

**COMSTAT, CRIMESSTAT & STAC - ORGANIZATION MANAGEMENT TOOLS
FOR NEXT GENERATION OF LAW ENFORCEMENT AGENCIES****MSc Afërdita Qekaj-Thaqi, PhD Candidate**Economics-Management Information Systems, European University of Tirana
ALBANIA**ABSTRACT**

Rapid technological advancements in the recent years had a positive impact in the way how police agencies do their internal and external operations. With the integration of GIS technology, as part of IT developments has made possible the update of the paper maps into digital maps. Years before, there were different types of maps which were not as effective as today's ones. In the era of these advancements, GIS – (Geographical Information System) made these types of maps be more accurate, effective, and more precise in terms of setting up the exact location. Regarding the police agencies, there are three main programs of GIS called CompStat, CrimeStat, and STAC which are more than necessary in collecting and using the crime data. So, this paper will describe in details the characteristics of geography in police agency policies, the evolution of GIS throughout the years and most importantly the impact of the GIS in law enforcement agencies. Additionally, this paper will explain some features of these GIS programs which are considered very helpful for police officials in increasing the effectively of their jobs on daily basis.

Keywords: Police, GIS, agencies, programs, crime.**INTRODUCTION**

In today's world, geography has a great impact on crime data. Features and characteristics of geography used for intelligent crime analysis are facilitating and on the same time hampering crime events. Combining the geographical data with reports of police data and displaying those data in the digital maps, provide an effective way to analyze a particular crime event. In essence, GIS technology exists since 1960, as a technology only for building maps. GIS is defined as an organized collection of computer hardware and software, geographic data and the person who collects, stores, analyzes, and displays them manipulate geographic data (Norris, 2000). In the meantime, computerized maps began to be used in police services, specifically in the state criminal histories. These computerized maps display data visually determining e.g. the location of schools, parks, complexes, industrial zones and urban areas and rural areas. Also, there are various types of maps and software used by police agencies to increase efficiency in their police duties (Getis, 2000). So, this paper will have particular focus on technology GIS police services with emphasis on the types of maps used for the analysis of criminal and will discuss various computer programs which help police officers during their daily basis operations.

Types of maps used for crime analysis

There are numerous types of maps which can be used for various tests including tests for the police about the crimes - depending on what kind of tests are presented either to the audience or their colleagues or superiors. Old paper charts are used mostly when dealing with only one event; in this case the places are marked with needles and markers. In some cases, presenting the distribution of crime, different countries use the shaded maps and nets also. Locations

with hot spots that represent multiple events in conjunction with places/locations where crimes are likely to occur more frequently, show places like shops alcoholic, shops sales valuables-gold and silver, schools, pharmacies, grandparents houses of goods, or events that are related to that specific crime or serial crimes(serial killers) by using modern mapping technology. For the latter, now analysts can use statistics provided by many computer programs as the most prominent one, which is GIS system. This system has extended capacities that allows police officers from the data collected to predict what may be next target of perpetrators to commit the crime or information on where they live, work, or even withdraw the perpetrator after have committed the crime. According to Caplan and Kennedy (2011) developed a method for creating maps called "hazard maps" which can be used by analysts or officers to identify variables or risk factors that predict what might be the next hottest item based on the analysis and connection with previous crimes (Hill & Paynich, 2014).

ComStat, CrimesStat and STAC

Different software programs that assist police officers in the collection and use of information pertaining to the crimes, are software modules that fit with GIS or and interact as part of this system. These are the programs: ComStat, CrimeStat and STAC. In the following section we will present the characteristics, features and how these programs operate and assist police officers in increasing the effectiveness of their work:

ComStat – Developments in the intelligence police services are very important because this approach affects generations of police managers in creating strategies and use the crime analysis which will offer better solutions for precise problems. Through cooperation between criminologists in the field of crime prevention and management strategies through crime can create a long-term solution with the possibility of increasing the efficiency in this area. The period of innovation in solving problems and crimes began in 1980s and 1990s, a period when the crime fighting strategy known as Compstat shows off (Ratcliffe, 2011). In years when the US police achieved zenith of performance after several years of gradual expansion, a new movement was underway and being expanded also in dealing with Compstat (Palmer, Berlin & Das, 2012).

The origin of Compstat dates back to the early years of the 1990's when Lieutenant Jack Maple part of New York City police create maps ranging from railway stations in the city, marking each violent crime, robbery, burglary at the property as cases solved and unsolved. Later in 1994, when Rudolph Guilinani came on top of New York Police, Maple becomes the Deputy of Guilinani. Additionally, with the implementation of Compstat, number of crimes in New York fell largely making theft fall over 27% (Dussault 1999 to Palmer, Berlin & Das, 2012). It is worth mentioning that all police agencies visited New York in order to see and learn ComStat program. Many of these agencies have implemented several features of Compstat based on what they have learned from their visit to New York Police. Also, management of Compstat empowered executives, managers and supervisors during the usage of CompStat (Vincent, 2006). Based on the book of Vincent Henry, "The Compstat Paradigm", he states that "the total number of crimes reported to the seven major categories of crime decreased by 57.26%, in calendar year 2000 from the levels reported in calendar year 1993" (Vincent, 2002). By criminologists, the decline of crime in New York appear to be as a result of many factors including the interaction between the community and police services, policies of solving the problem, zero tolerance policy, demographic changes, and the help and efforts of the community in fighting crime. All peace and comfort from an

earlier crime was as a result of achieving the objectives of police commissioners which implemented a process known Compstat (Dempsey & Forst, 2014).

An important characteristic of CompStat is that its model is highly focused in fighting crime rather than other police services. By applying CompStat, high decrease on crime rates happened which raised another issue of making other services less valuable. This issue raised a global debate by researchers and agencies to increase the attention of CompStat characteristics, besides fighting crimes (Eterno, 2003).

CrimeStat – documentation of the volume of crime located either in the US or in any other country and the calculation of its impact on society is a very difficult job to do or as stated by some expert and researchers of crime it is an impossible task to be finished. But understanding how crime statistics are collected and how reliable are those statistics, is essential for the issue to be based on politicians as well as officials whose job is to establish policies that affect the safety and welfare of citizens for a particular country or community. Since citizens are based on crime statistics which are published by the police, any error or mistake in the presentation of those statistics can send in loss of time and money invested also in loss of lives of citizens. Thus, the creation of crime statistics should be more reliable, clear and understandable to the broad mass of citizens (Briggs, 2009).

CrimeStat is a program itself which serves for analysis and summary of statistics based on the spatial locations where the crimes occurred. This program can be connected and operated as part of the GIS system. The purpose of using CrimeStat is to provide additional statistics assisting the law enforcement agencies and criminal justice researchers in their work by trying to create maps of crimes. CrimeStat program is used by many police departments in the US and in other countries. Also, the use of this program was extended to other users who focus their work on criminal justice including numerous researchers in this field - crime and criminology. The usage of this program started in 1999, more precisely in November of 1999, being improved with other versions. CrimeStat program is designed to contain in itself the basis of given data that most of the metropolitan police departments deal and multiple folders and larger by volume. The advantage of using this program is that different processors, when dealing with large data volumes, can be calculated in a relatively quick time which provides more time for police and other users. In addition to that, the program also provides opportunities for other programs to fit to the parameters of CrimeStat from which interaction is developing a regional program of GIS analysis or original crimes Regional Crime Analysis GIS (RCAGIS). This program was first used by the Baltimore metropolitan city and then continued to be used by many countries as analytical equipment involved in the program his CrimeStat (Levine, 2005).

STAC – for many years the authorities of criminal justice information Illinois, USA, have conducted extensive research in the criminal field. All research was conducted with a special focus on examples based on events in space and time that happened within the community of Illinois. From this research, it can be claimed that there is a need of creating a system which will enable tests to be improved in relation to the crime; hence, the authorities created the system known as STAC. So STAC operates in cooperation with MapInfo program which is used to identify crime hotspots and analyze crime data based on spatial (Groff, 1998). STAC system is the acronym for Spatial and Temporal Analysis package (McEwen, 1990). During the 1990s crime analysts began to use the computer as a tool for collecting and analysing of "major serious crimes" in places and spaces where noted and allegedly or could have already increased crime. STAC program contains modules that provide valuable data for analysis of

crimes occurring in time and space distribution by presenting all these completed in the form of mapping. STAC includes automatic searches on hotspots, tests on nearby neighbourhoods, averages crimes occurred, and beam research on space research by specifying the address or location (Palmiotto, 2004).

STAC system consists of 2 programs / modules that help to locate and collect data on criminal activities within the community making combination between time and space:

1. Module over time which defines and helps to show the hour, day and week when the crime occurred. Offering finer details like the time of the crime occurred during the day, the program enables the calculation to be made of all the crimes committed on the day designated by providing data as crimes occurred on Monday, Tuesday and other days of the week. Above all, this program provides data calculated in percentage for a specific crime that occurred at a particular day by collecting data seasons in order to provide a detailed analysis of effective policing on crime activities which reflect the increase or decrease in relation to the day or last week.

2. Module on the space helps in finding / locating places in the community within which a specific crime is more concentrated or more active. These specific crime zones, in GIS terminology analysis of crimes are known as "Hot Spots", similar to those in the GIS which portray the premises or places where crimes are, or have the opportunity to attended / occurred more often (McEwen, 1990).

Using sophisticated computer programs that contains software package for analysis of crimes that enable affective to specify locations where crimes occur and in which countries the crimes can be concentrated, the program allows and facilitates temporary solid analysis solving and preventing criminal acts. About this issue, police officer Bob Streak from police department in Los Angeles described how software programs such as GIS program and STAC assist and enhance the achievement of better performance in the conduct of police activities. In addition to that, he states:

“By using automatic map with information layering, officers, detectives, and managers can, in minutes evaluate information that would have taken hours in the past to collect- not correlate ... When evaluating a crime problem, it is nice to know all of the above. It’s even nicer to be aware of current narcotic enforcement activity, vice enforcement, parolee density, alcohol beverage licensee density, housing project information, demographics, and, at times, geography.”

Therefore the use of computer programs such as STAC and GIS are those which are already part of everyday police operations (Palmiotto, 2004).

CONCLUSION

Information technology has revolutionized large police services within the analytical tools, including the handling of spatial data. GIS systems incorporated in criminal intelligent analysis methods have created a partnership that should continue forever. Meanwhile, GIS software is finding wide use every day more and more in various fields. This means that GIS is helping people to have faster access to geospatial data by displaying them in visual menu (Stone, 1998). As the most important programs of GIS Compstat, Crimestat and STAC, which are discussed above, this paper considers that the use of these models will assist

managers in reducing and preventing crime (Ratcliffe, 2004). So, the use of GIS is most useful in analyzing the events, with emphasis on the design and analysis of events. This method of analyzing the events enables police agencies to be easier to predict, and improve more effectively analyze future events criminal particular location (Kumar, 2011).

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