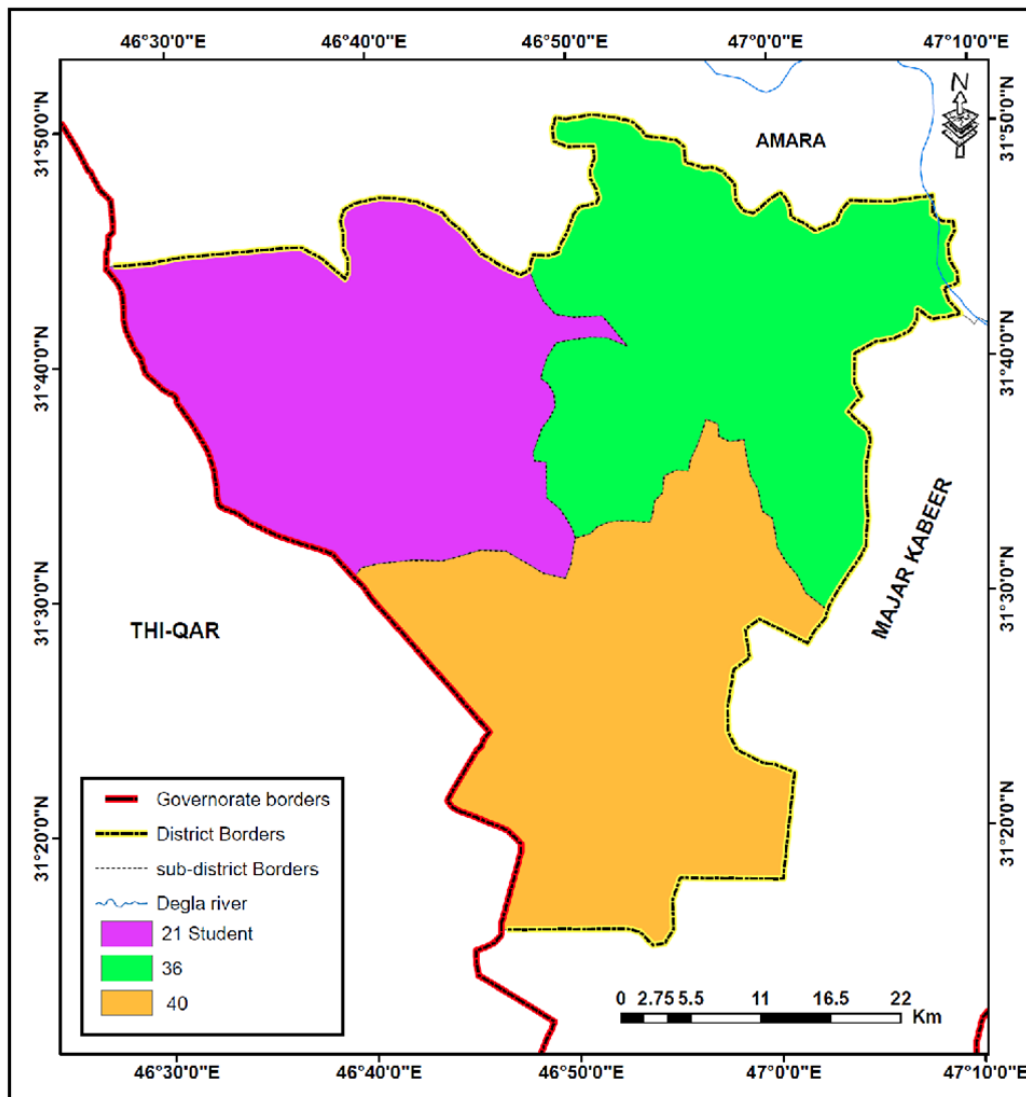
Source: General Directorate of Education of Misan Governorate, Statistics Division, Unpublished Data, for the year 2021

Map (10) Capacity and number of surplus students for primary schools in Al-Maimuna district for 2021



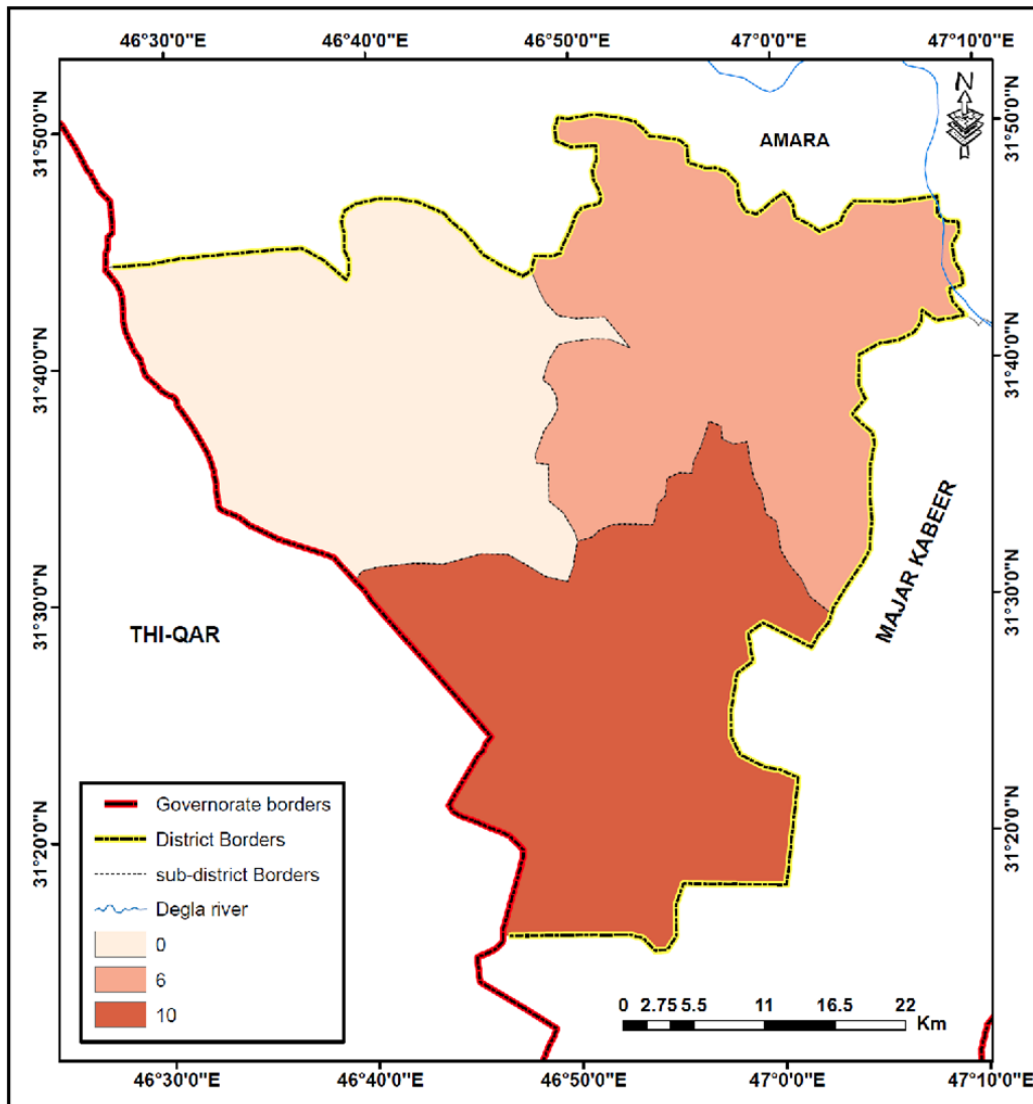
Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.
 2-The work of the researcher based on Table (4)

Map (11) Average number of students per class in Al-Maimuna district for 2021



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.
 2-The work of the researcher based on Table (4)

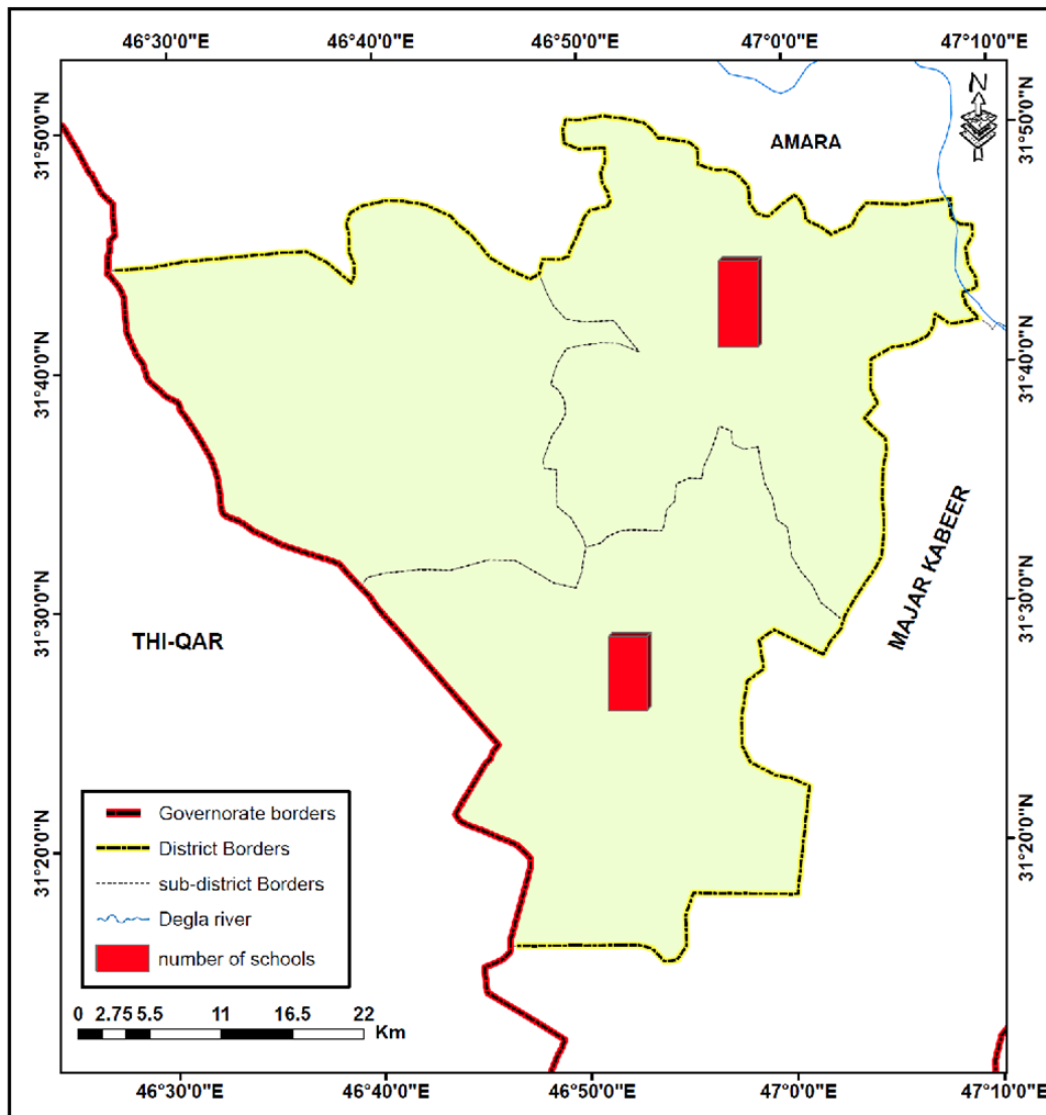
Map (12) The rate of increase of students in the class in the district of Al-Maimuna for 2021



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

2-The work of the researcher based on Table (4)

Map (13)
Number of schools to be built in Al-Maimuna district for 2021



Source: -1- work of the researcher based on, Republic of Iraq, Ministry of Water Resources, Directorate of Public Survey, Scale 1:500,000 for 2010.

2-The work of the researcher based on Table (4)

4. Conclusions

1. The use of modern techniques in cartography gives high accuracy in the representation of statistical data on objective maps from the scientific and technical aspects.
2. The total number of primary schools in the district of Al-Maimuna for the year 2021 reached (101) schools, the District Center occupied the largest number of schools, the district of peace, and finally the district of Sayed Ahmed Rifai.
3. The research proved that the number of primary schools is not commensurate with the number of students in the judiciary according to the global standard of the number of students per class.

4. Through this study, it was concluded that the Al-Maimuna district needs (13) schools for the purpose of achieving the ideal number of schools.
5. The increase in the number of students above the average per class will result in a decrease in the scientific level of students

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التمثيل الخرائطي لكفاءة توزيع خدمات التعليم الابتدائي في قضاء الميمونة لعام ٢٠٢١

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الملخص

يشمل بحث الدراسة تمثيل خدمات التعليم الابتدائي في قضاء الميمونة خرائطياً، وقد تم استخدام التقنيات الحديثة في توظيف المعلومات والبيانات في اعداد خرائط بدقة عالية في الرسم والتصميم والمعلومات فضلاً عن الاستنباط والتحديث والتحليل، وقد أشار البحث ان العدد الكلي للمدارس الابتدائية في قضاء الميمونة لعام ٢٠٢١ (١٠١) مدرسة، احتل مركز القضاء على المرتبة الأولى بأكبر عدد من المدارس ومن ثم ناحية السلام بالمرتبة الثانية بينما جاءت ناحية سيد احمد الرفاعي في المرتبة الثالثة والأخيرة، واثبت البحث ان عدد المدارس الابتدائية لا يتناسب مع عدد الطلاب الموجودين في القضاء وذلك حسب المعيار العالمي لعدد الطلاب في الصف الواحد، من خلال هذه الدراسة تم الاستنتاج بأن قضاء الميمونة يحتاج الى (١٣) مدرسة لغرض تحقيق العدد المثالي للمدارس.