

***“A Geographic Information System For
Healthcare In Sharkia Governorate”
GIS Project***

Under supervision

Prof. Khalid Eldrandaly

Eng. Nabil Moustafa

Eng. Safa Elsaed

Team member

- ▶ *Aya gaber shehata*
- ▶ *Aya elsayed mohammed*
- ▶ *Ether hassan mohammed*
- ▶ *Aya anwar abdallah mohamed*
- ▶ *Aya abd el monaem mohammed*
- ▶ *Amany mohammed Mahmoud*

Introduction

- ▶ *GIS provides a way to move data from the project level so that it can be used by the entire organization.*
- ▶ Public health uses of GIS include tracking child immunizations, conducting health policy research, and establishing service areas and districts.
- ▶ *The use of mapping to improve health care services doesn't stop at the building level. BodyViewer, an ArcView GIS extension developed by GeoHealth Incorporated, allows users in the health care industry to analyze, visualize, and map more than 14,000 of the International Classification of Diseases*

Project goal

Our project is serving The Health Department in this fields.

- ▶ spread of diseases with percentage of services in marakez .
- ▶ Help decision makers to overcome problem related to healthcare field.
- ▶ Identifying Health Trends
- ▶ Tracking the Spread of Infectious Disease
- ▶ Utilizing Personal Tech
- ▶ Improving Services

Background about gis

► What is Geographic Information Systems (GIS)?

Geographic Information Systems is a computer-based tool that analyzes, stores, manipulates and visualizes geographic information on a map

► Major Components of GIS



Background about gis

GIS functionality:

1. Input
2. Manipulation
3. Management
4. Query and Analysis
5. Proximity Analysis
6. Overlay Analysis
7. Visualization

GIS Data:

spatial information (coordinate and projection information for spatial features) and attribute data.

Background about gis

- **GIS Data Models:**

Vector Spatial Data Types

Raster Spatial Data Types

- **GIS Software:**

is designed to store, retrieve, manage, display, and analyse all types of geographic and spatial data. GIS software lets you produce maps and other graphic displays of geographic information for analysis and presentation.

Background about gis

Some types of GIS software:

- ▶ ArcGIS
- ▶ Map Business Online
- ▶ Rosmiman IWMS
- ▶ PubWorks

Define needed data:

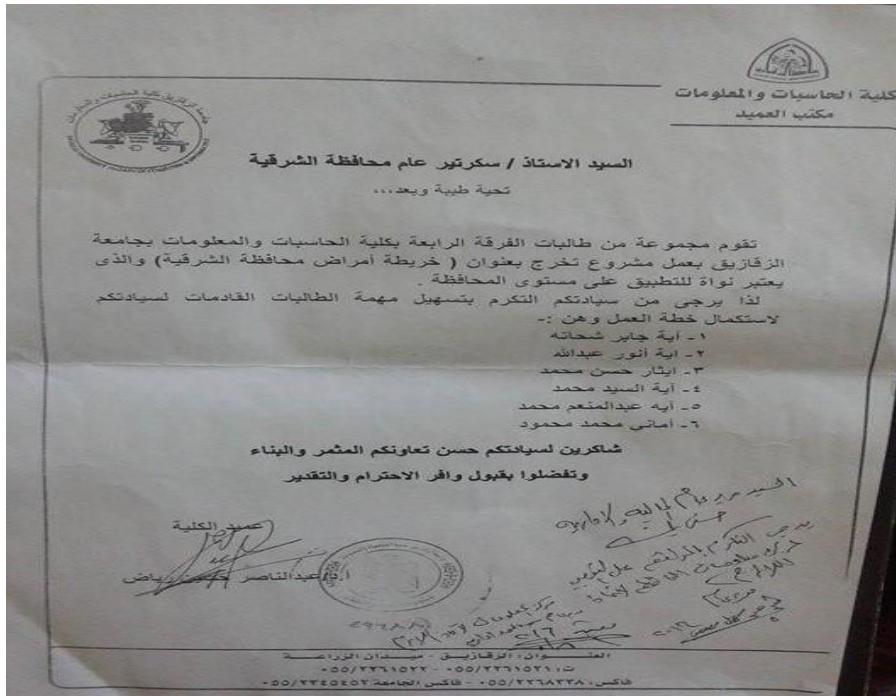
- ▶ *We initially started to collect the data for our project. The collected data classified into two categories (attribute, spatial).*
- ▶ *In our project we need :*

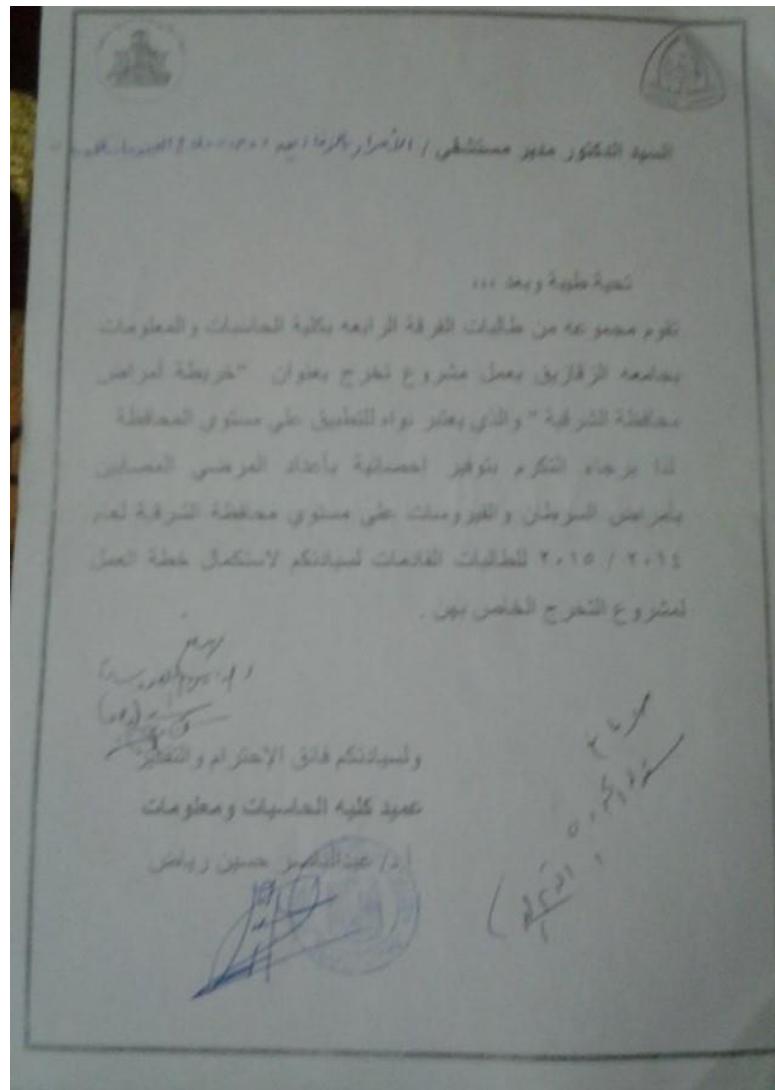
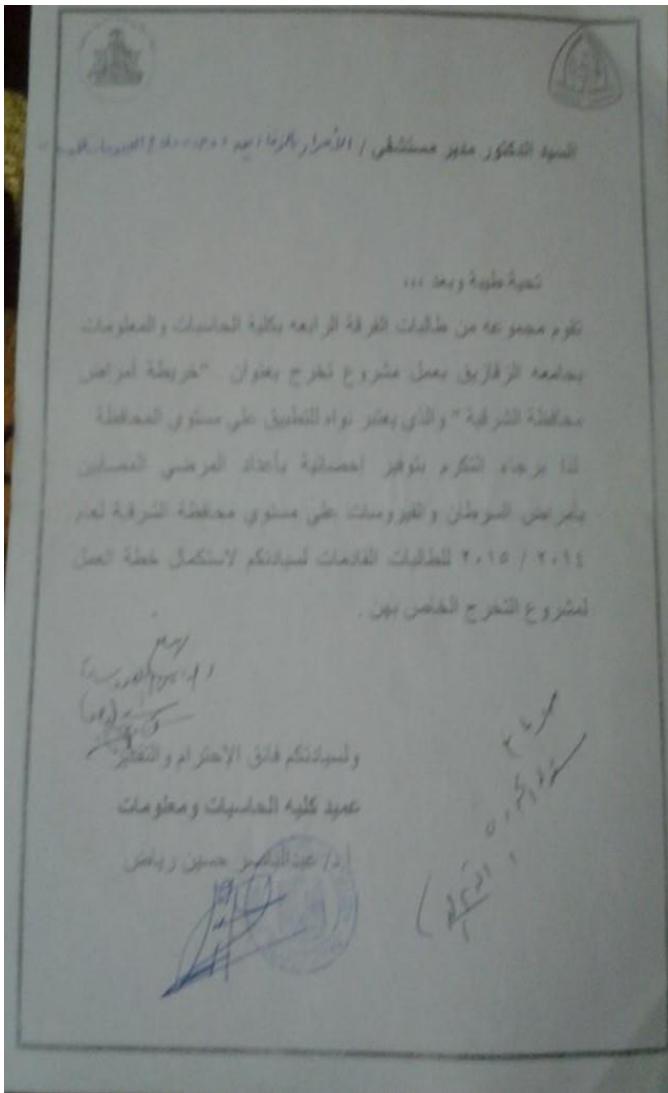
Attribute data: which consists of statistical information about no of dieases such that as(bunions ,liver , blood_dieases ,etc)

And informations about service in each marakez of sharkia such that as (education, health, sports, culture,... etc.).

Define needed data:

- To take an approval from the Secretary-general of the governorate and hospitals to get information we need and to prove that your work is official you need to have a paper or certificate from the “ Dean of our College”.





Data collection

- ▶ the process of gathering and **measuring** information on targeted variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate outcomes.
- ▶ This phase is considered one of more difficult steps which face us .we start going to organizations of sharkia government in order to get data we need. After dividing us to two groups'.
- ▶
- ▶ **We collect data from three places:**
 1. Governorate building of sharkia
 2. Hospitals
 3. Directorate of Health

Data from Directorate of Health :

الفنار

صفحة (1)

بيان نشاط وحدات الكلى الصناعي بالمستشفيات العامة والمركزية والتوعية التابعة لمحافظة الشرقية خلال شهر ديسمبر 2015

وحدة الغسيل الكلوي

البيان

عدد المنشآت	الإجمالي	B			C			D			E		
		الإيجابي	السلبي	غير مفهوم									
1	74	15	0	0	22	6	52	9					
1	93	24	0	0	44	12	49	12					
2	186	38	15	4	99	20	72	14					
1	77	15	0	0	35	7	42	8					
1	111	33	0	0	46	13	65	20					
2	115	22	4	3	57	10	54	9					
2	175	37	0	0	63	14	112	23					
1	59	10	0	0	36	6	23	4					
2	146	45	0	0	69	22	77	23					
1	37	13	0	0	28	5	9	8					
1	38	9	1	1	12	3	25	5					
1	105	23	0	0	45	16	38	7					
1	0	0	0	0	22	5	56	13					
1	49	16	0	0	33	8	16	8					
1	40	10	0	0	27	3	13	7					
2	77	18	0	0	37	9	40	9					
2	62	17	0	0	20	5	45	12					
1	37	7	0	0	13	2	24	5					
2	160	39	0	0	68	19	92	20					
2	195	41	0	0	58	13	137	28					
	503	23	0	0	55	13	48	10					
					0	0	0	0					

الدرون

ناتئاً : سجل الدرون

ناتئاً : سجل الدرون (الإيجابي) (السلبي)

ناتئاً : سجل الدرون

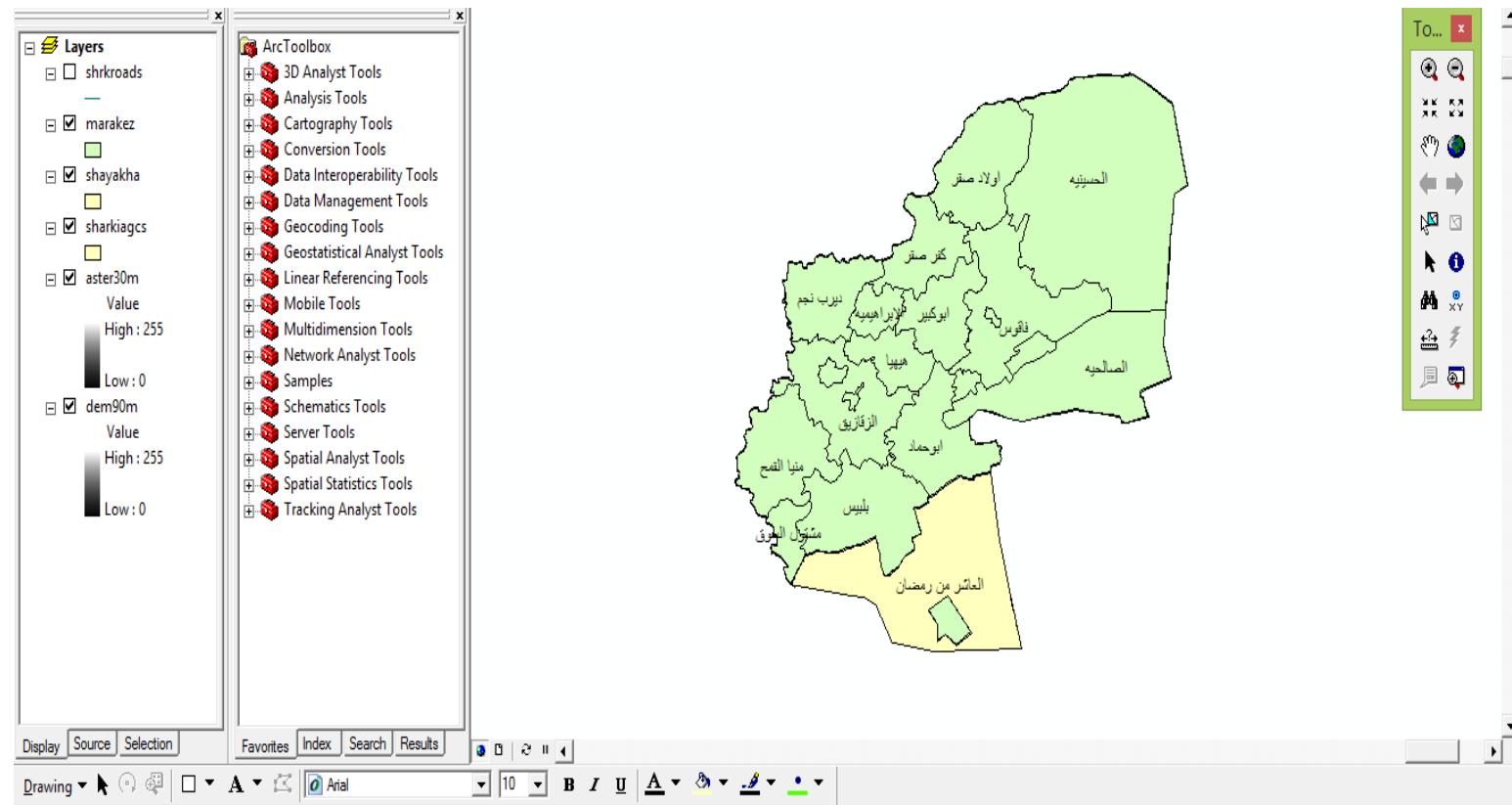
الجنسية	اسم المستشفى او المستوصف	الإيجابي	السلبية	الحالات الإيجابية					الحالات السلبية					
				دون زبوي لم	غير مصرى	البياصان	بعد ذلك	منكس	فشل	دديد	غير مصرى	البياصان	بعد ذلك	منكس
غير مصرى	الزفاريق	19	1	2	0	3	2	0	0	11	غير مصرى	1	0	0
غير مصرى	أبو حماد	1	0	1	0	0	0	0	0	0	غير مصرى	2	0	0
غير مصرى	ابو كير	6	0	1	0	2	0	0	0	3	غير مصرى	3	0	0
غير مصرى	الحسينية	4	0	1	0	0	0	0	1	4	غير مصرى	4	0	0
غير مصرى	بلبيس	2	0	0	0	0	0	0	0	2	غير مصرى	5	0	0
غير مصرى	درب نجم	12	0	3	0	0	1	0	2	6	غير مصرى	6	0	0
غير مصرى	قاقوس	13	0	3	0	3	0	0	0	7	غير مصرى	7	0	0
غير مصرى	كفر صقر	13	1	1	1	3	0	0	0	7	غير مصرى	8	0	0
غير مصرى	منيا القمح	7	0	0	1	0	0	1	0	5	غير مصرى	9	0	0
غير مصرى	دلهيا	9	0	3	0	2	0	0	0	4	غير مصرى	10	0	0
غير مصرى	مشتول السوق	2	0	0	0	0	0	0	0	2	غير مصرى	11	0	0
غير مصرى	الإبراهيمية	1	0	0	0	1	0	0	0	0	غير مصرى	12	0	0
غير مصرى	الإجمالي	89	2	10	1	10	3	4	4	49	غير مصرى	13	0	0

القطاعات الأخرى

ناتئاً : سجل الدرون

ناتئاً : سجل الدرون

- ▶ Finally, we bring a base map for sharkia government to implement our work .This map is considered the main in our project.



Data refinement:

- **Governorate building of sharkia** : After collecting required data , everyone from us take a part of these filled forms, and transforming data from Arabic to English into Excel file.

Attributes of educations														
* OBJECTID	E_NAME	A_NAME	GOVERNORAT	* CODE	_primary	preparatory	secondary	commercial	manufactural	agricultural	faculties	inistutions	faculties	
1	mrkz dkrns	مرکز دكتورس	الدقهلية	12	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
2	mrkz awlad sqa	مرکز اولاد صغار	الدقهلية	21	52	38	10	7	1	<Null>	<Null>	<Null>	<Null>	<Null>
3	mrkz tmy amdyd	مرکز تموي امداد	الدقهلية	28	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
4	mrkz alsnblawy	مرکز السنبلتون	الدقهلية	31	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
5	mrkz kfar sqa	مرکز كلير صغار	الدقهلية	34	72	58	6	6	1	2	<Null>	<Null>	<Null>	<Null>
6	mrkz faaqaws	مرکز فاقوس	الدقهلية	37	158	112	16	7	2	2	<Null>	<Null>	<Null>	<Null>
7	mrkz abwkybr	مرکز ابو كبير	الدقهلية	40	96	66	12	5	4	<Null>	<Null>	<Null>	<Null>	<Null>
8	mrkz myt ghmr	مرکز ميت غمر	الدقهلية	41	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
9	mrkz dyrb ngm	مرکز درب نجم	الدقهلية	43	287	61	14	6	3	2	<Null>	<Null>	<Null>	<Null>
10	mrkz alebraayma	مرکز الابراهيمية	الدقهلية	45	37	28	7	3	1	<Null>	<Null>	<Null>	<Null>	<Null>
11	qasm faaqaws	قسم فاقوس	الدقهلية	48	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
12	elsalhyya	الصالحية	الإسماعيلية	49	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
13	mrkz aaya	مرکز ههيا	الدقهلية	52	63	42	<Null>	3	3	<Null>	<Null>	<Null>	<Null>	<Null>
14	qasm alsalhyya algyda	قسم الصالحية الجديدة	الدقهلية	53	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
15	mrkz alzqaazyqa	مرکز الزقازيق	الدقهلية	54	238	137	51	16	9	2	١٦	٣	<Null>	<Null>
16	qasm alqanayat	قسم القنطرات	الدقهلية	56	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
17	mrkz abw hmad	مرکز ابو حماد	الدقهلية	57	116	83	16	7	4	<Null>	<Null>	<Null>	<Null>	<Null>
18	qasm alqaryn	قسم القرنة	الدقهلية	60	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
19	mdyna alzqaazyqa	مدنه الزقازيق	الدقهلية	61	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
20	mrkz mnya alqamh	مرکز منيا القمح	الدقهلية	62	123	84	21	5	6	2	<Null>	<Null>	<Null>	<Null>
21	mrkz kfar shkr	مرکز كفر شكر	الدقهلية	63	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
22	mrkz alti alkbyr	مرکز البتل الكبير	الإسماعيلية	65	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
23	mrkz bnaa	مرکز بنها	الدقهلية	67	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
24	mrkz blbys	مرکز بلبيس	الدقهلية	68	147	85	18	7	3	<Null>	<Null>	<Null>	<Null>	<Null>
25	mrkz mshtwi alswqa	مرکز مشتوك السوقة	الدقهلية	72	51	35	6	1	2	<Null>	<Null>	<Null>	<Null>	<Null>
26	mrkz sbhy alqanatr	مرکز شبين القناطر	الدقهلية	74	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
27	mrkz alkhanka	مرکز الخانكة	الدقهلية	77	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
28	qasm adawahy	قسم العشوائي	الدقهلية	211	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
29	mrkz alhsnyya	مرکز الحسينية	الدقهلية	212	160	86	15	7	1	3	<Null>	<Null>	<Null>	<Null>
30	mdyna alaashr mn rmadaan	مدنه العاشر من رمضان	الدقهلية	217	34	30	15	3	10	1	<Null>	<Null>	<Null>	<Null>
31	mrkz alqantra	مرکز القطرة	الإسماعيلية	219	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
32	mrkz alesmaalya	مرکز الاسماعيلية	الإسماعيلية	221	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>
33	qasm faysl	قسم فيصل	السويس	226	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>	<Null>

Record: 14 | 1 | Show: All | Selected | Records (0 out of 33 Selected) | Options |

Challenges and barriers:

- ▶ **Transportation:** There are regions which contain hospitals that its distance between them is so far. This requires walking Long-distances to arrive for each school.
- ▶ **Bad treatment:** Some of the headmasters treated us badly when introducing us for them and give a request. I remember a hospital such as: Al-ahrar hospital and Directorate of Health refuse helping us .

geodatabase

- ▶ It is a relational database offers a seamless physical storage location that makes it easy to scale GIS datasets to extremely large sizes and numbers of users.

▶ Why geodatabase?

Geodatabases store not only the locations but the facts about each location. It is this data and its analysis that makes GIS such a powerful tool.

▶ Advantages of geodatabase:

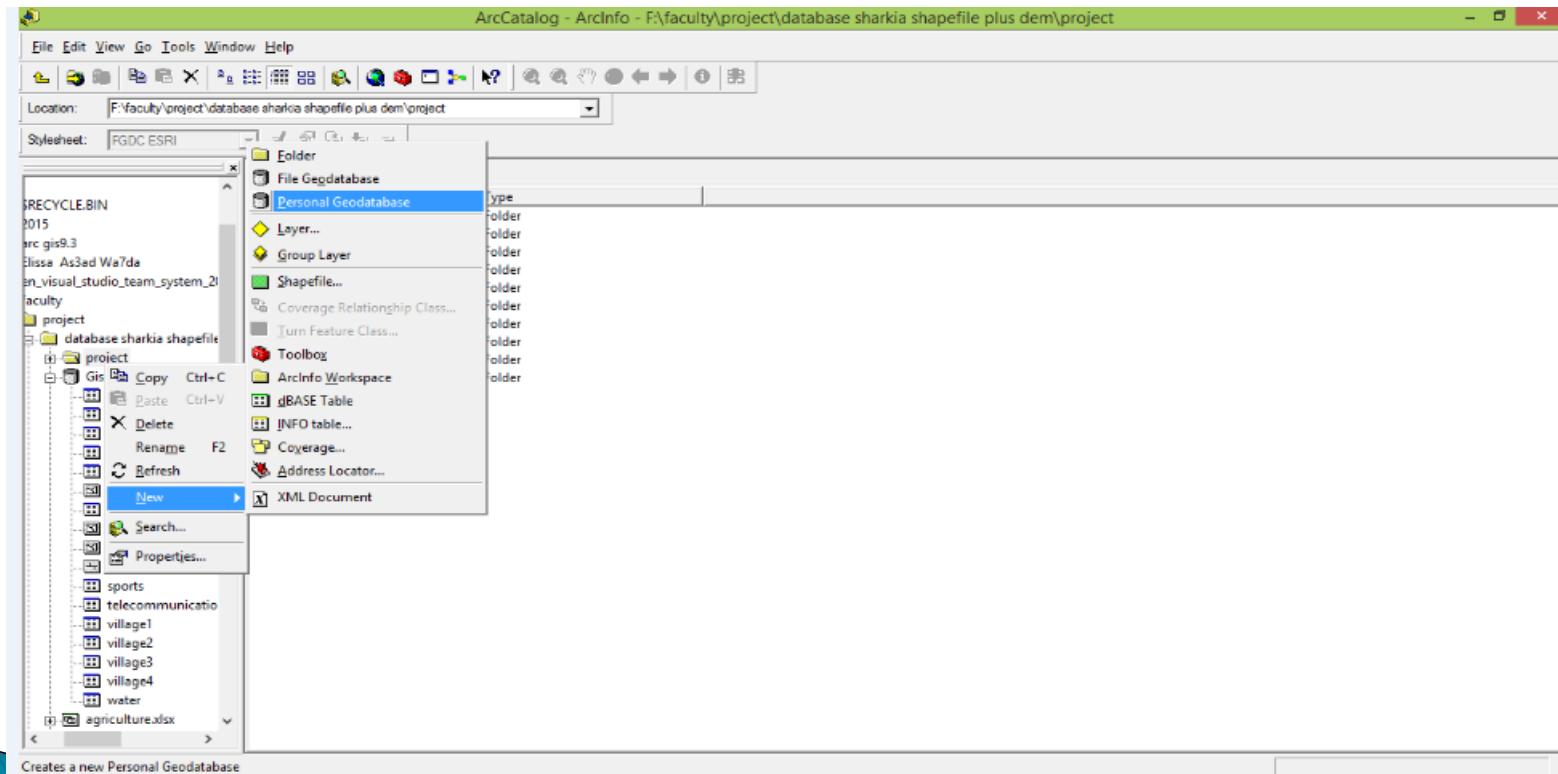
- ❖ geodatabase simplifies managing and accessing GIS data.
- ❖
- ❖ can accommodate continuous large sets of features.
- ❖
- ❖ support two, three and four-dimensional vector features(X,Y,Z and M values).
- ❖
- ❖ you can classify features within features class using subtypes.

Building geodatabase

- ▶ There are two types of geodatabase (multiuser, personal)
- ▶ in our project we use personal geodatabase because data not huge and data can be read by multiple people at the same time, but edited by only one person at a time.

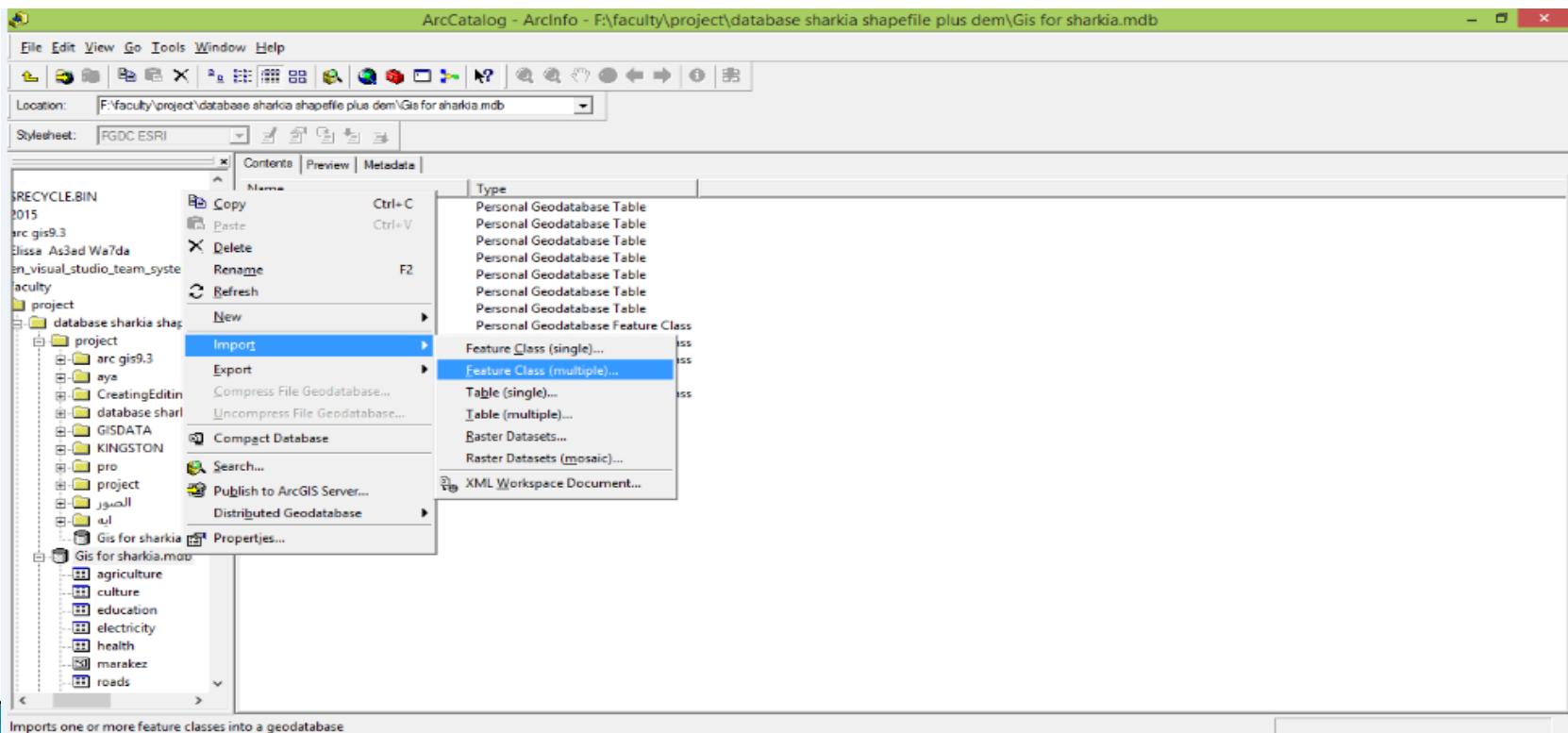
Steps of building geodatabase: (We will use ArcGIS 9.3)

1. Using ArcCatalog, Create personal geodatabase by right click New → Personal geodatabase



Steps of building geodatabase: (We will use ArcGIS 9.3)

2. Import needed feature classes from sharkia base map like (“marakez,shroads,shayakha,...) by right click→import→Feature Class



Steps of building geodatabase: (We will use ArcGIS 9.3)

3. Adding behavior to the GeoDatabase:

► **Attributes Domain:**

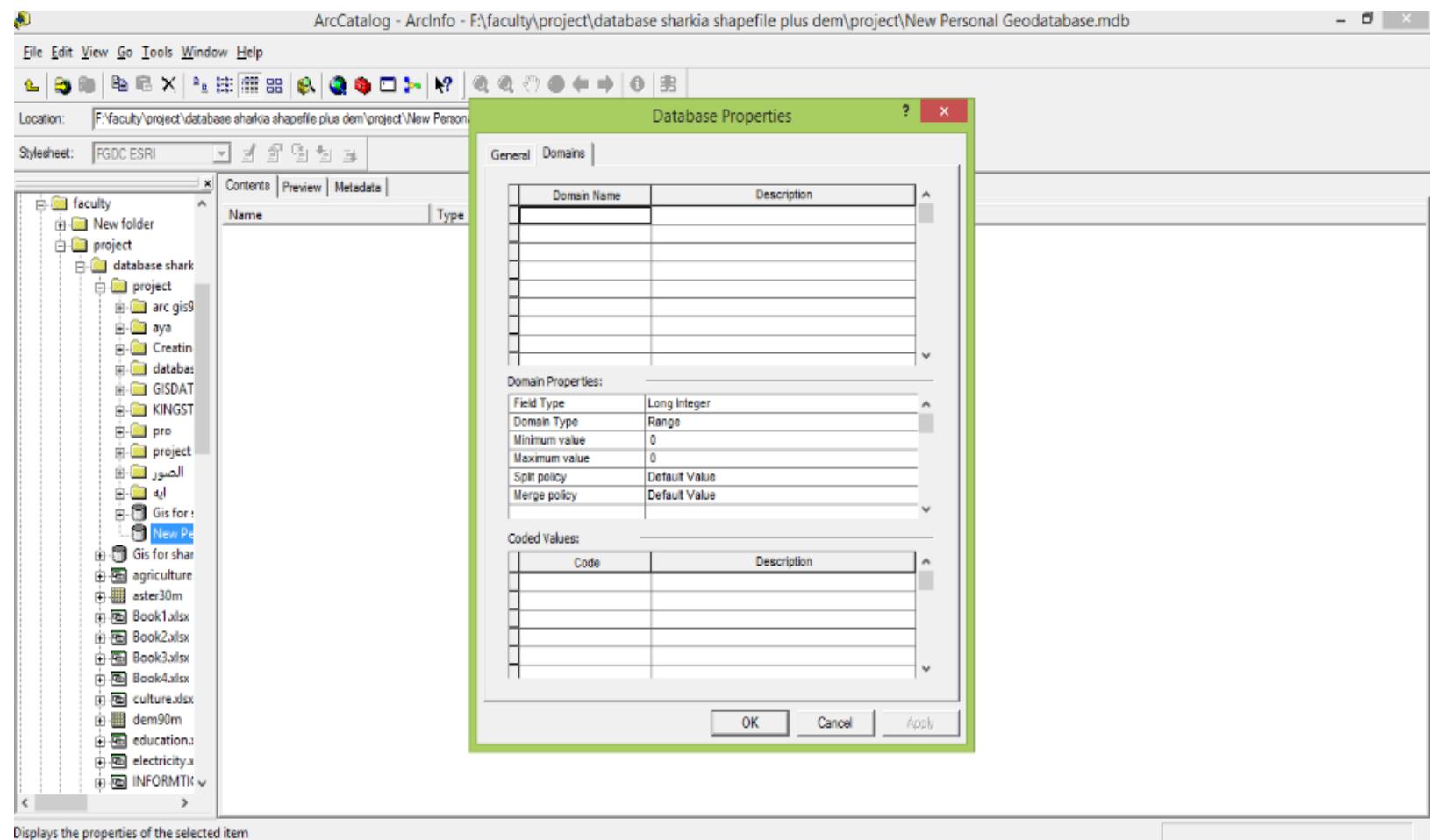
The first step is to decide the type of the attribute domain:

► **Coded Value Domain:**

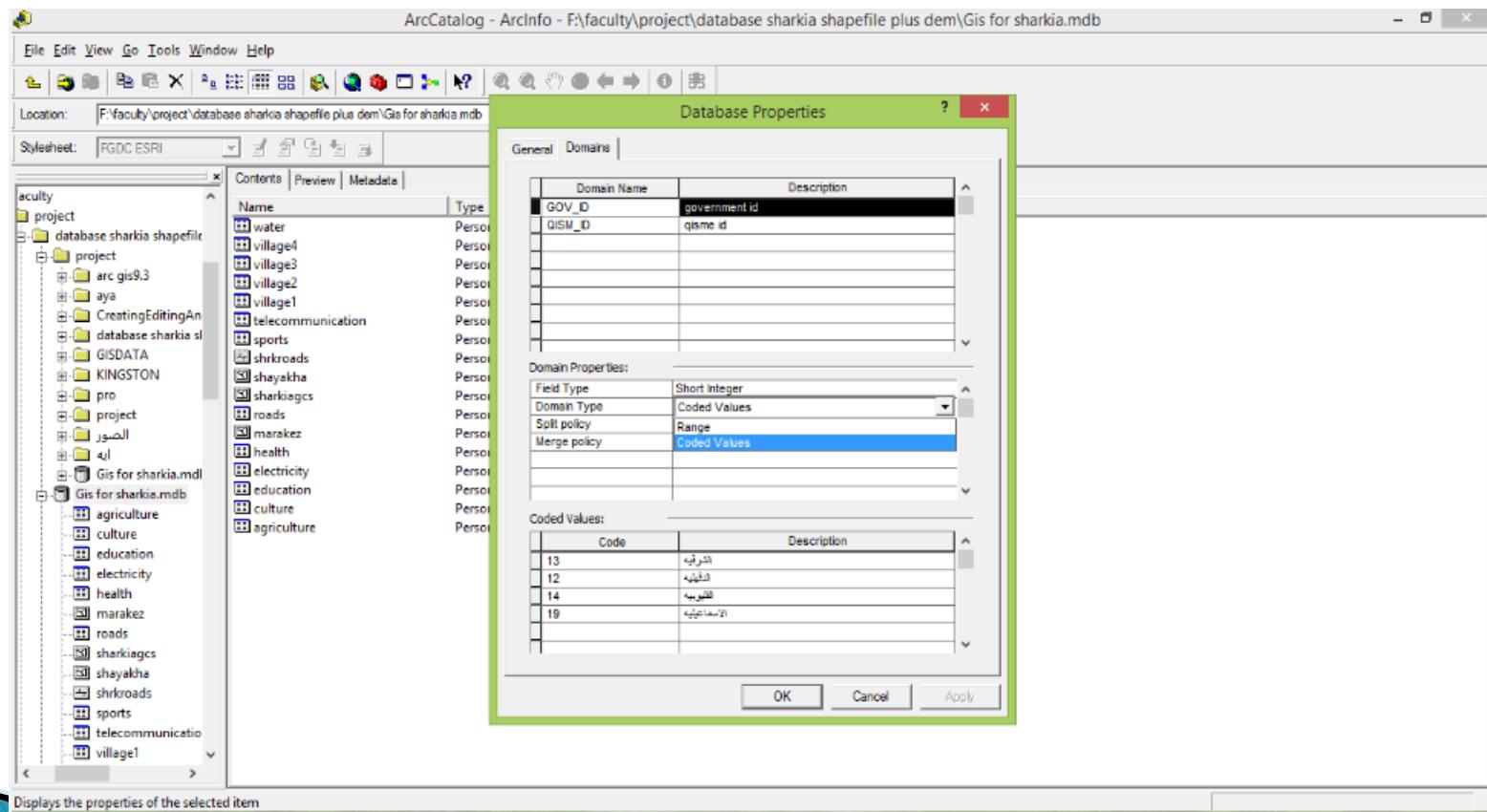
1. Gov_id
2. Qism_id

► **Range Domain:**

1. start ArcCatalog.
2. connect to our GeoDatabase (GIS For sharkia map).
3. right click the GeoDatabase and open properties.
4. Examine the domain tab.



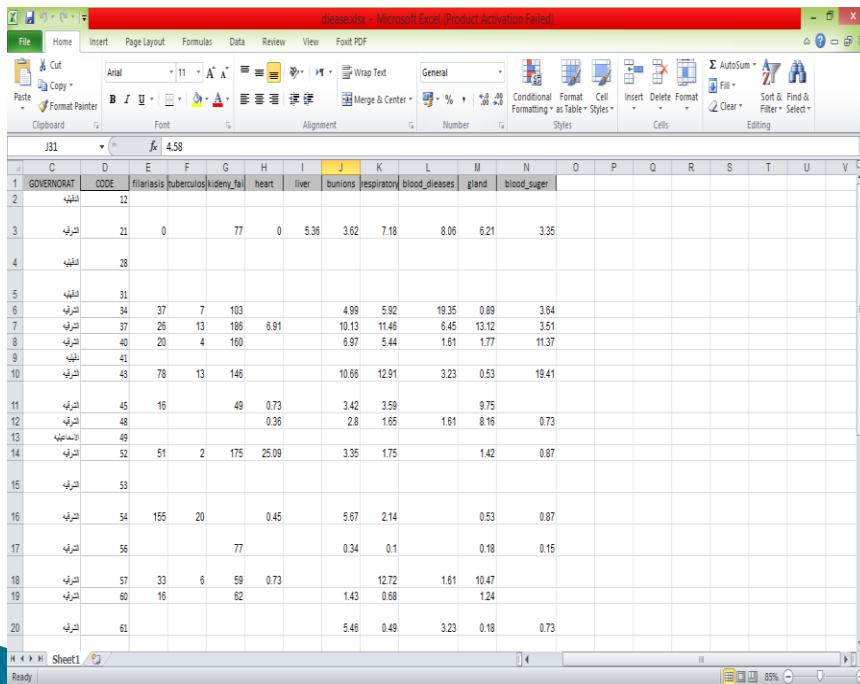
Know we are going to create the coded value domains
First we are going to enter the domain name and its description and define its Properties .Then enter the coded values (which includes code and its descriptions)



We collect more information about services of sharkia (health, education, sports, agriculture.....) and insert it as excel sheets in project file.

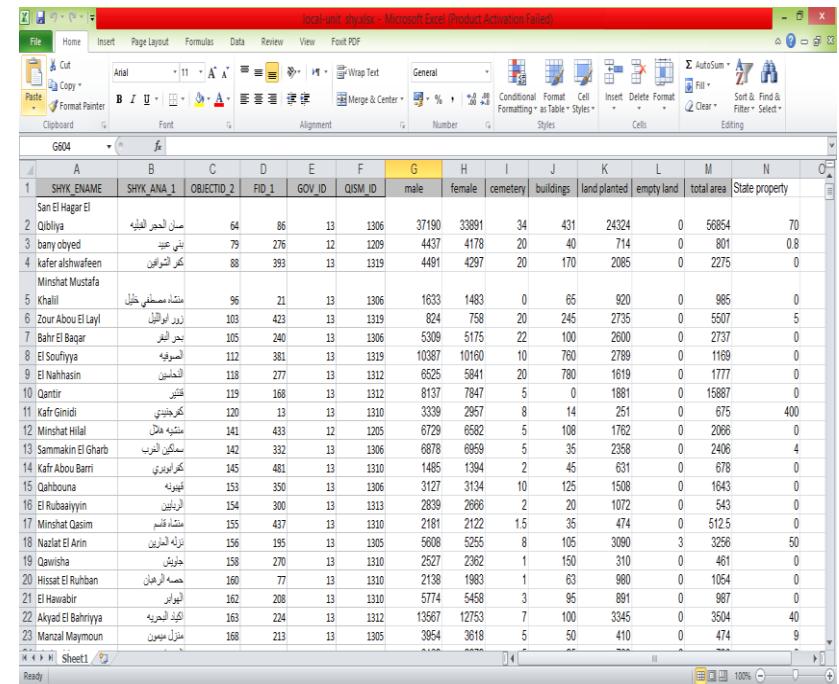
There are two type of excel:

1. excel relate to marakez.
2. excel relate to shayakha.



The screenshot shows a Microsoft Excel spreadsheet titled "disease.xlsx". The table has columns for location (GOVERNORAT), code, disease names (filaria, tuberculosis, kidney, heart, liver, buncions, respiratory, blood_diseases, gland, blood_sugar), and numerical values. The data spans from row 1 to 20.

	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	GOVERNORAT	CODE	filaria	tuberculosis	kidney	heart	liver	buncions	respiratory	blood_diseases	gland	blood_sugar								
2	الإسكندرية	12																		
3	المنوفية	21	0	77	0	5.36	3.62	7.18	8.06	6.21	3.35									
4	القاهرة	28																		
5	الجيزة	31																		
6	الإسكندرية	34	37	7	103	4.99	5.92	19.35	9.89	3.64										
7	الإسكندرية	37	26	13	186	6.91	10.13	11.46	8.45	11.12	3.51									
8	الإسكندرية	40	20	4	160	6.97	5.44	1.61	1.77	11.37										
9	الإسكندرية	41																		
10	الإسكندرية	43	78	13	146	10.66	12.91	3.23	0.53	19.41										
11	الإسكندرية	45	16	49	0.73	3.42	3.59	9.75												
12	الإسكندرية	48				0.36	2.8	1.65	1.61	8.16	0.73									
13	الإسكندرية	49																		
14	الإسكندرية	52	51	2	175	25.09	3.35	1.75	1.42	0.87										
15	الإسكندرية	53																		
16	الإسكندرية	54	155	20		0.45	5.67	2.14	0.53	0.87										
17	الإسكندرية	56					0.34	0.1	0.18	0.15										
18	الإسكندرية	57	33	6	59	0.73	12.72	1.61	10.47											
19	الإسكندرية	60	16	62		1.43	0.68	1.24												
20	الإسكندرية	61					5.46	0.49	3.23	0.18	0.73									



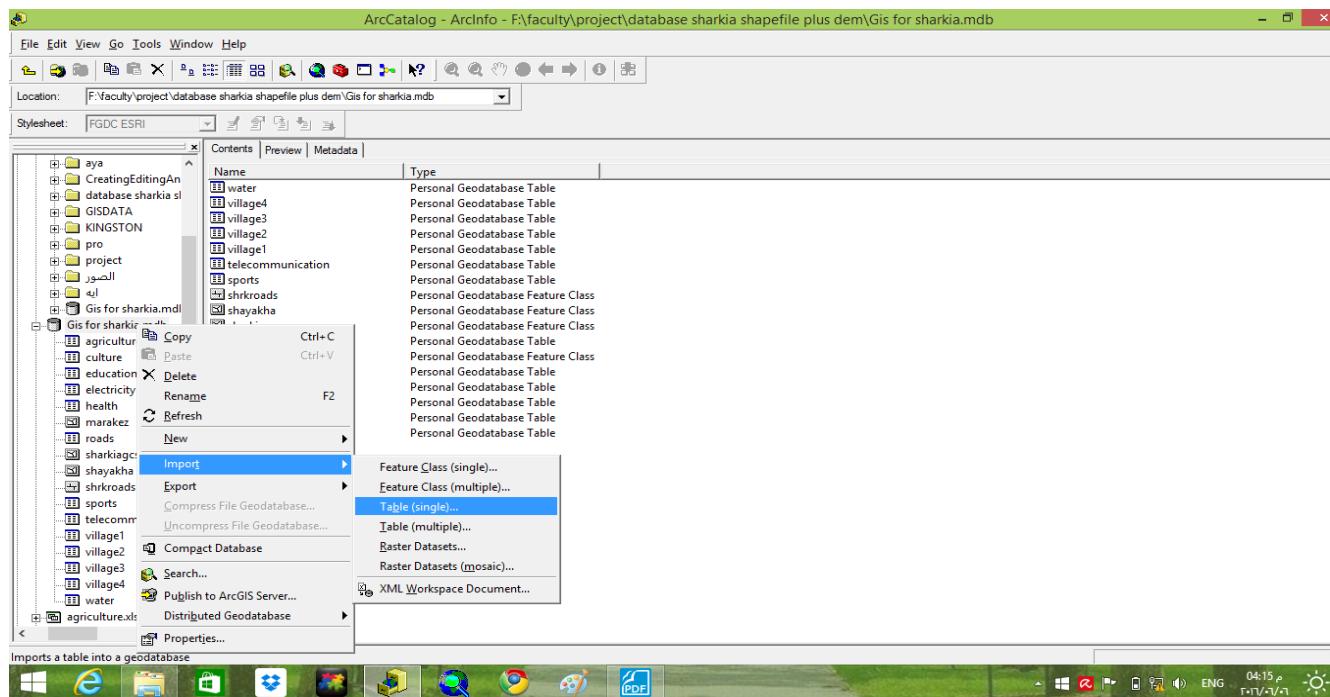
The screenshot shows a Microsoft Excel spreadsheet titled "local-unit.xlsx". The table has columns for SHYK_ENAME, SHYK_ANA_1, OBJECTID_2, FID_1, GOV_ID, QISM_ID, gender (male, female), cemetery, buildings, land planted, empty land, total area, and State property. The data spans from row 1 to 23.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	SHYK_ENAME	SHYK_ANA_1	OBJECTID_2	FID_1	GOV_ID	QISM_ID	male	female	cemetery	buildings	land planted	empty land	total area	State property	
2	San El Hagar El	صلن الحجر الابيض	64	86	13	1306	37190	33891	34	431	24324	0	56854	70	
3	Qibliya	بنى بني	79	276	12	1209	4437	4178	20	40	714	0	801	0.8	
4	kafer alshafeen	كفر الشافئين	88	393	13	1319	4491	4297	20	170	2085	0	2275	0	
5	Minshat Mustafa	ممشط مصطفى خليل	96	21	13	1306	1633	1483	0	65	920	0	985	0	
6	Zour Abou El Layl	دور ابو الليل	103	423	13	1319	824	758	20	245	2735	0	5507	5	
7	Bahr El Baqr	بحر البقر	105	240	13	1306	5309	5175	22	100	2600	0	2737	0	
8	El Soufiyya	المساوية	112	381	13	1319	10387	10160	10	760	2789	0	1169	0	
9	El Nahashin	الناشين	118	277	13	1312	6525	5641	20	780	1619	0	1777	0	
10	Qantir	قنتير	119	168	13	1312	8137	7947	5	0	1881	0	15887	0	
11	Kafr Gindidi	كفر جندي	120	13	13	1310	3339	2957	8	14	251	0	675	400	
12	Minshat Hilal	مشطة هلال	141	433	12	1205	6729	6582	5	108	1762	0	2066	0	
13	Sammakin El Gharb	سماكن الغرب	142	332	13	1306	6878	6959	5	35	2358	0	2406	4	
14	Kafr Abou Barri	كفر ابروري	145	481	13	1310	1485	1394	2	45	631	0	678	0	
15	Qahbouna	قوبة	153	350	13	1306	3127	3134	10	125	1508	0	1643	0	
16	El Rubaiyyin	الربيعين	154	300	13	1313	2839	2666	2	20	1072	0	543	0	
17	Minshat Qasim	مشطة قاسم	155	437	13	1310	2181	2122	1.5	35	474	0	512.5	0	
18	Nadaf El Arin	نادف العرين	156	155	13	1305	5608	5255	8	105	3090	3	3256	50	
19	Qawishla	جويشلا	158	270	13	1310	2527	2362	1	150	310	0	461	0	
20	Hissat El Ruhban	حصة الرهبان	160	77	13	1310	2138	1983	1	63	980	0	1054	0	
21	El Hawair	الهوار	162	208	13	1310	5774	5458	3	95	891	0	987	0	
22	Akyad El Bahriyya	اكياد البحرية	163	224	13	1312	13567	12753	7	100	3345	0	3504	40	
23	Mancal Maymoun	منزل ميمون	168	213	13	1305	3954	3618	5	50	410	0	474	9	

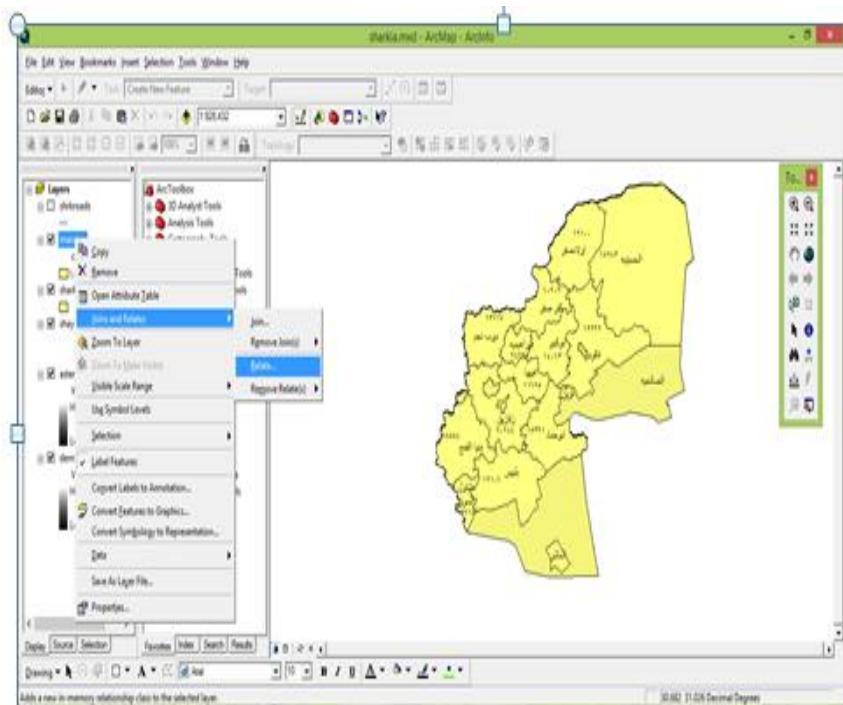
we will put this excel in geodatabase to be readable from arcGIS
Start arcCataloge:

to import this excel in geodatabase :

Using ArcCatalog, Create table(single) by right click
import →table(single) →

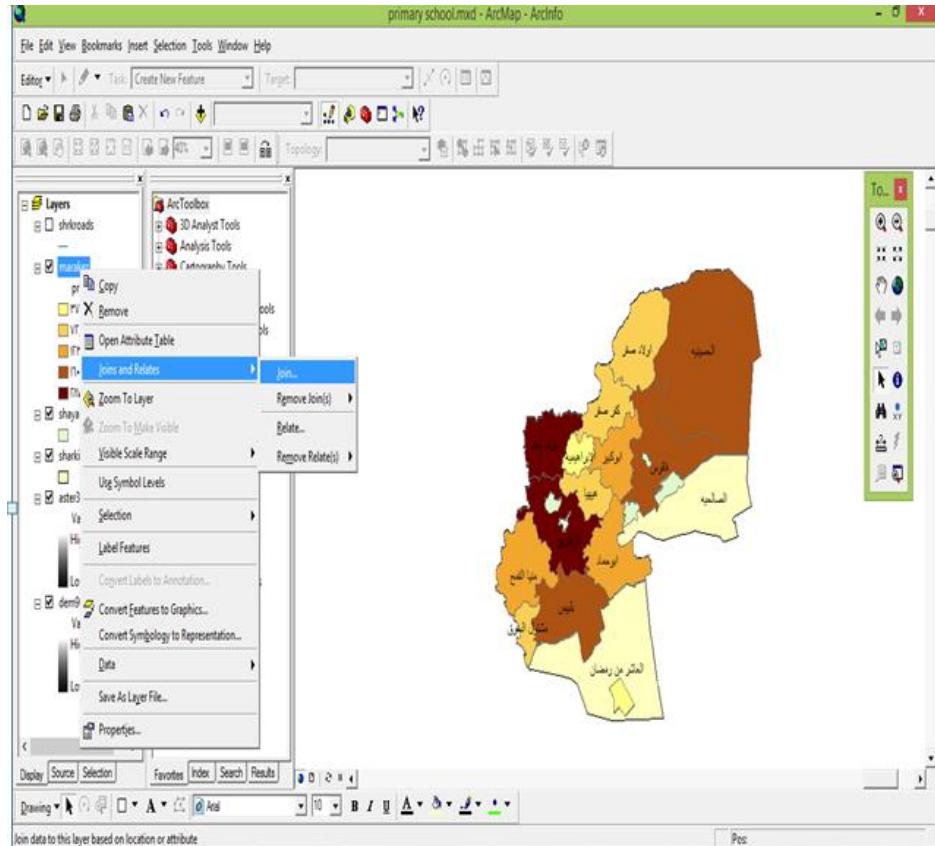
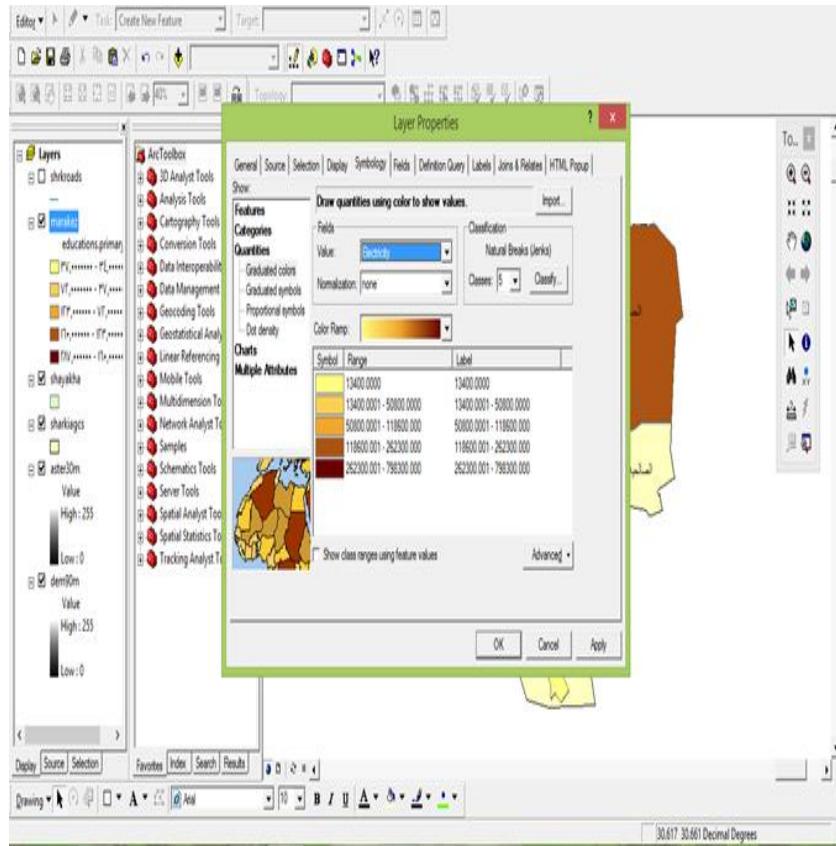


- ▶ Used join and relate to relate marakez to it's information additional relate shayakia to it's information :
 1. Right click(marakez)→join and relate→relate
Choose related field in both two layer



In this step we applying join

2. Right click(marakez , shyakha)→join and relate→ join

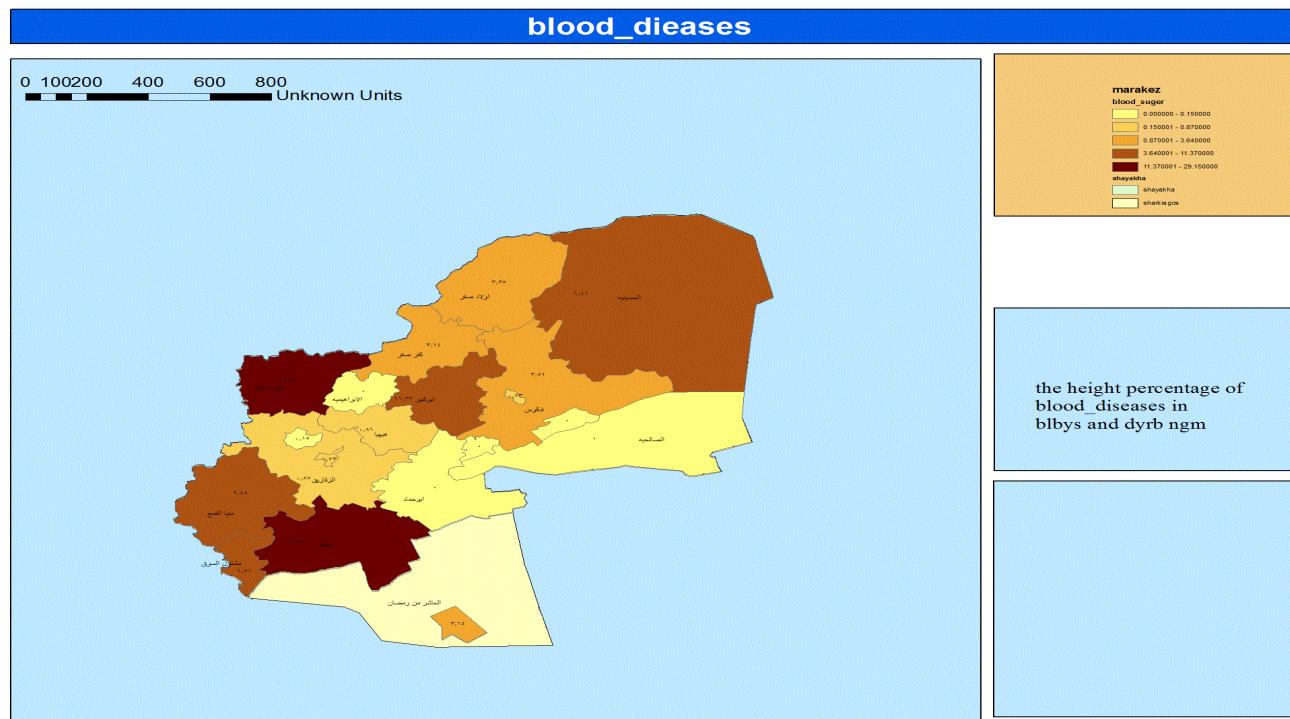


Pattern analysis

- ▶ *Identifying geographic patterns is important for understanding how geographic phenomena behave.*
- ▶ *Although you can get a sense of the overall pattern of features and their associated values by mapping them, calculating a statistic quantifies the pattern. That makes it easier to compare patterns for different distributions or for different time periods.*
- ▶ *We apply pattern analysis in our project to analysis data and get sense of features.*
- ▶ *We analysis the effective of the available services on diseases (blood diseases , heart , liver,.....,etc)*

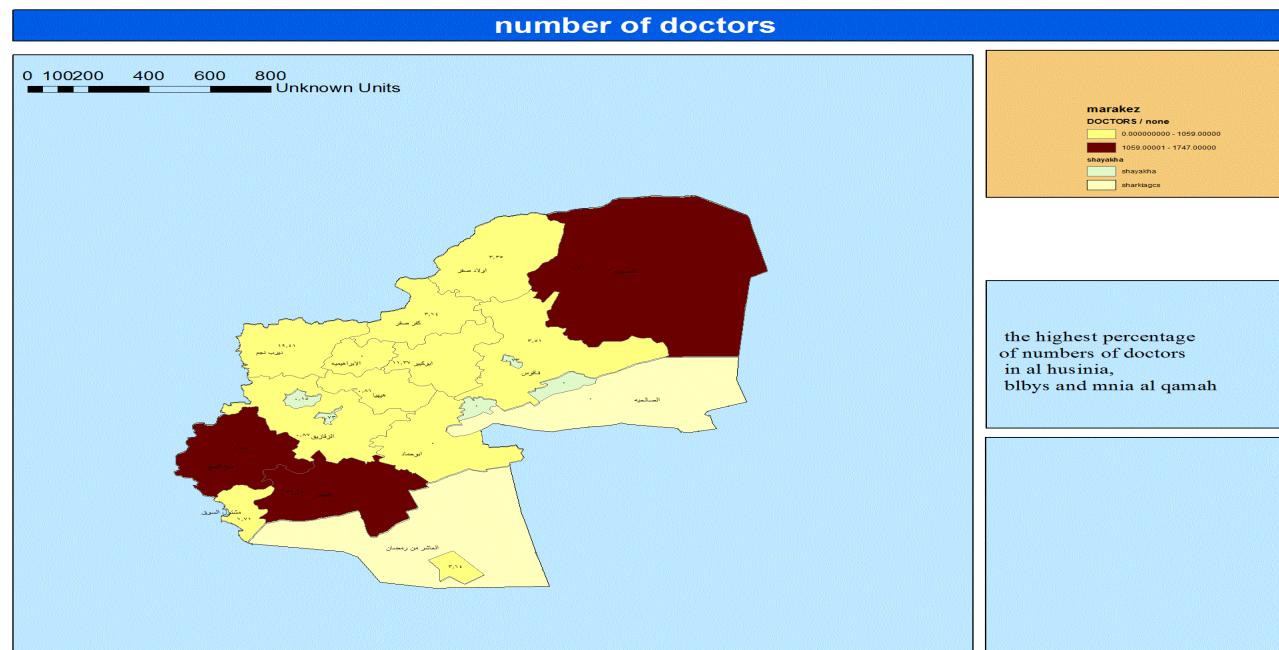
1. Blood diseases

- The highest percentage of this diseases in "markz mashtwl alswqe"

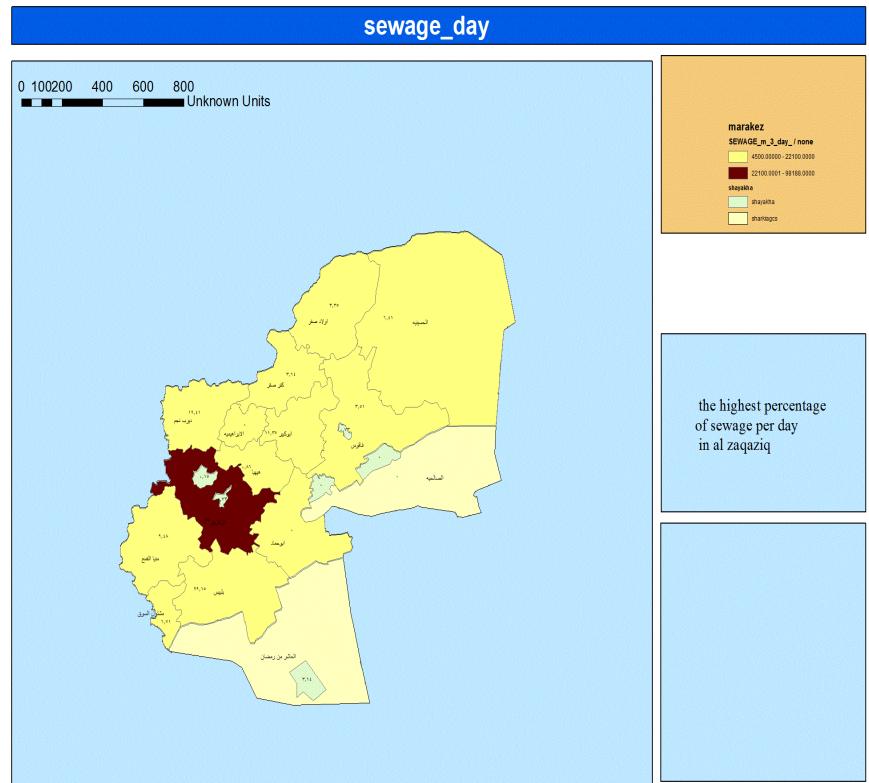
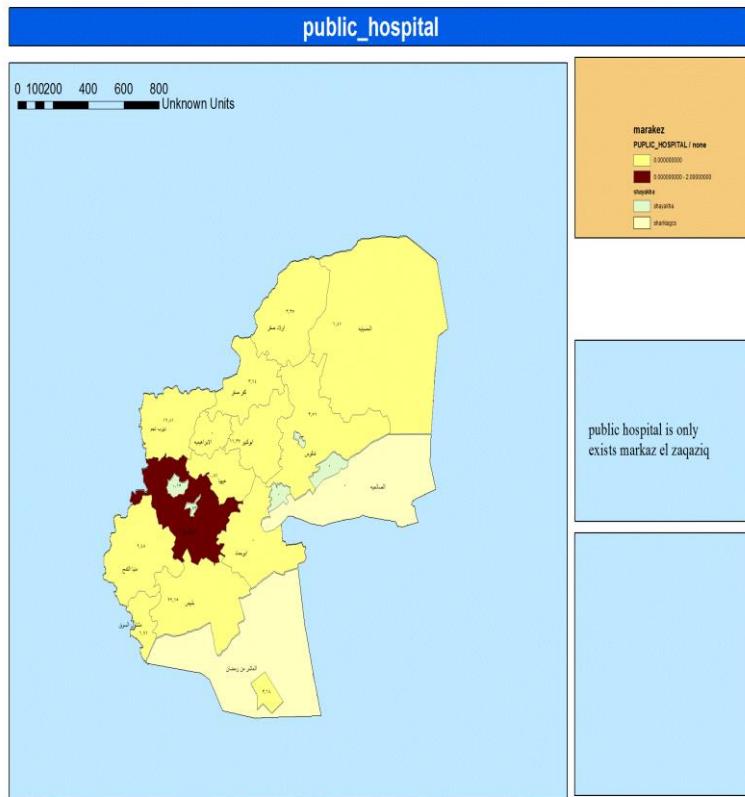


1. Blood diseases

- We observe there are lack of health services(public_hospital,private_hospital,.....,etc) in markaz mashtwl also. Also there are lack of sewage in markez mashtwl also.

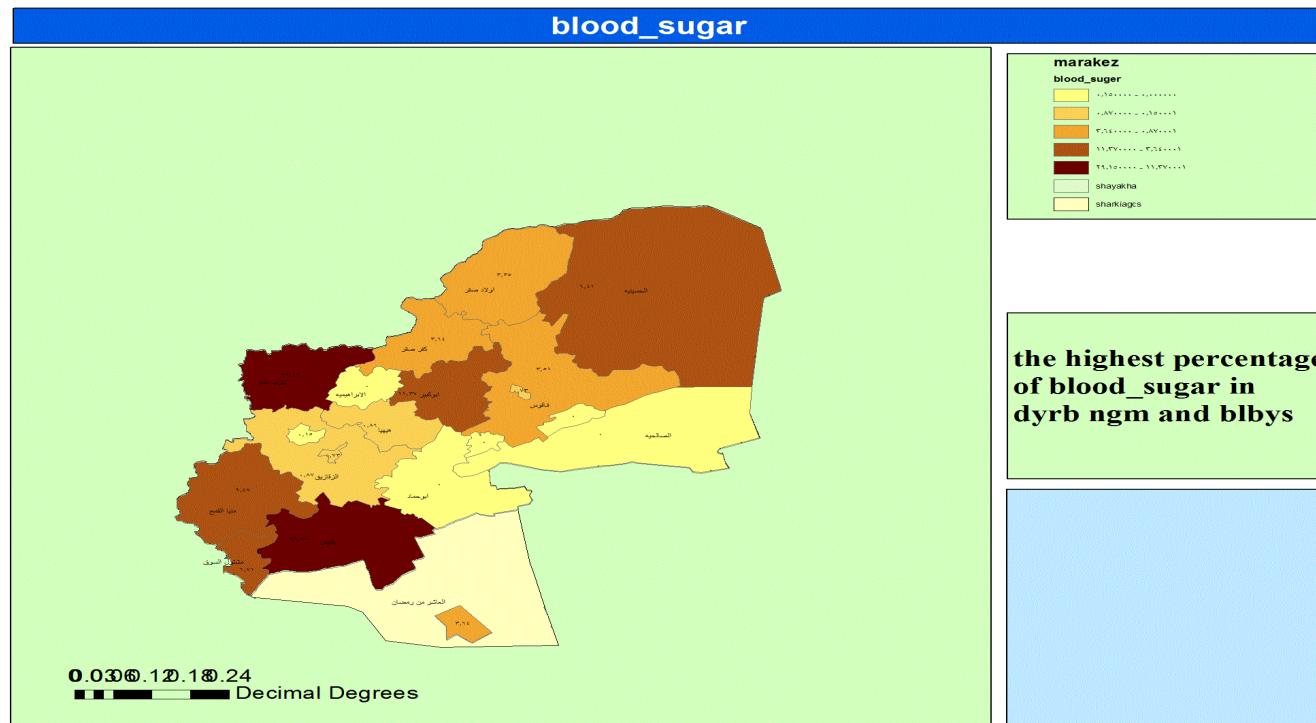


1. Blood diseases



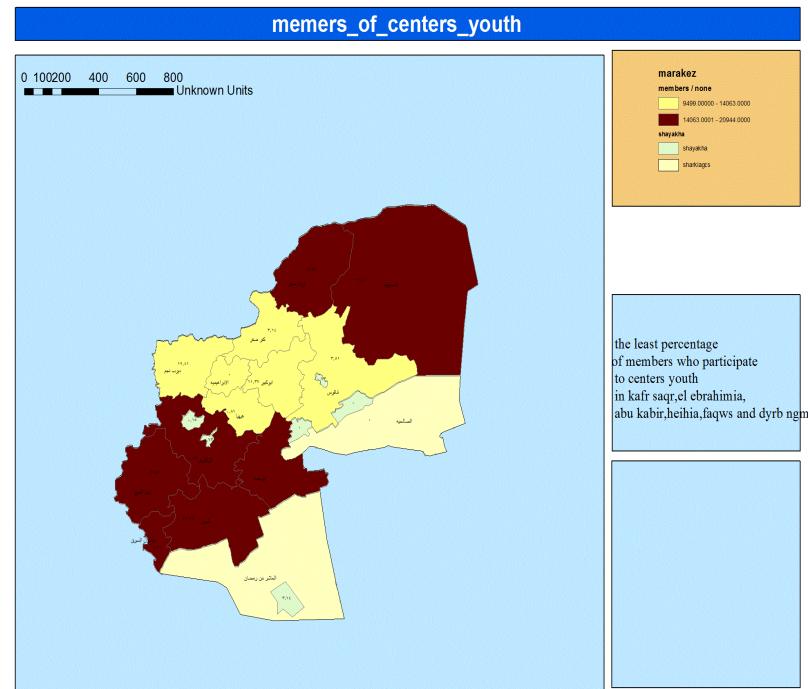
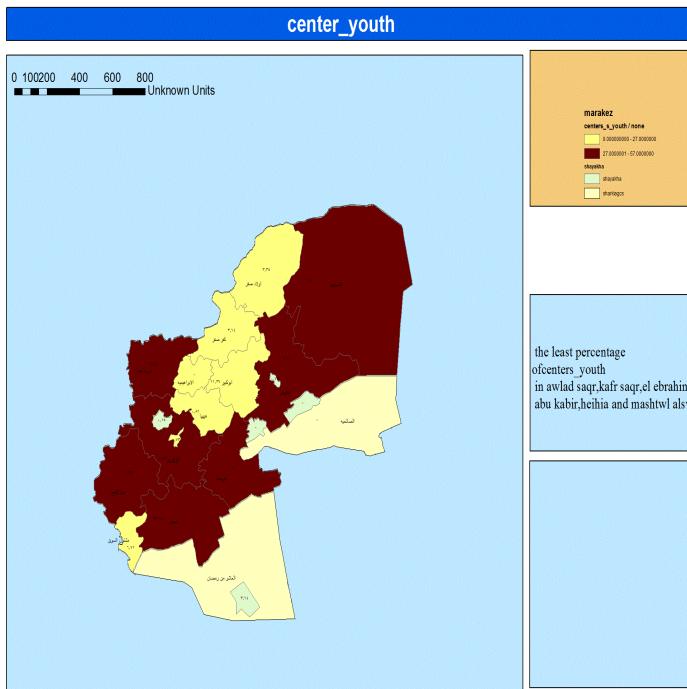
2. Blood_sugar disease

- The highest percentage of this diseases in "markz blbys and dyrb negm"



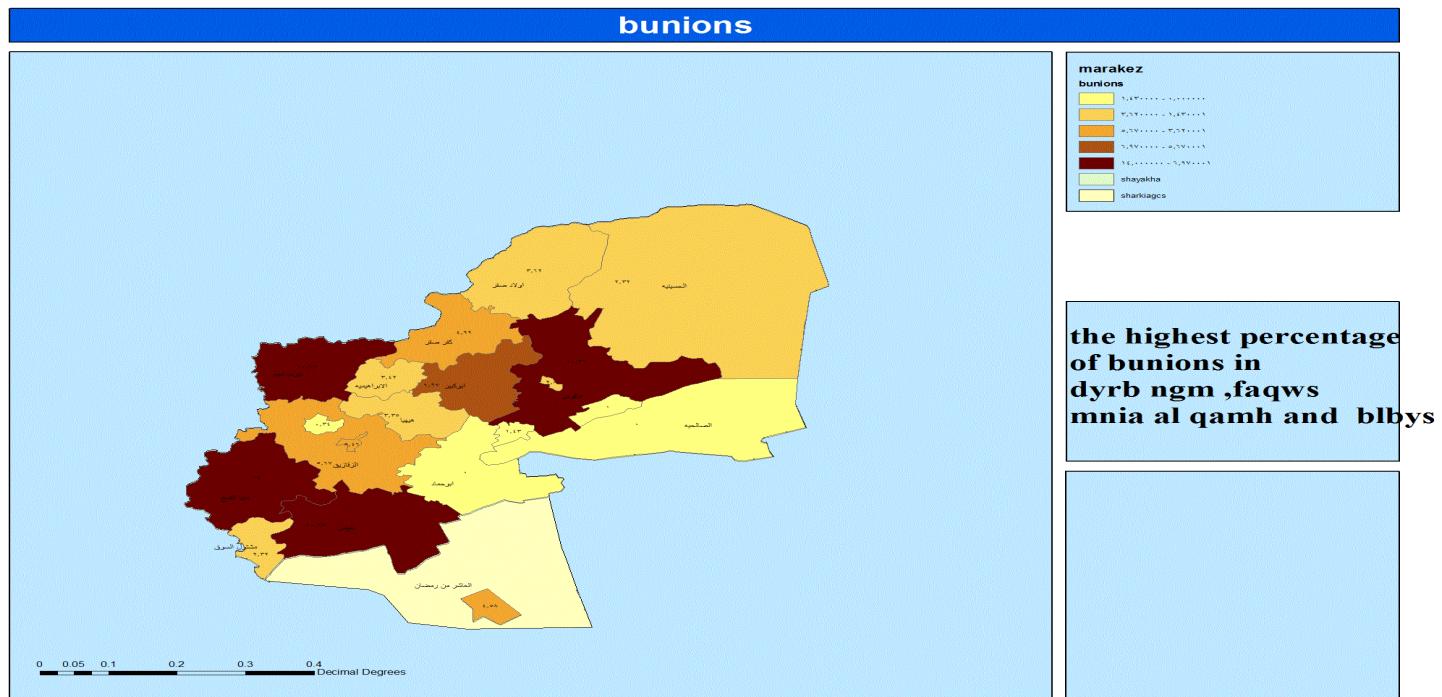
2. Blood_sugar disease

- We observe despite there are many of youth's centers, there are lake of members.



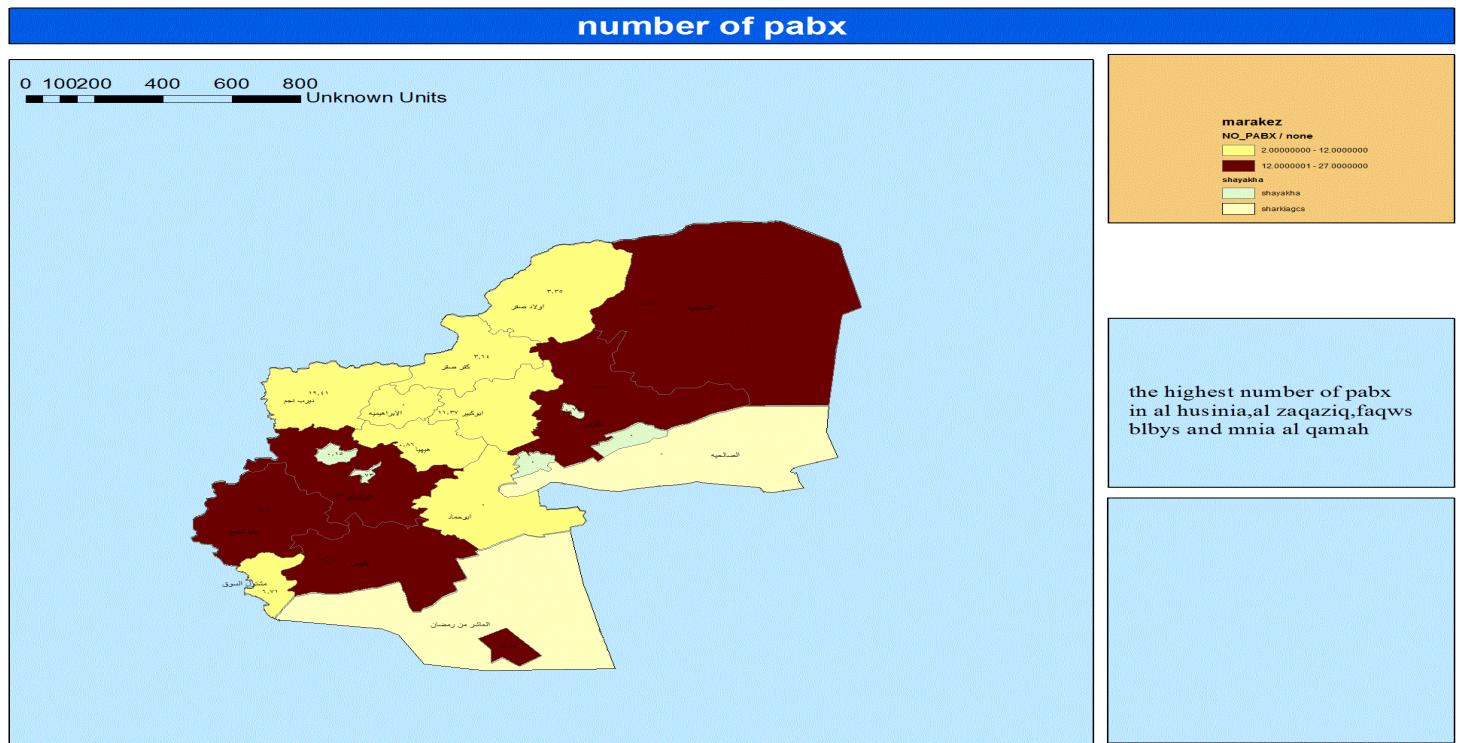
3. Bunions disease

- The highest percentage of this diseases in "markz blbys, faaqws, mnya elqamh, and dyrb ngm".



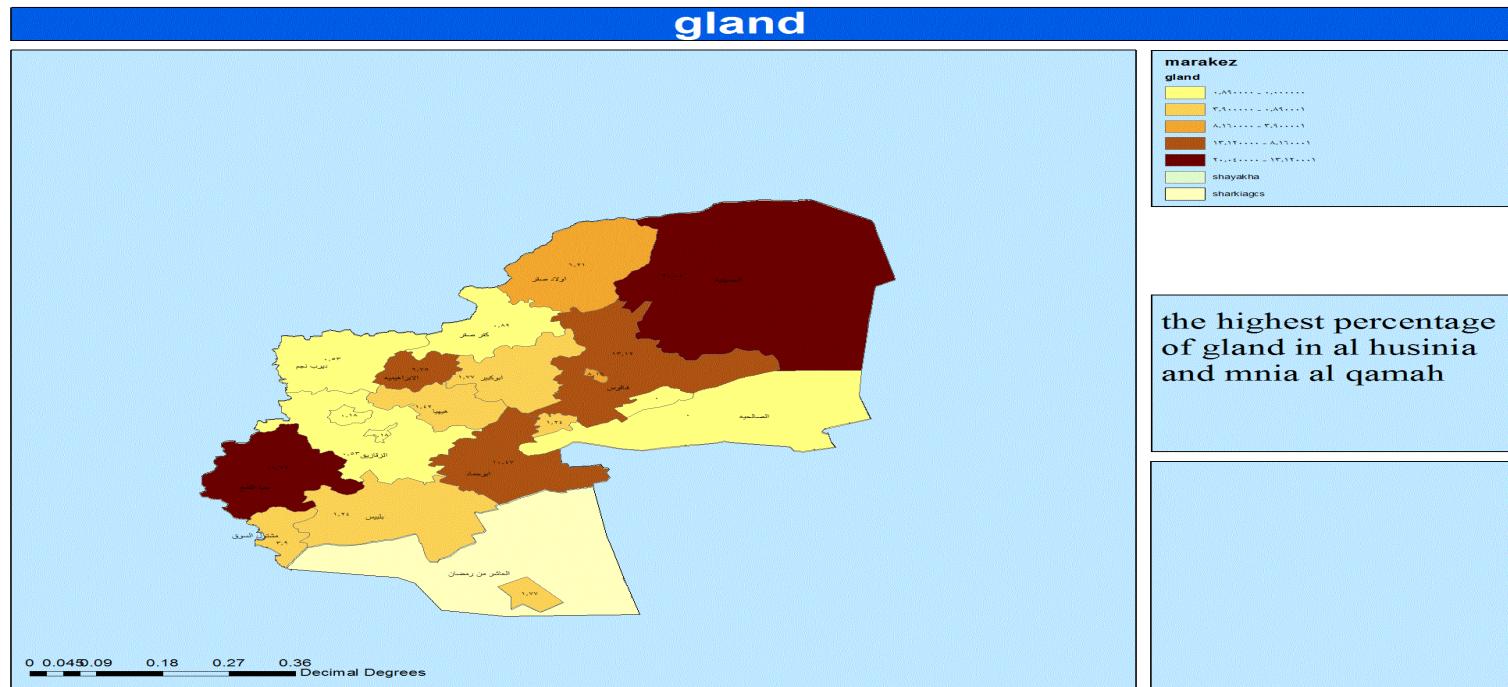
3. Bunions disease

- Increasing numbers of pabx lead to spread bunions disease



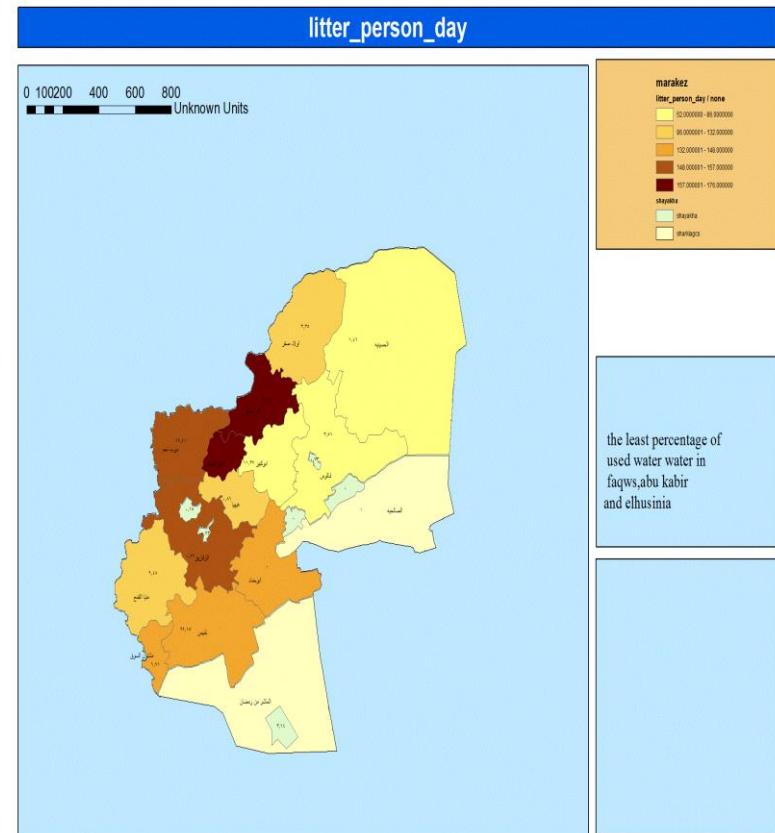
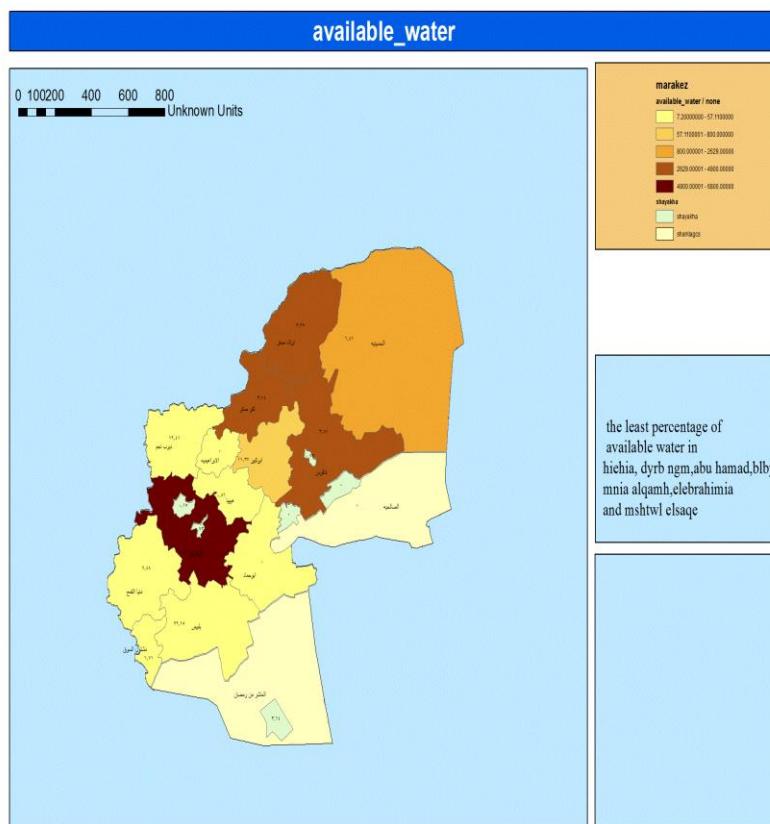
4. gland dieases

- The highest percentage of this diseases in "markz elhsinia,minia el amah"

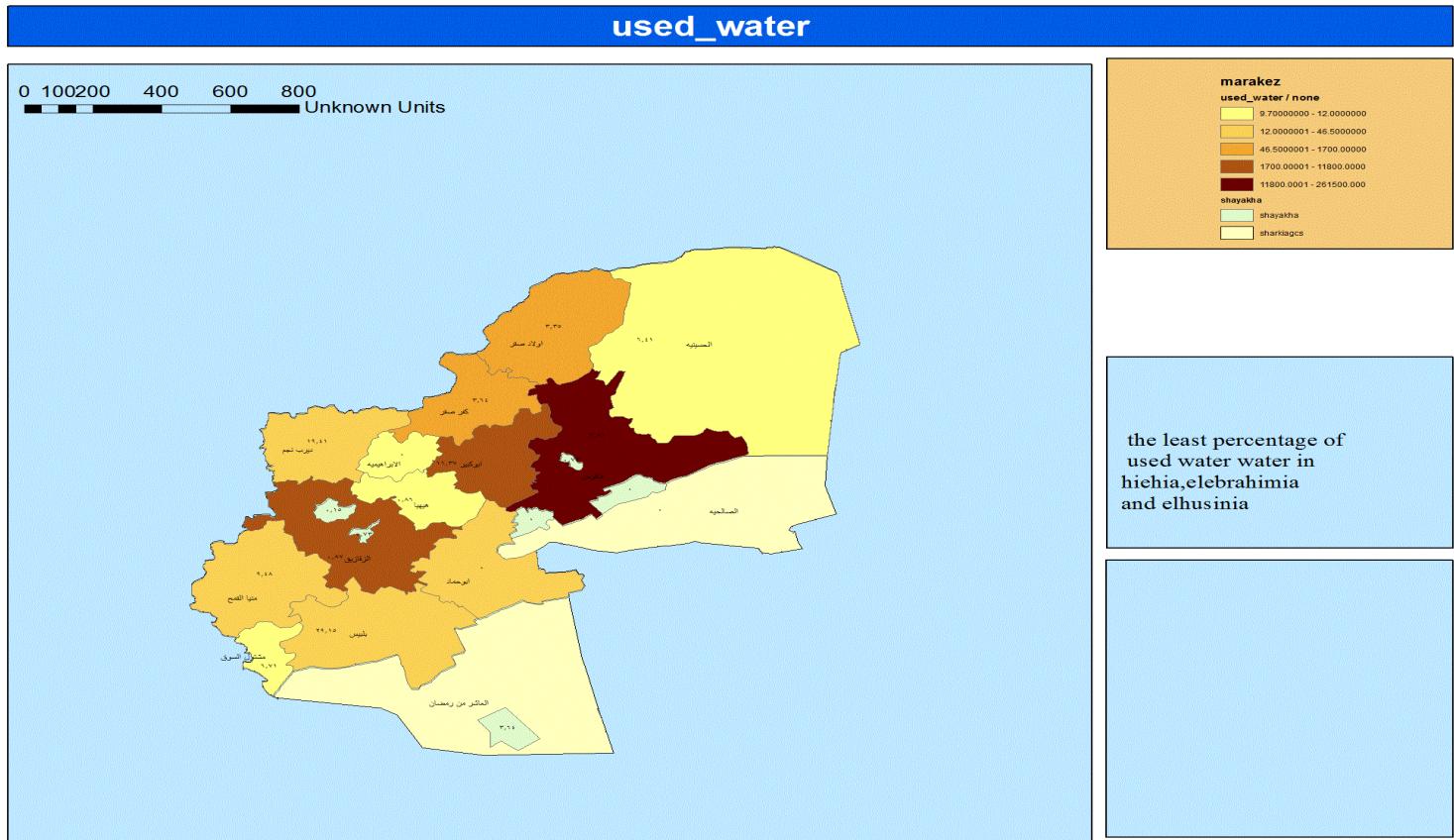


4. gland dieases

- Lacke of water_available ,used water,no of stations and litter _person_day lead to spread gland dieases.

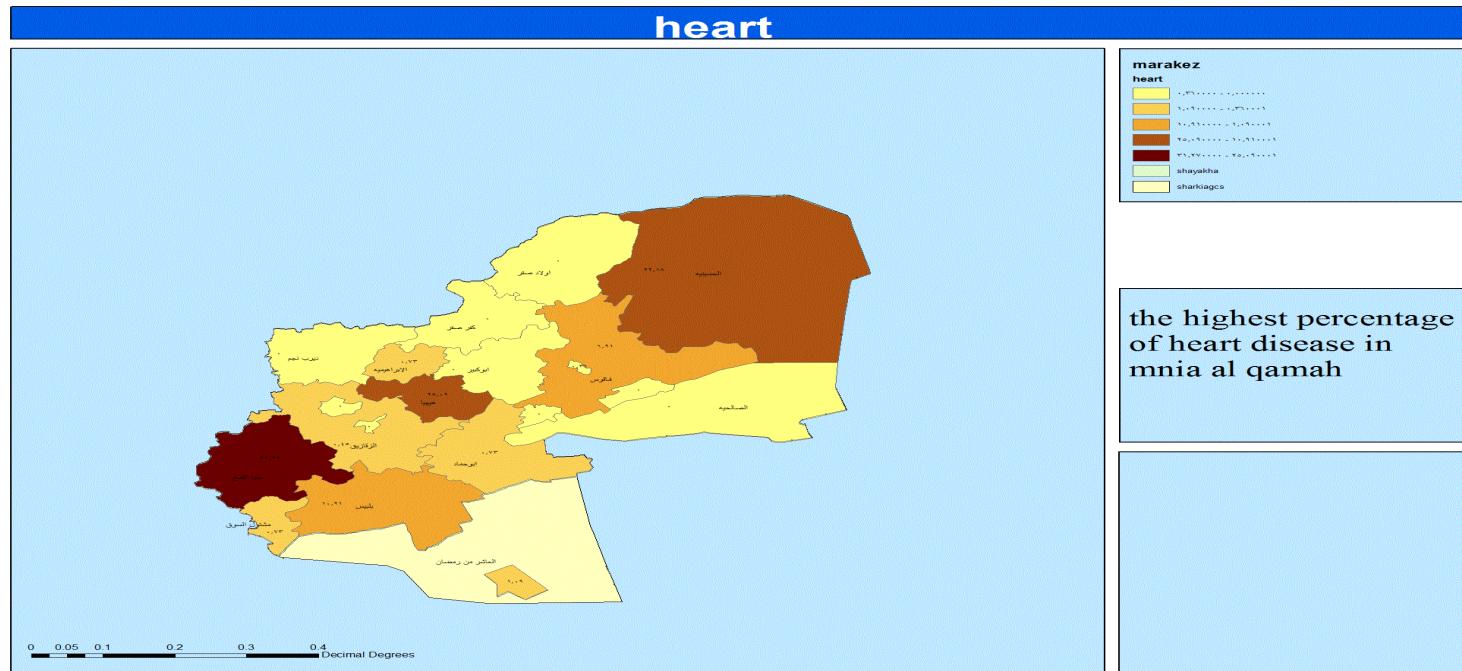


4. gland dieases



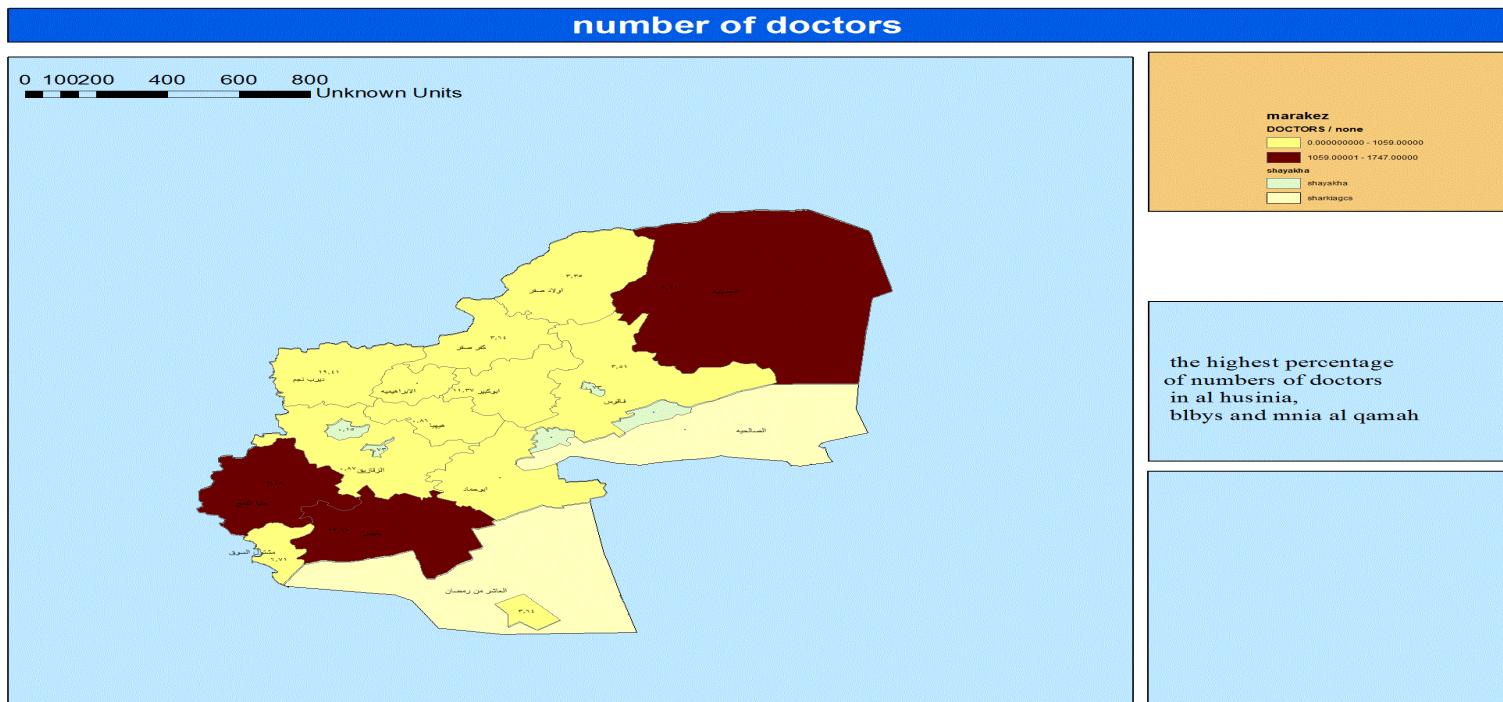
heart dieases

- The highest percentage of this diseases in "markz mania elqamah"



5. heart dieases

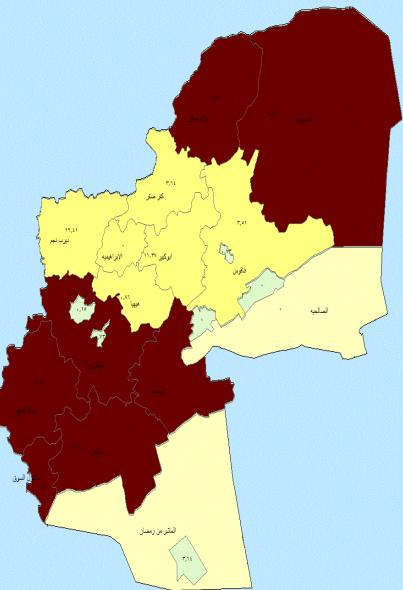
- We observe there are lack of health services(public_hospital,private_hospital,centrr`s youth,.....,etc) in markaz mynia el kamaha lead to spread heart dieases.



5. heart dieases

memers_of_centers_youth

0 100200 400 600 800 Unknown Units

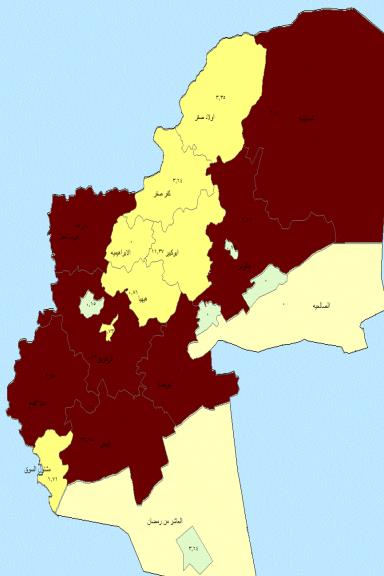


marakez
members / none
949 00000 - 14053 0000
14053 0001 - 20944 0000
shayakha
shayakha
shariaga

the least percentage
of members who participate
to centers youth
in kafr saqr,el ebrahima,
abu kabir,heihia,faqws and dyrb ngm

center_youth

0 100200 400 600 800 Unknown Units

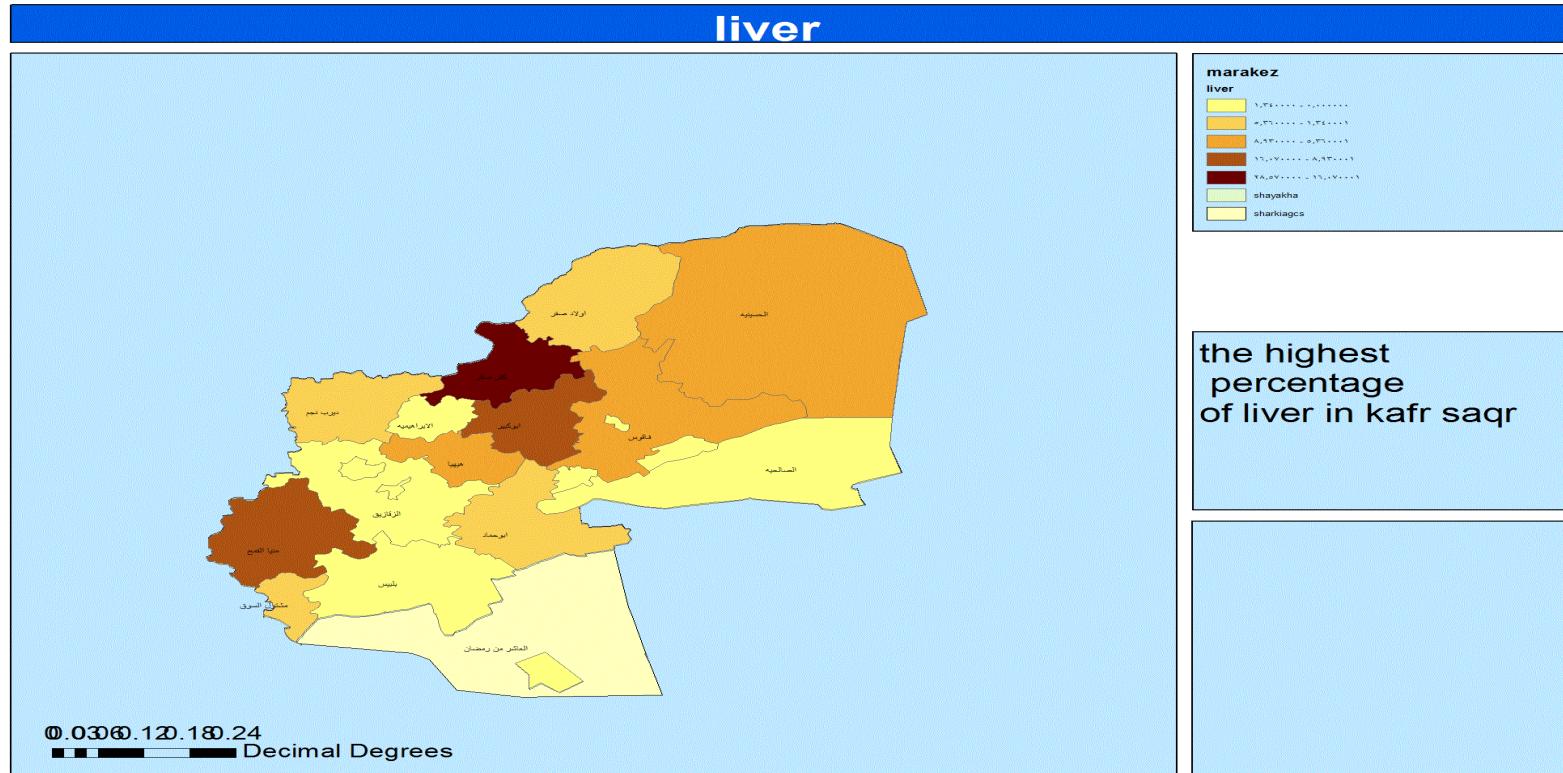


marakez
centers_youth / none
0 0000000 - 27 000000
27 0000001 - 57 000000
shayakha
shayakha
shariaga

the least percentage
of centers_youth
in awlad saqr,kafr saqr,el ebrahima,
abu kabir,heihia and mashtwl alsywq

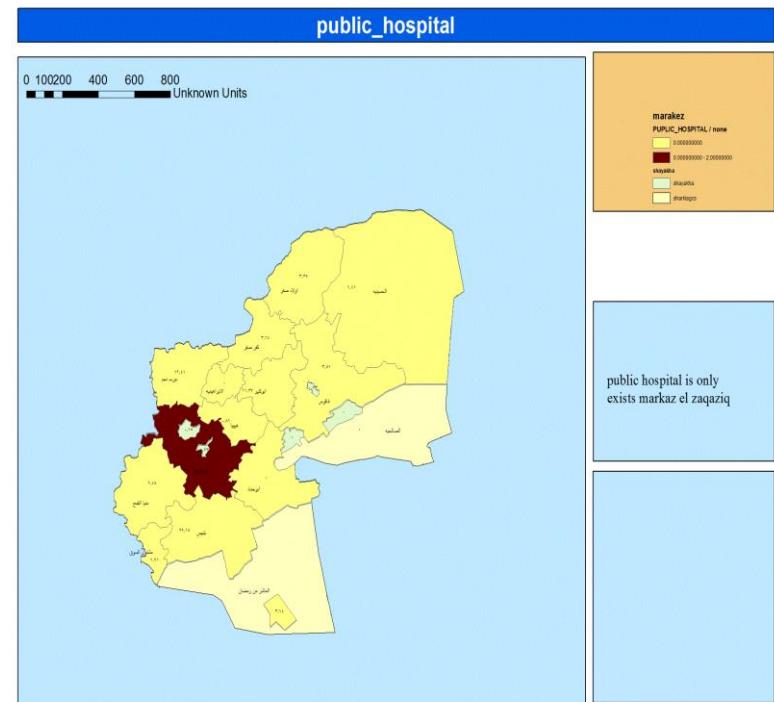
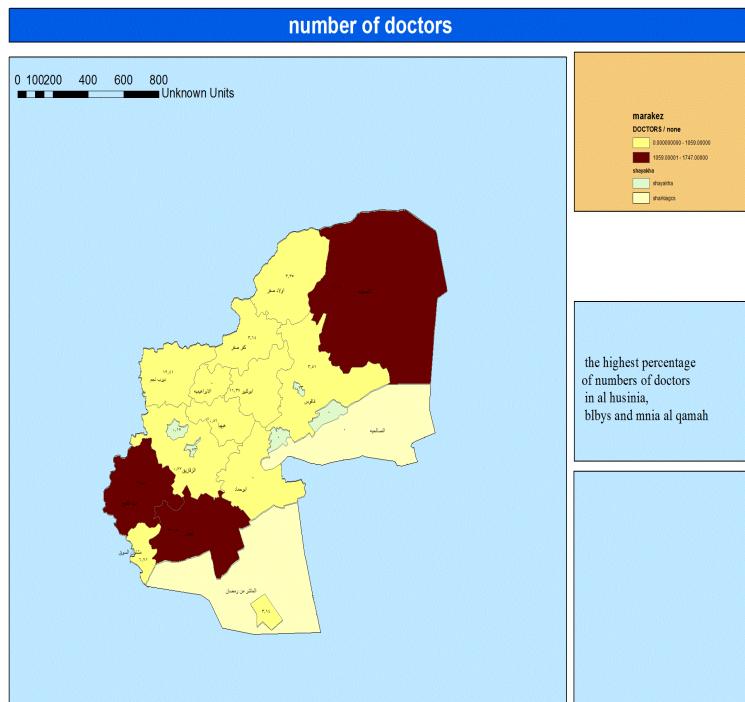
6. liver diseases

- The highest percentage of this diseases in "kafer saker"

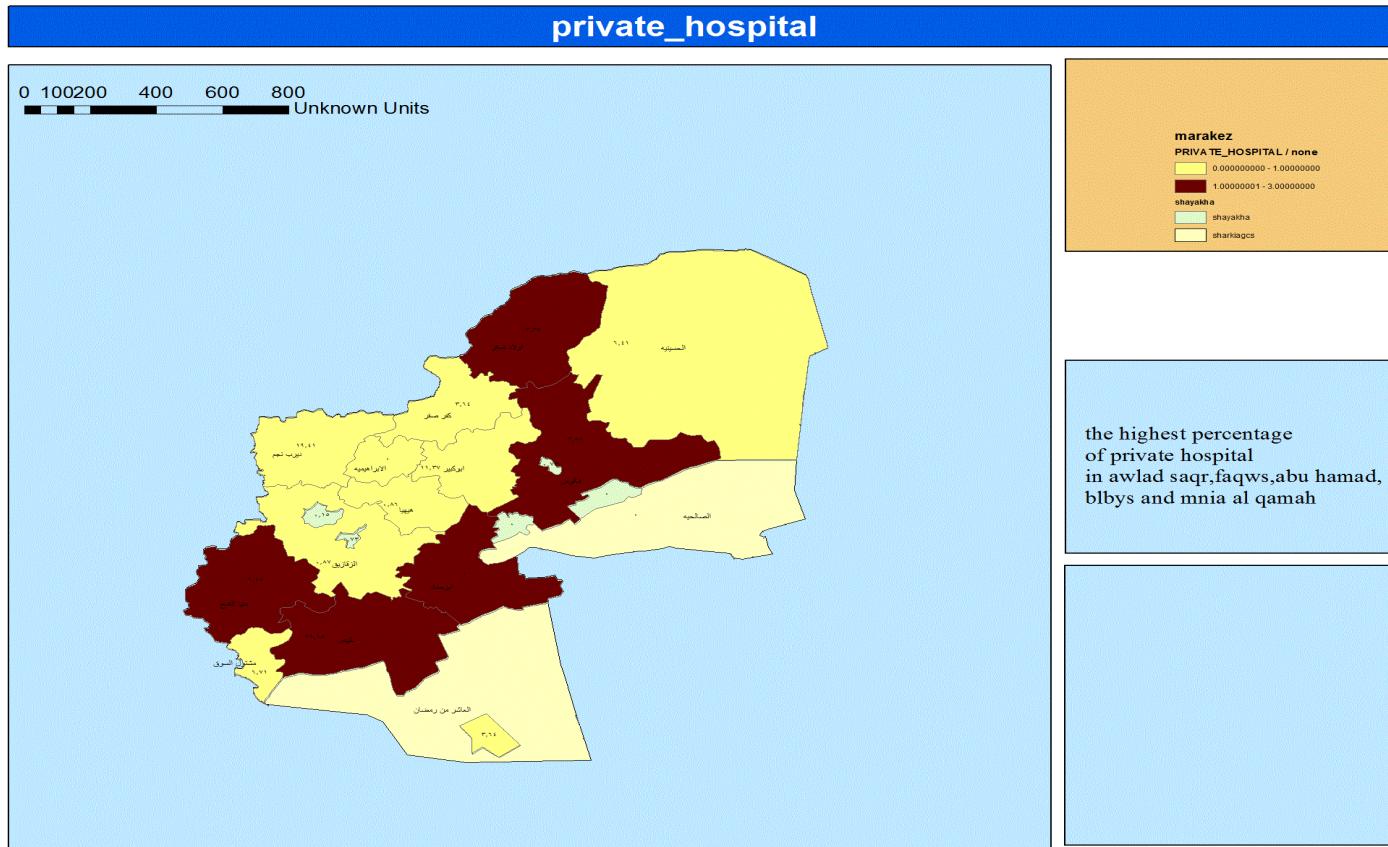


6. liver dieases

- We observe there are lake of health services(public_hospital,private_hospital,centrr`s youth,.....,etc) in markaz mynia el kamaha lead to spread heart dieases

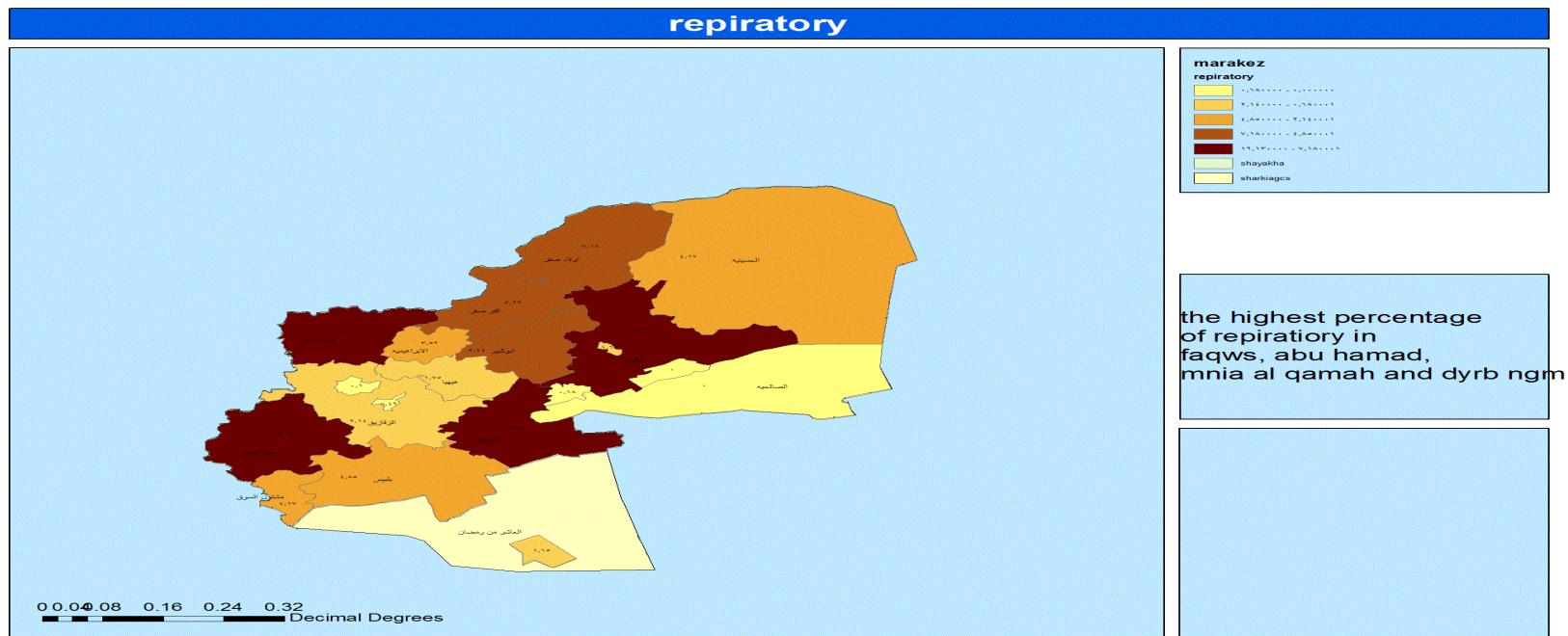


6. liver dieases



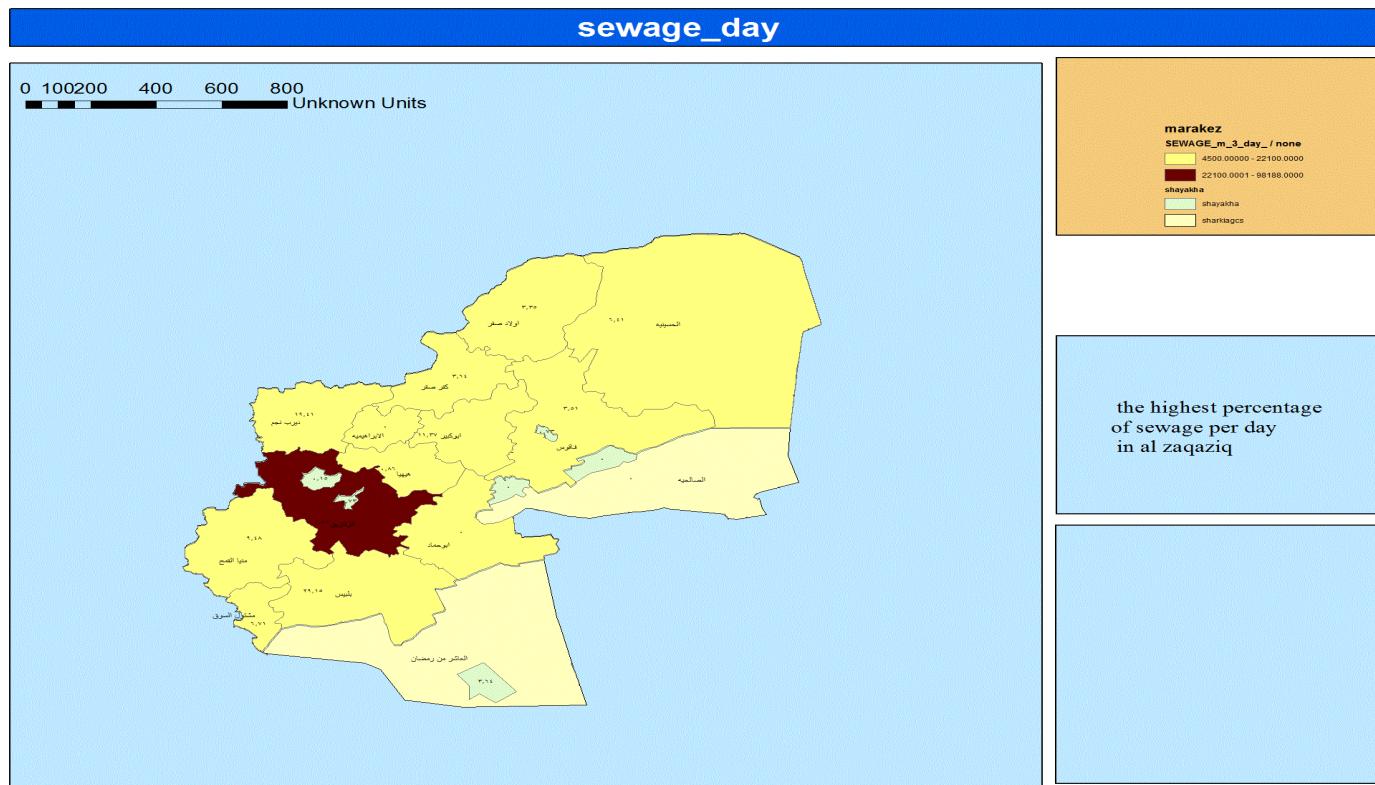
7. respiratory dieases

- The highest percentage of this diseases in marakez "mnya el kamah,diarb nigme.abou hamade,faques"



7. respiratory dieases

- We observe there are lack of sewage services in marakez "mnya el kamah,diarb nigme.abou hamade,faques".



special Thanks For :

Prof. Khalid Eldrandal

Eng. Nabil Moustafa

Eng. Safa El-said