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Research Article

Analysis of the spread of drug trafficking crime (crystal trade) in the Baghdad city for the period of 2020 using remote sensing techniques

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Abstract

The purpose of the research is to study the phenomenon of the increasing spread of the drug trade and its control in order to protect against its spread and increase its trade in Baghdad, through the use of remote sensing techniques and geographic information systems programs and measuring the extent of the development of this phenomenon to reduce and control it and predict its spatial spread within the geographical space and the city of Baghdad and the population density of the number of traffickers. In the case of weak measures to prevent and combat organized crime, and to produce maps of the distribution of this crime in order to limit its spread and take the necessary measures to control it, this issue has been addressed through GIS version 4.01, as one of the tools that helps decision makers to take appropriate decisions in the right time. The areas in which the activity of drug dealers will spread and according to the ratio between the numbers of drug dealers to the population of Baghdad, which is 8500 million, was reached. The highest value was from 119 to 202 in the areas of Dora, Bab Al-Sharqi, Bab Al-Muadham, Al-Shaab and Al-Husseiniya areas. As for the rest of the areas, they varied with less severity, ranging in value from 12.1 to 118. As for the ratio between the areas registered with the activity of drug dealers to the area of the city of Baghdad. Our study predicted the highest value from 13.46 to 23.07, the expected areas were Al-Sadr City, New Baghdad and Bab Al-Muadham, while the rest of the values ranged between 1.413 to 13.45, and they are subject to several factors for reasons of spread or not according to the programs set to reduce drug trafficking.

Keywords Crystal drug trade, Geographic locations of gangs, Remote sensing techniques, Geographic information system, Prediction maps

Introduction

Iraq, like most countries of the world, has become a popular market for the spread, trafficking and consumption of drugs, including crystal. Although these drugs are illegal worldwide, it is difficult for the authorities in Baghdad to thwart their popularity for many reasons and factors. The seriousness of the spread of drugs is related to the escalation of crimes in societies, as a study stated that due to the high prices of addictive drugs (heroin and cocaine), responsible for the vast majority of crimes, including 70-80% of thefts and 85% of shoplifting, 54% from thefts. It concluded that losses from these crimes were estimated at 16 billion pounds annually in

the United Kingdom (Traci, 2010 ;Transform". TDPF, 2011). Drug trafficking, including the crystal trade, has become a project that generates large sums of money for its promoters, with little trouble, except for some of the intelligence and tricks that the leader of the group of promoters enjoys in the regions, including the use of high technologies, where the promoting gangs with smugglers use technology to track their goods and communications among them to sell their products and movements and launch Their warnings and so on, so that one of the disadvantages of modern technologies is that they are exploited by these gangs spread throughout the world in which this technology is located.

It was necessary for law enforcement agencies to master these modern technologies, first and foremost, and design to fight smugglers and drug trafficking, arrest them and investigate to extract information that is of great benefit to the future and protection of individuals and society, and most importantly, knowledge and follow-up of their innovative methods. Law enforcement, if its work is monotonous and routine, as well as always exploiting people who have capabilities in technological intelligence and harnessing them more than the state with routine work in discovering the dangers of these intelligent people.

Through the Internet, drugs were increasingly traded on an accessible network that in markets was called the dark web. The Silk Road platform provided goods and services to 100,000 buyers before it closed in October 2013. This prompted the creation of new platforms such as Silk Road 2.0, which were also closed (Mulvey, 2020; Justin, 2011; Rita (2017).

Law enforcement agencies can make the most of information and evidence and categorize them in databases circulating among themselves to gain and exploit the time factor, but the problem lies in preparing cadres to analyze these data that concern all aspects of drug trafficking cases, so it was necessary for these agencies to follow up on the advanced developments in the rapid information technology including smart software in analysis that helps in sorting, analyzing and distributing information to the authorities, each with its competence. If these agencies do not keep pace with development and progress and follow up on issues quickly, complete paralysis will affect their work and setback for society (Fouad, 2012).

This will help advance investigations, confront gangs with unquestionable scientific evidence, establish local and foreign relations, and strengthen the exchange and disaggregation of data that will contribute to curbing drug trafficking, law enforcement, and achieving justice (Fouad, 2015; Saleh (2013).

Remote sensing is an art and a science depends on energies emitted from objects in the form of wavelengths to pick up and portable camera lenses on aircraft or satellite, and the multiple applications of these techniques, which provided by the legitimate and less effort, including spatial accuracy to install juveniles. The GPS event is placed in space deployed in space for the purpose of addressing these events visible, and there is good flexibility to read ground measurements in several universal offices (Fouad and Zina, 2020).

The Geographic Information System (GIS) is a smart program set on the computer that has been harnessed for storage, data management and utilization of these data, which is in the form of schedules or databases to take advantage of these data and related to the event sites and the descriptive information to extract relationships and phenomena reflecting the interest of data for mapping Analyze events feature on Earth, assist

individuals, organizations and law enforcement agencies to reduce the spread of drug trafficking (Fouad, 2017).

The aim of research to build a model for building a geographical database for the locations of drug dealers in Baghdad that works as a data bank for any inquiry, using remote sensing techniques and geographic information systems as a tool in protection and security control, prediction analysis and map production of the spread of this phenomenon in relation to the population density and the area of the study area, which is the city of Baghdad.

The study area

The city of Baghdad, the administrative and political capital of Iraq, is located in the center of Iraq, a city that represents a center of overcrowding and human activity. Baghdad, which is the administrative and economic capital of Iraq and is considered the center of commercial, cultural and population gravity, is located at the geographical position between latitude and longitude, from the top left. ($43\ 50.06^\circ \rightarrow 33\ 45.68^\circ$) min degrees and from the bottom right ($44\ 57.23^\circ \rightarrow 32\ 48.59^\circ$) min. The Universal Transverse Mercator (UTM) planar metric projection is from the top left (391695.26 3736045.936) and bottom right (495676.664 362683.223) meters with an area of 927.61 km². The highest altitude in the north of Baghdad is 48 meters above sea level, and in the south is 23 meters above sea level, as shown in Figure 1 (Saleh and Fouad, 2013; Jasim and Mashee, 2020).

General description and demographic of the study area

Administratively, the city of Baghdad, divided into 12 districts and 31 sub-districts, most of the residential activities are concentrated in the center of Baghdad, and it is surrounded on all four sides by most agricultural areas and factories, and surrounded by three rivers, two main rivers: the Diyala River in the eastern side and the Tigris River in the center of Baghdad The Euphrates River occupies part of the eastern side (Fouad, 2020). Most of the seasons are wet and dry, with four months of intense heat, which is summer and the climate is relatively dry. In general, the city's climate varies throughout the year. It is covered with orchards, farms, natural plants and artificial lakes for fish farming. A network of international highways covers central Baghdad and the western end, and main and secondary roads cover most of the city of Baghdad, which facilitates movement and movement easily and gives alternative options for transportation and prevarication to avoid the regulatory and executive authorities' pursuit of smuggling and drug trafficking networks (Taif et al., 2020; Ali and Fouad (2020). The study is dominated by the character of popular housing due to the increasing number of residents in the same areas due to the splitting of families, so the house is divided into several small secondary houses due to the stagnation of development in the city of Baghdad, except for areas that are almost small in which the level of construction in large areas, but it does not change anything from reality due to also the division of families and the division of homes To

secondary houses, either vertical or block construction is almost negligible, except for an area (called Basmaya) located

in the southwest of Baghdad designated for vertical construction, and it is young and unfinished.

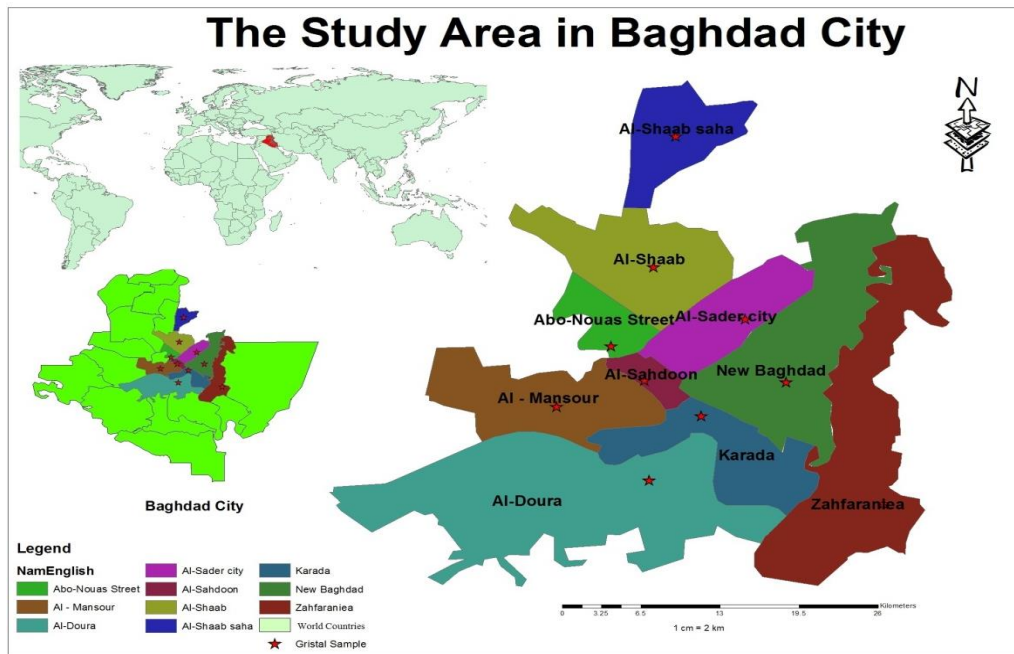


Fig.1 Represents the study area located in the center and west of the city of Baghdad, which is in green and is the administrative and economic capital of Iraq, which is in the middle of the world map in red

Methodology and Material

Data acquisition

Data obtained from the Directorate of Anti-Crime Organized by the Interior Ministry's intelligence agency in the fourth month of 2021, and the datas for 2020, which represent the revealing of ten drug traffickers, specifically a desired crystal

grain material in society, and this number is officially registered from a total of 4000 The crime belonging to drug trade (including all kinds of drugs), and this number of traders was held in a number of neighborhoods of Baghdad and its number of neighborhoods, which were identified as the location of the GPS land positioning system by the Directorate of Combating Crime, to help us To analyze the impact of crime in the city and the population, as in Table 1.

Table 1. The number of gangs arrested in drugs (crystal grains) is officially registered in the Interior Ministry departments of the city of Baghdad for 2020

No	Latitude	Longitude	Type of Crime	Address	Number of accused	Place of Crime
1	44.4062	33.4303	Crystal drug trade	Al-Shaab	3	Baghdad
2	44.4029	33.2505	Crystal drug trade	Al-Doura	4	Baghdad
3	44.5765	33.2309	Crystal drug trade	Zahfarania	3	Baghdad
4	44.44156	33.30468	Crystal drug trade	Karada	2	Baghdad
5	44.47392	33.38654	Crystal drug trade	Al-Sader city	5	Baghdad
6	44.3346	33.3127	Crystal drug trade	Al-Mansour	1	Baghdad
7	44.37493	33.36369	Crystal drug trade	Abo-Nouas Street	4	Baghdad
8	44.42252	33.54073	Crystal drug trade	Al-Shaab saha	2	Baghdad
9	44.50437	33.33324	Crystal drug trade	New Baghdad	1	Baghdad
10	44.3995	33.3345	Crystal drug trade	Al-Sahdoon	2	Baghdad

Addiction types

Studies have identified two types of addiction (Mara, 2018)

1. Addiction materials or drugs

2. Conduct addiction

The addiction of narcotic substances or addiction to illegal drugs, is a complex psychological disorder of repeated desire for drug or alcohol abuse due to many factors. Despite the

harmful consequences of the individual, which may lead to a clear dysfunction in the daily duties, which include: health deterioration, social relations disorder, and loss of work, it should be noted that this type of addiction is developing over time, and needs treatment before Specialists (Zhiling et al., 2017; Caron (2021). Here are some of the most prominent examples of materials that cause addiction.

Marijuana and champions, anonymous analgesics, medical drugs, steroids such as; Metamvitamine and cocaine (Mayo, 2017), and tobacco products, alcohol, incidental solvents and volatile materials such as; Petroleum derivatives, fuel or gum.

Behavioral addiction: is a severe individual desire and adopting a set of unrepresented behaviors. It is the same symptoms of addiction, but without the abuse of certain materials, an individual or collective behavior providing some comfortable and seductive emotions, sometimes orgasm and joy by the group or individual, interfering with the habits on which the victim is due to many factors (Grant et al., 2010).

Addiction can include addiction behavior on any of the following (Crystal Raypole, 2021).

Gambling, eat the food, doing exercise, Watch tv, Sex, Social networking sites like; FB, Work for physical fatigue that affects family, relationships and social life, Shopping that lifts to the level of buying things that one does not need, usually follows by guilt, shame and despair, the Internet, both on mobile or computer monitors, watches in the Internet browsing and exercise games with neglect other aspects of life (Kuss, 2013).

Drugs

Licensed and prohibited drugs are defined as drugs that are obtained irresponsibly and far from medical advice, whether treatment or discontinuation of treatment. And their frequent circulation among members of society and far from state control, they are called street drugs. The abuse of these drugs has serious health complications for their users after the passage of time, especially among young people. There are several types of these drugs that go beyond being drugs for satisfactory treatments, where it is known as addiction, through the abnormal behavior of users. Drugs, such as persistent psychological and mental disorder, and they always form groups and use the same drug, so we see every region in which a certain type of drug or drug is spread, and it is difficult for society to prevent the use of these drugs by young people despite the anomalies in behavior, health complications and problems that cause society and that are related to Abnormal behavior as a result of disruption of the nervous system in the brain. It is the main reason for attention as a result of social problems, including (violence, rape, unjustified attacks, the spread of diseases as a result of neglect, murders and injuries, rape, and car accidents, unnatural deaths, homicides, the spread of the phenomenon of suicide easily and societal addiction), for this reason I

focused Societies escalate the phenomenon of drug addiction. (Blum et al., 2012). Therefore, the increase in criminal offenses is linked to the increase in drug abuse, which has become the greatest danger to societies.

The main motive for drug use

Most of the drugs are pain relievers for some mental and nervous diseases, anxiety, fear and lethargy, so accustoming the patient for a long time to these drugs makes him stick to them and increases his sense of the urgent need for them, as without them he will also feel anxiety, straying and pain. Which causes more quickly than others, and the crystal medicine that makes a person vigil, as happened to the Japanese pilots in their repeated attacks on distant American bases, which require vigilance and activity. And some of these drugs make the user in a state of euphoria and victory over fear, including sexual orgasm that requires courage and steps outside his usual psychological behavior in his community, and some of the user just feels content and psychological calm and stillness to sleep after feeling tired or fear and anxiety, Over time, the user feels the difficulty in not being able to quit these drugs, which is called addiction, and over time, he makes him in a state of fear of physical or psychological illness, or for his sake, he took the drug, and each according to the type of drug he uses, and as we mentioned, societies specialize in fixed types of these drugs (Rinde, 2018).

What is Crystal Drug

It is part of the amphetamine family. It is a stimulant, its action is fast and its effect is strong. Low doses of crystal lead to an increase in alertness, alertness and abnormal activity to overcome lethargy and fatigue. This means that high doses cause a supernatural state and lead to high positive and negative emotions that are accompanied by euphoria and high abilities, and this is the reason why a person is a prisoner of crystal pills and addicted to it without consulting specialists. Any wrong use causes addiction and loss. It is called among addicted circles, the professional killer or the spirit of the devil or the curse of life Crystal meth was named after its resemblance to crystal beads, broken pieces of ice, or crushed glazed glass. It is called Shabo, which is a common term in drug markets and among addicts, and the first circulation of this term Shabo on crystal meth are residents of East Asian countries, who are skilled in the Shabo industry, which Southeast Asian countries are the first home in the spread of crystal meth or Shabo As a drug promoted among societies and causes addiction (Yu et al., 2015).

The spread of drugs in Iraq

The spread of drugs in Iraq increased after the lifting of restrictions and harsh provisions after the occupation of Iraq in 2003 and the application of federal and plural democratic rule and the application of human rights laws, which made

society misunderstand these new provisions on it, after psychological and physical suffering and persecution from the previous ruling regimes and before this date as well. Where Iraq was an easy passage for these drugs to neighboring countries and in coordination with the leaders of the ruling regime with the tightening of measures on the people, which generated a feeling of persecution as a result of harsh sentences, which claimed the lives of dozens of drug users and promoters of these drugs, even the governments of neighboring countries were treating Iraqis harshly, up to The degree of execution as in the Kingdom of Saudi Arabia. Most of this trade was carried out through southern and northern Iraq due to the ease of its sea and mountain corridors, but after 2003, trade began to take place in all parts of Iraq due to the spread of transportation routes and the weakness of the regulatory agencies with the increasing influence of families and clans in the regions. Crystal is the most common property in Iraq now, especially the city of Baghdad due to the population density and the transportation node between the north and south, east and west. It is an addictive substance that is used two or three times. It is characterized by its small size, cheap price and ease of concealment, and its great spread began after 2013 in conjunction with the emergence of extremist Islamic organizations, including the terrorist organization ISIS, for psychological reasons and the suicide bomber's feeling of euphoria and greatness and appearing as the only hero and to be vigilant to overcome lethargy The security services also recorded a large number of robberies, armed robberies, extortion, kidnappings and drug smuggling during this period, as these departments recorded about 4000 users, dealers and promoters of this substance (Nesif et al., 2014; Adnan, 2020; Alissa, 2019; Bel 2021).

GIS and crime analysis

The GIS software group has played an important and essential role in controlling all community organized crimes, if it is better to deal with and tabulate the data and locate locations with extreme accuracy using the GPS software to form a basic base for spatial information with tabulating of metadata and to facilitate its management and dealing with these Data easily to form a primary key for the circulation and analysis of data, to become an ideal approach and a great opportunity to use analytical tools to elicit and basic information that helps us understand any event that negatively poses a problem to society while developing appropriate solutions and recommendations to be an ideal working approach for the supervisory and executive bodies of the crime control agency through the appropriate outputs that They are visual or paper maps or reports that help decision makers to issue appropriate plans and instructions for crime study and analysis departments (Fouad and Zina, 2017; Fouad et al., 2020 ; Mazin et al., 2020).

combating and controlling organized crime (Ratcliffe, 2014; Roncek and Maier, 1991; Hyman et al., 2006).

Law enforcement departments in all countries of the world have adopted maps as a deductive approach in operating rooms to be a visual alternative to the fallen and proven data related to any organized crime, so the maps became a key to explaining many points that were not visible and scattered at first glance helped in controlling crime sites and their inputs and outputs and follow-up perpetrators. Because the movement of gang members is always wide and fast at the various entrances to the city, and they are the most capable of maneuvering, hiding and tuning. Without accurate maps, it becomes difficult and impossible to control (Muaid and Fouad, 2021; Jeremy, 1999).

The importance of GIS in reducing crime

1. The mechanism of action of the system depends mainly on the location of the place of the crime or event. The relationship between the place and crime is an important and basic relationship with the collection of descriptive information about the crime and the location of the crime.
2. Relying on servers to store the vast amount of information stored and supplied by the rest of the state's departments, and it initiates mandatory laws, in return, the sub-departments benefit from using the stored data according to a mechanism of powers.
3. Preparing capable and competent cadres in dealing with data and quickly and preparing outputs and recommendations in central and sub-units in analyzing crime data, including security statistics analyst, data tabulation, GIS analyst, crime prevention experts and forensic experts.
4. Develop a mechanism to benefit from this system and involve all crime prevention units such as police stations, civil defense, criminal registration offices, statistics and documentation offices, forensic evidence offices, and higher control bodies with law enforcement agencies, including emergency forces, secret agencies, and a network of collaborators.
5. Establishing a mechanism for regional and international cooperation, monitoring and limiting joint crimes, exchanging data and maps that organize the most important landmarks and elements of the map, so that dealing with them is easy and fast.
6. Paying attention and focusing on these technologies, including remote sensing, preparing cadres and centers that take upon themselves the training of efficient cadres capable of easy and flexible handling of data, storing and transmitting them, and translating and preparing developments. Because most countries of the world preceded us in this regard and made an effort four decades ago with successful applications and amazing results that cannot be neglected. Security cannot continue without the use and knowledge of modern technologies, leaving routine and classic dealing that does not keep pace with the speed and intelligence of criminal gangs, and we will fail any efforts It did not keep pace with the development and modernization of the work of

Interpolation and contour line technique

The interpolation method is the process of using data with known values to estimate data with unknown values. The IDW method assumes that this correlation can be defined as a function of the inverse distance of any of the adjacent points. (Fouad, 2018; Ali et al., 2019). Things that are close to each other are more alike than things that are far away. To predict unmeasured location values, IDW interpolation uses the measured values surrounding the predicted location. IDW assumes that for every point that is measured, there are some local points whose effect diminishes with distance. IDW is an exact typeface. This means that the predictions will be exactly equal to the value of the data if Predictions occur at locations where data has already been collected. This method is mainly based on to estimate the height of the unknown points by calculating the distances from this point to the other of the known points, as shown mathematically by the following equations (Fouad and Gheidaa 2017; Younis et al 2021, Al Naqeeb et al., 2020; Lwin, 2008)

$$Z(x,y) = \frac{\sum_{i=1}^n \left[\frac{z_i}{d_i^p} \right]}{\sum_{i=1}^n \left[\frac{1}{d_i^p} \right]} \dots\dots\dots, (7).$$

$$Z(x,y) = \sum \lambda_i * z_i \xrightarrow{\text{with}} \sum \lambda_i = 1 \dots\dots\dots, (8).$$

Where;
 Z(x, y) represents the predicted value at the ensample location X,Y.
 d_i is the plan metric distance between the reference point and the *i*th interpolation point;
 $d_i = \sqrt{(x_i - x)^2 + (y_i - y)^2} \dots\dots\dots, (9).$
 Where;
i: is the measured sample points number within the neighborhood defined.
 Z_i : represents the observed value at location i.
 d_i : represents the distance between the estimated placement X,Y and the measured location i.
 λ_i : represent the distance-dependent weight associated with each sample point.
 p : represents the power parameter that defines the rate of reduction of the weight as distance increases.

Results and Discussion

Data Acquisition

To control drug crime (crystal trade), its exact location must be determined using a Ground Positioning System (GPS) device, to be able to analyze this dangerous crime on society, and determine the impact of its spread and area of work on the residents of the city of Baghdad. Samples were collected from the Directorate of Organized Crime Control of the Ministry for the year 2020, there were about ten gangs dealing in this substance, as shown in Table 3.1.

Table 3.1. The number of drug crimes (crystal drug trade) officially registered for the city of Baghdad in the year 2020.

No	Latitude	Longitude	Address	Number of accused
1	44.4062	33.4303	Al-Shaab	3
2	44.4029	33.2505	Al-Doura	4
3	44.5765	33.2309	Zahfaraniaea	3
4	44.44156	33.30468	Karada	2
5	44.47392	33.38654	Al-Sader city	5
6	44.3346	33.3127	Al-Mansour	1
7	44.37493	33.36369	Abo-Nouas Street	4
8	44.42252	33.54073	Al-Shaabsaha	2
9	44.50437	33.33324	New Baghdad	1
10	44.3995	33.3345	Al-Sahdoon	2

And now the locations of the gangs that deal in drugs (crystal substance) are determined in different areas of the city of Baghdad after taking their locations with a GPS device and dropping them on the maps of Google Earth, as shown in Fig.2.

In order to know the impact of drug gangs on society in this study, it is necessary to map the spread of these gangs. The application of the interpolation technique and the selection of the Inverse Distance Weight (IDW) process is the best way to predict the area of spread of these gangs as well as their impact on the population of the city of Baghdad, and a very important benefit of the results of these maps is to determine the presence of these gangs Distributing the tasks of crime-fighting men in a better and focused manner to limit the spread of these gangs, tighten the noose around their work, catch them easily, and bring them to justice so that they may receive their just punishment.

According to the operations of linear mathematics (ratio and proportion).

The weighted value was extracted for

1. The number of gangs dispersed in their residential areas in relation to the population of the city of Baghdad.
2. The number of gangs dispersed over the area of their presence with the area of the city of Baghdad.

And as in the following equations

The number of residents in the city of Baghdad for the year 2020 is equal to 8200.500.

The probability of gangs for residents = (No-Accused*population region /All population of Baghdad) * 0.1

Baghdad total in kilometer square = 5215.299515

The probability of gangs for area = (No-Accused*Area/Area of Baghdad) * 0.1

And when applying the ratio and proportion equation as in Table 2 and 3.

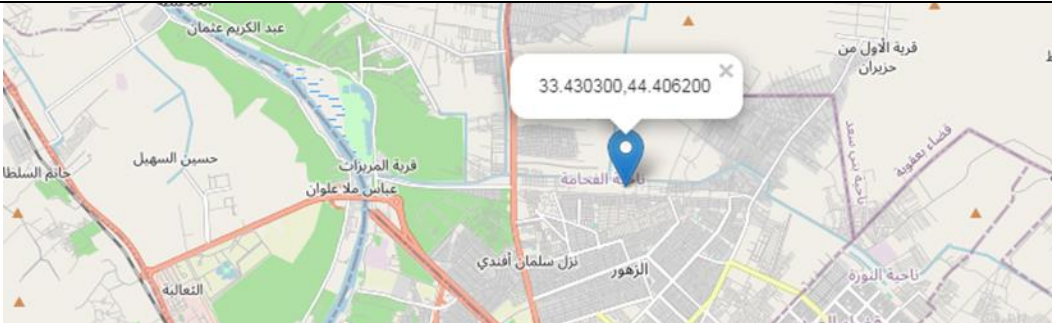
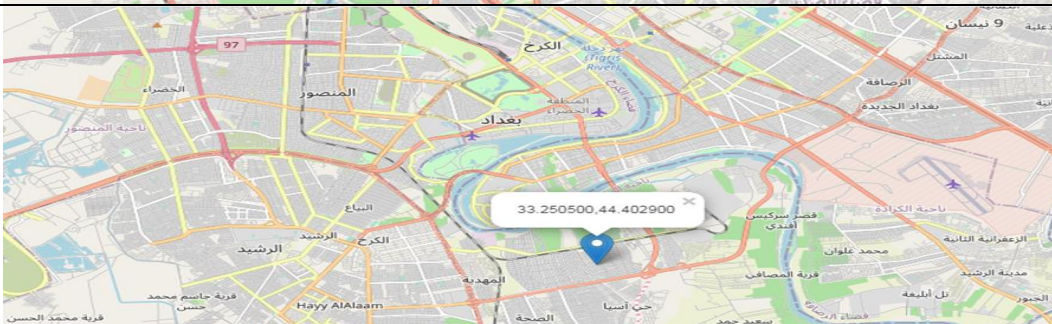
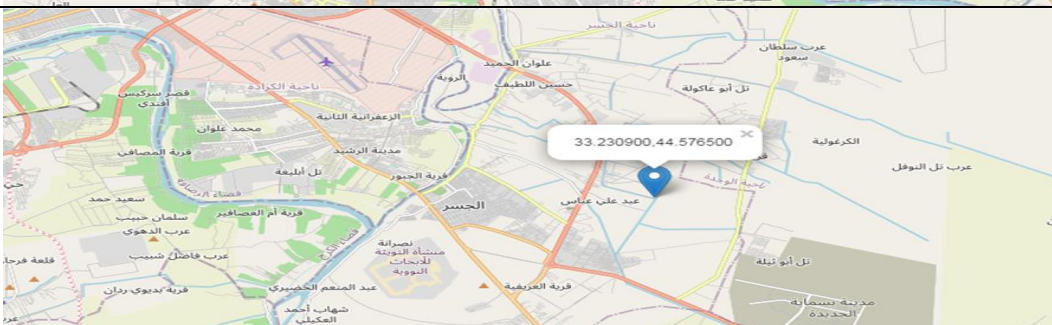
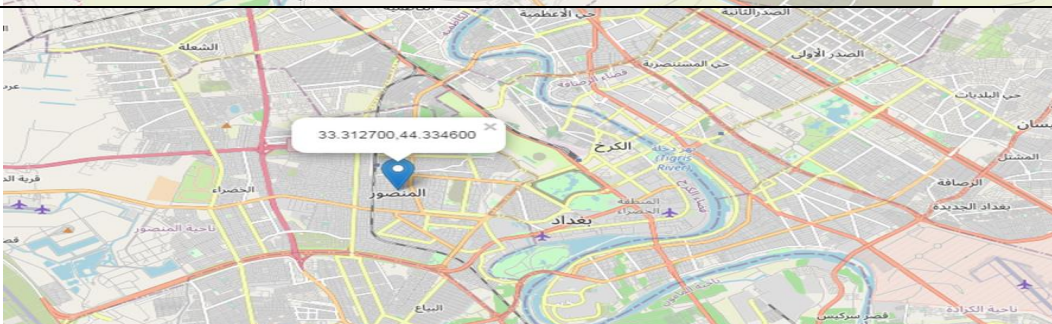
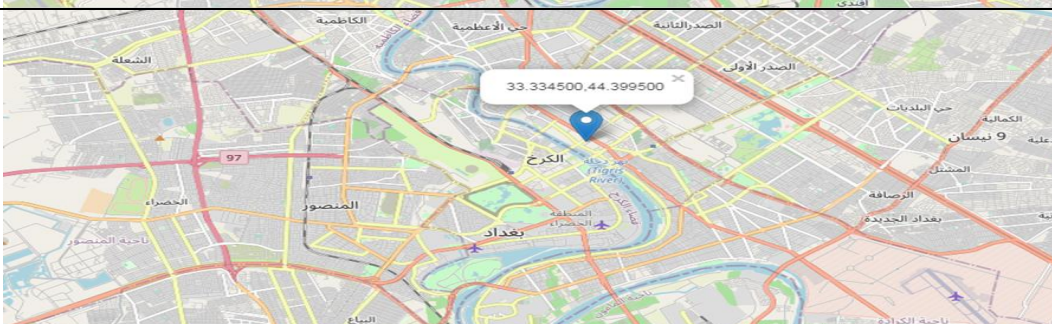
No	Address Locations
1	
2	
3	
4	
5	



Fig.2 Location of Events for study area

Table 2. The possibility of an increase in the number of accused of selling drugs in all population of the city of Baghdad

No	Latitude	Longitude	Address	Number of accused	Population	Probability [Number of accused] *8200.500 / [Population]
1	44.4062	33.4303	Al-Shaab	3	542.69	45.3325
2	44.4029	33.2505	Al-Doura	4	103.39	158.632
3	44.5765	33.2309	Zahfaraniaea	3	380.941	21.527
4	44.44156	33.30468	Karada	2	279.123	58.759
5	44.47392	33.38654	Al-Sader city	5	142.217	172.986
6	44.3346	33.3127	Al-Mansour	1	863.609	37.9825
7	44.37493	33.36369	Abo-Nouas Street	4	81.167	202.065
8	44.42252	33.54073	Al-Shaab saha	2	1100.82	37.2472
9	44.50437	33.33324	New Baghdad	1	680.629	12.0484
10	44.3995	33.3345	Al-Sahdoon	2	320.836	102.239

Table 3. The possibility of an increase in the number of accused of selling drugs in all areas of the city of Baghdad

No	Latitude	Longitude	Address	Number of accused	District Area	Probability [Number of accused] *5215.299515/ [area]
1	44.4062	33.4303	Al-Shaab	3	166.777	93.8133
2	44.4029	33.2505	Al-Doura	4	90.4057	230.751
3	44.5765	33.2309	Zahfaraniaea	3	92.1062	169.868
4	44.44156	33.30468	Karada	2	143.887	72.4916
5	44.47392	33.38654	Al-Sader city	5	443.35	58.817
6	44.3346	33.3127	Al-Mansour	1	58.3244	89.4188
7	44.37493	33.36369	Abo-Nouas Street	4	759.921	27.4518
8	44.42252	33.54073	Al-Shaab saha	2	185.111	56.3478
9	44.50437	33.33324	New Baghdad	1	36.5627	142.64
10	44.3995	33.3345	Al-Sahdoon	2	741.61	14.0648

In order to implement the IDW technique, which requires familiarity in calculating the distances, the readings of the geographical coordinates projection of the events locations must be converted from degrees, minutes, seconds to metric

measurement according to the UTM projected. As in Table 4, also shown the IDW and contour line in Fig.3, 4, 5 and 6.

Table 4. The possibility of increasing the number of accused of selling drugs on all residents and areas of the city of Baghdad and finding predictive values by converting the coordinate data from degree to metric UTM.

No	Longitude (φ)	Latitude (λ)	x-axis coordinate system (UTM)	y-axis coordinate system	Address	Number of accused	Probability [Number of accused] *8200.500 / [Population]	Probability [Number of accused] *5215.299515/ [area]
1	33.4303	44.4062	444800.11	3699149.28	Al-Shaab	3	45.3325	93.8133
2	33.2505	44.4029	444379.16	3679216.87	Al-Doura	4	37.9825	230.751
3	33.2309	44.5765	460541.62	3676964.93	Zahfarania	3	172.986	169.868
4	33.30468	44.44156	438060.74	3686151.30	Karada	2	58.759	72.4916
5	33.334500	44.399500	444116.01	3688531.58	Al-Sader city	5	37.2472	58.817
6	33.304700	44.441600	448016.31	3685205.94	Al-Mansour	1	21.527	89.4188
7	33.540700	44.422500	446383.46	3711380.91	Abo-Nouas Street	4	102.239	27.4518
8	33.333200	44.504400	453877.69	3688336.13	Al-Shaabsaha	2	202.065	56.3478
9	33.363700	44.374900	441846.06	3691782.41	New Baghdad	1	12.0484	142.64
10	33.386500	44.473900	451069.05	3694259.32	Al-Sahdoon	2	158.632	14.0648

Conclusions

The most important conclusions of the research can be summarized as follows

1. The prevalence of the phenomenon of Crystal drug trade in the southern and northern regions is higher than in the central regions.
2. Represent the prevalence of the phenomenon of the drug trade in the form of curved lines surrounding its location,

similar to the elevation lines, making it easier to read and trace the trail of gangs.

3. By using a predictive map, law enforcement's task distribution becomes easier and faster by tracing imaginary contour lines.
4. By following the demographic nature, it was found that the degree of awareness and the cultural and scientific level have a strong relationship in the spread of the crystal drug trade in the study area.

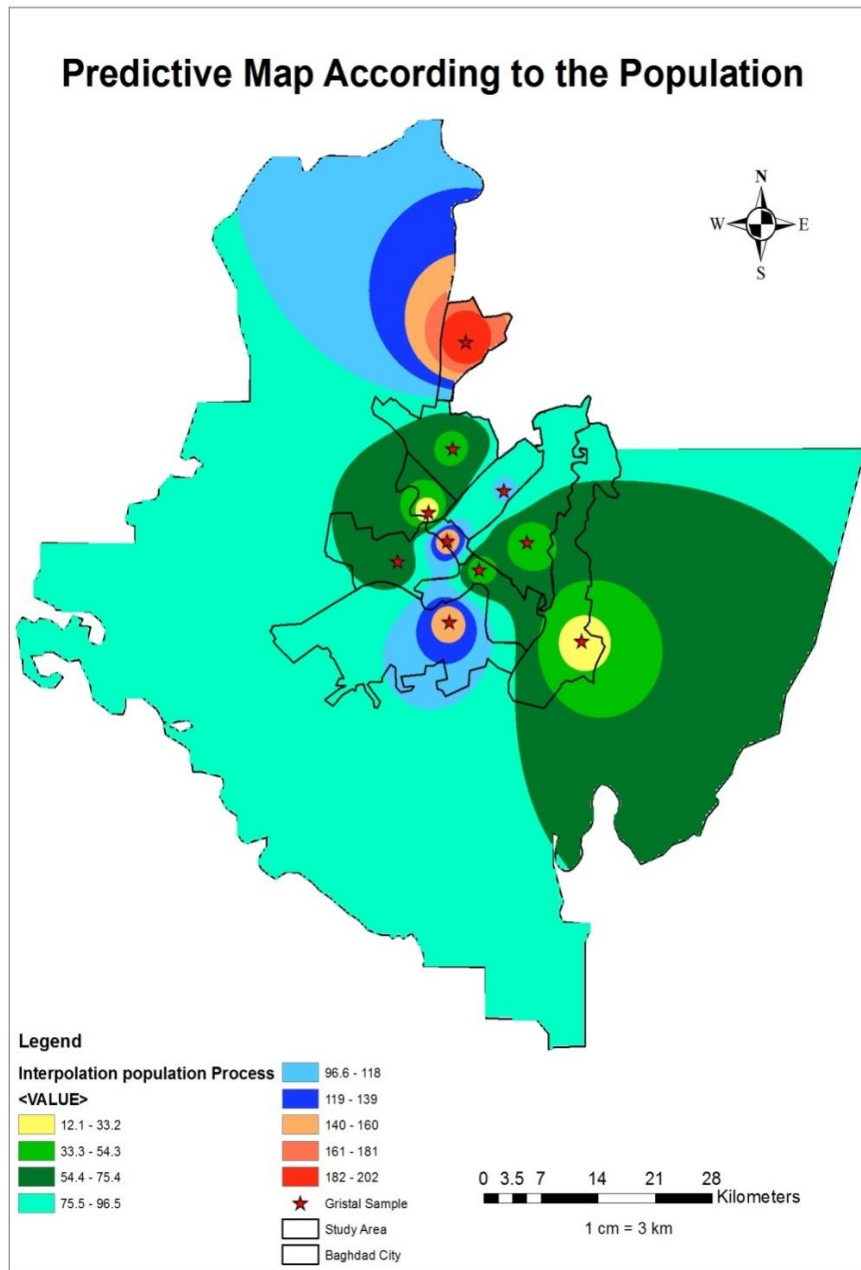


Fig.3 Predicting Map shown the spatial ranges to predict the spread of the phenomenon of drug trafficking based on the population indicator.

The previous map shows the predictive ranges of the phenomenon of drug trafficking according to population numbers and living status, and the cultural and educational level of the population at the sites of the spread of the phenomenon, where the population decreases as we move away from the site of the phenomenon, and therefore the degree of awareness is higher when moving away from the location of the phenomenon, and this varies from location to location as shown in the map.

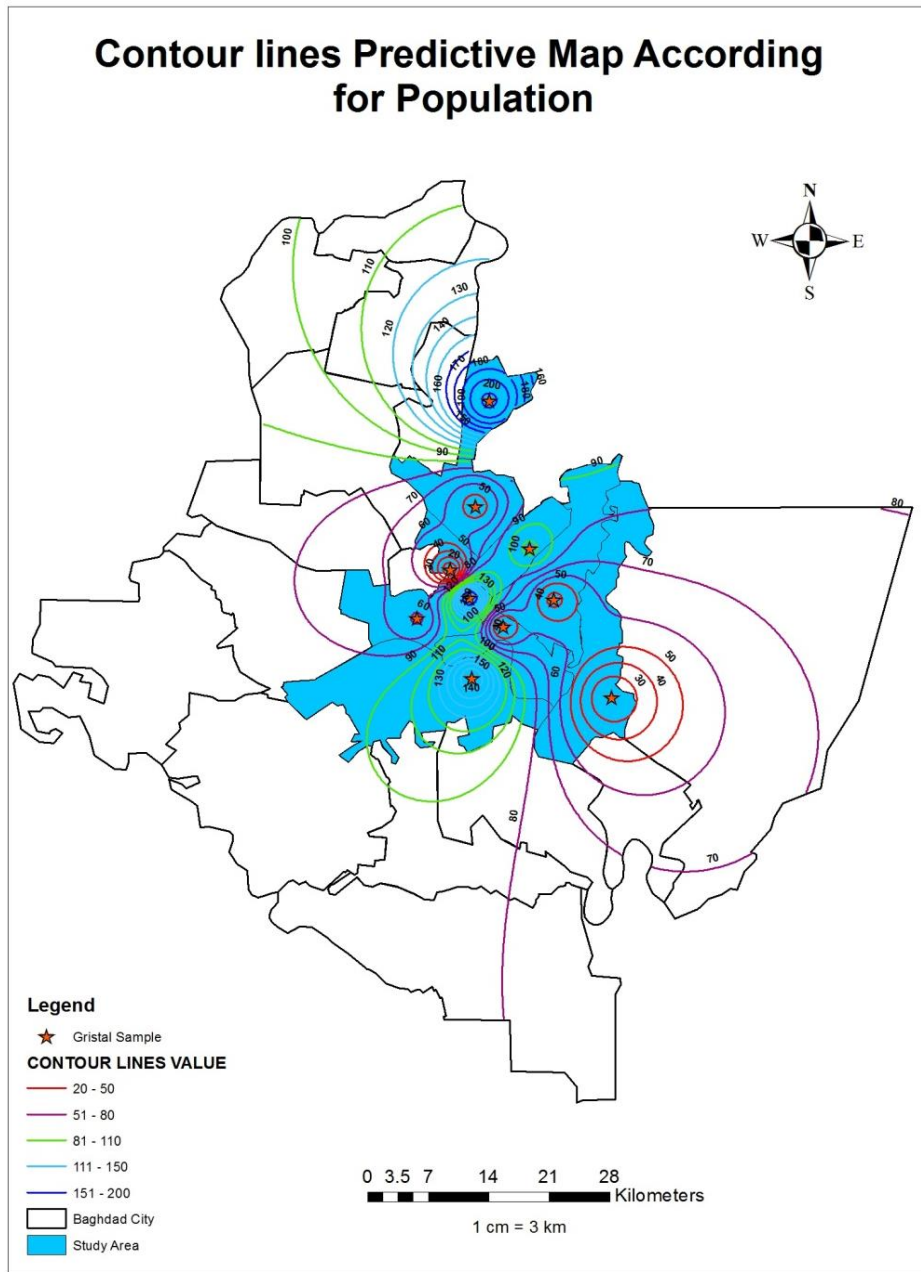


Fig. 4. The predictive map shows the spatial ranges as contour lines, which are imaginary lines according to the color gradient of the interpolation technology to predict the spread of the phenomenon of drug trafficking based on the population index.

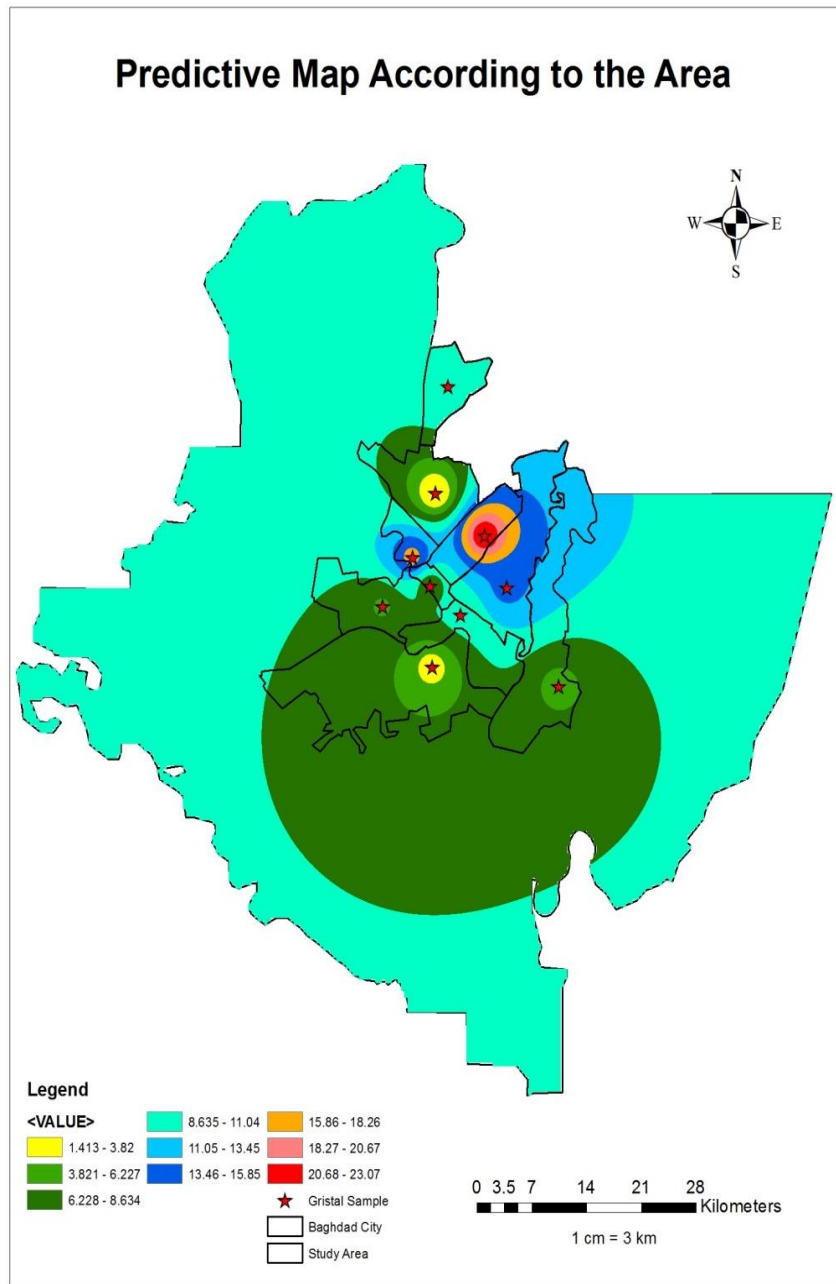


Fig 5. Predicting Map shown the spatial ranges to predict the prevalence of the drug trade by relying on regions. Shows drug trafficking rates according to the regions where this phenomenon is prevalent, rising in three locations and reaching 20.6 as the largest value, while falling to 1.4 as the smallest value in three locations.

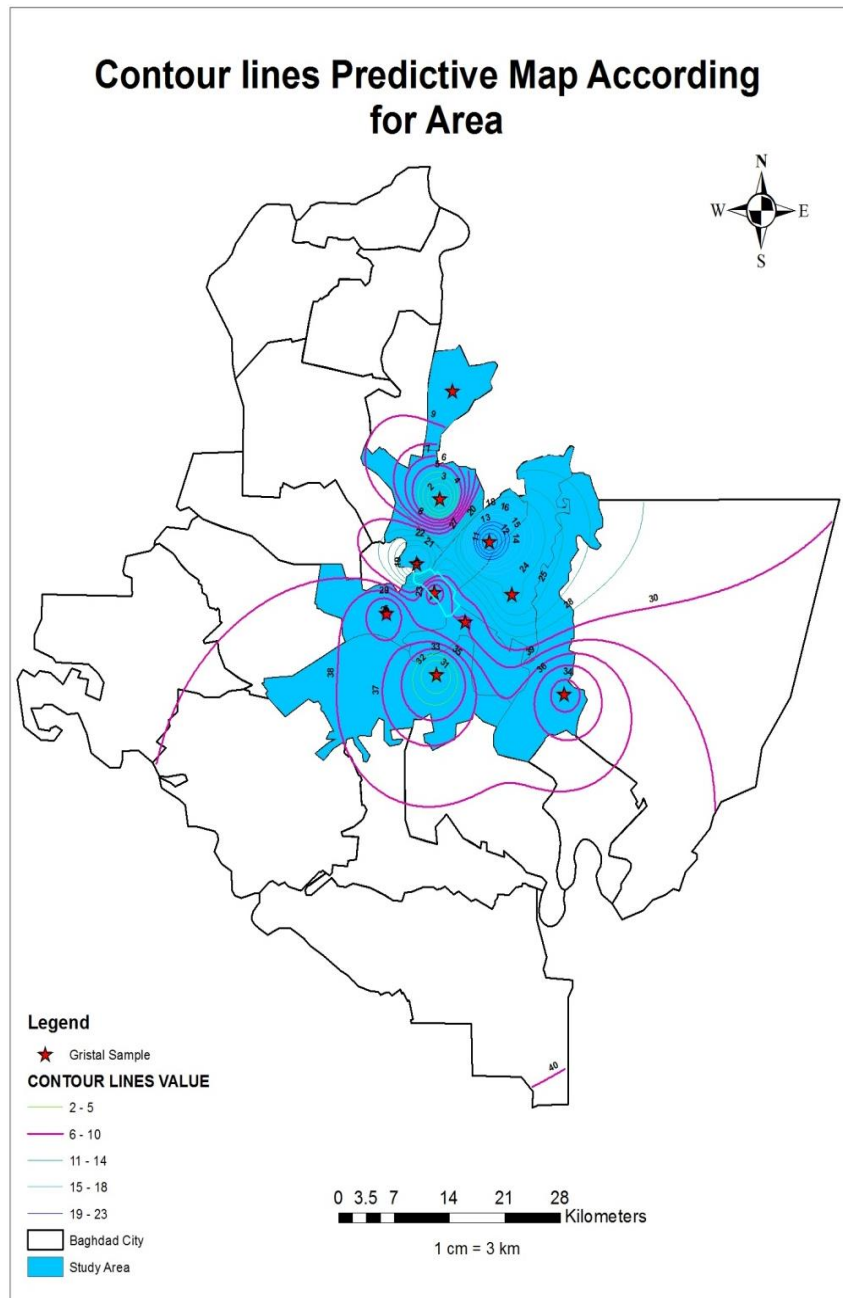


Fig 6. The predictive map shows the spatial ranges as contour lines, which are imaginary lines according to the color gradient of the interpolation technology to predict the spread of the phenomenon of drug trafficking based on the population index.

As is evident from the interpolation map, the spread of the phenomenon around its center and its expansion in its geographical location, as evidenced by the predictive ranges of the phenomenon's spread.

5. The highest value in the prevalence of crystal drug trafficking in the population was 182.2 in the people of health, and the lowest value was 12.1 Zahfarania and Abo-Nouas Street due to the low population density.

The prevalence of the phenomenon increased in three locations to the highest value of 20.6 in the Al-Sader city area, while the lowest value was 1.4 in the Al-Shaabsaha and Al-Doura areas at the level of the study area, evidence of the activity of monitoring drug smuggling cases in these sites before competent law enforcement authorities.

6. Producing predictive maps helps law enforcement agencies to serve as a future working guide to reduce crystal drug trafficking.

7. Predictive maps showed us that leaving gangs without supervision, harassment, or accountability will spread throughout the city of Baghdad from a spatial and demographic point of view.

Conflict of Interest

The author hereby declares no conflict of interest.

Consent for publication

The author declares that the work has consent for publication.

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