

Community Security Governance based on the Hot Spot Distribution of Illegal Activities

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Abstract. Hot spot is a phenomenon of location aggregation and distribution in space. The spatial prevention and control mode based on illegal activities hot spot is popular now. This work firstly analyzed the value of hot spots to assist the public security department to control crime reasonably, allocate police force scientifically, and improve the actual effectiveness of community policing. Then it discussed the key elements of social security governance, and the construction of social security governance system based on crime hot spots technology. Finally, this work put forward that strengthening the governance of hot areas can play a positive role in crime prediction and prevention, summarized key work of community crime governance, and suggestion of crime prediction based on hot spot map.

1. Introduction

Without the help of crime prediction tools, it is difficult for the police to judge accurately. There are many crime hot spots in the city. In order to prevent and control of community crime and reduce the community residents' fear of crime, theorists usually tend to "reduce crime or reduce the incidence of crime", and design a large number of crime intervention mechanisms based on this concept. With the development of criminal geography and the application of geographic information system (GIS), it is found that most crimes occur in some specific places. If sufficient police force is invested in these places, most crimes may be prevented.

2. Related Work

2.1. Crime Hot Spots

Hot spot and cold spot are used to measure the aggregation of crime in different area, as in fig 1. Crime hotspot generally refers to a region in space, which has a level of crime rate is significantly higher than the average level, or the risk of people becoming victims is higher than the average risk of victims. Crime hot spots originated from the crime of place, which was represented by Lawrence Sherman and David Weisburd. Through a large number of empirical studies, David Weisburd and others found that crime has certain regularity in space. On the one hand, crime hot spot is objective. For example, he found that in 2010, 72.8% of all street cases occurred at the top 10% of New York's streets, and 69.6% of all street cases occurred at the top 10% of New York's intersections [1]. On the other hand, the hot spot of crime is stable in time dimension. That is, under the condition that the environment, human and other significant factors remain unchanged, the hot spot of crime can exist stably in a long time[2].

At present, there are two methods to determine the crime hot spots: one is to describe the environment of the crime hot spots or speculate on the experience based on the past position control, such as "space blind area" and "dead corner" of public security, which can be regarded as the hot spots of crime; the other is to map the crime hot spots with the methods of environmental analysis and cartographic analysis based

on the spatial statistics of cartography, is considered to be a more scientific and rational choice. Nowadays, with the integration of big data modeling, Internet of things perception, GIS based mapping and analysis, as well as public security big data, police GIS system and other advanced technologies and resources, it is certain to play an active investigative advantage based on the abnormal dynamic early warning of crime hot spots[3].

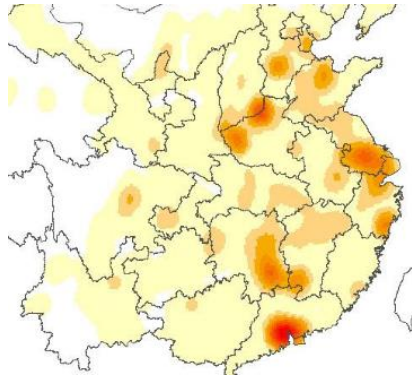


Figure 1. Hot Spots of Crime.

2.2. Crime Hot Spots in Police Forecasting

The application of GIS technology makes the relevant crime geographic information more and more accurate and diverse, and the analysis of crime space can be deepened from the community level to the relatively small geographical units. The early location policing are mainly to strengthen the patrol, and to deter potential criminals by making the crowd more easily feel the police, so that they dare not commit crimes. For example, the content of the hot spot patrol test in Minneapolis is that the police patrol twice the average level in the experimental group, so as to deter criminals by improving the visibility of the police [4].

Compared with the previous policing measures, the location policing in the United States is instructive and predictive. The traditional random patrol mode of crime is that the patrolmen drive in the area and patrol at will. The police activities have no target in time, space, strategy and direction. The police decide the place and time of patrol at random, which makes the patrol lack of systematization and integrity. And the crime hot spot represents the concentration of crime risk, which makes the hot spot have a strong predictability for the future crime occurrence, that is, "hot spot police advocates a kind of intervention mode of early warning, guiding and targeting, which tries to use the police resources in a more centralized and strategic way in those crime or disorder problems." Large number of empirical research methods is more professional and precise than before [5].

Based on crime hotspot prediction information, police officers can combine Google Street View images of predicted locations to improve their ability to detect and stop crimes. In real work, patrol officers only need to carry an electronic map, which will indicate the hot area where the crime occurred, and they will carry out patrol according to the map instructions. According to the research reports provided by the developers, the software can effectively reduce the crime rate [6].

3. Key Concept of Social Security Governance based on Hot Spots

3.1. Crime Prediction not Only Rely on Algorithms

The crime prediction is not a complete mechanical command of grassroots police officers. It is not enough to rely on algorithms. Police officers still need to understand their own areas and make adjustments according to their own needs. There are also some views that it is not a real way to take the

initiative to prevent police officers from running after crimes. Professor of Criminology at the University of Cincinnati, John Ike, said: "forecasting police is the blade of today's policing, but it's blunt if a place's crime problems are predictable for a long time, then there must be some fundamental problems in this place. If the dereliction of duty of the local manager makes it a crime hot spot, then the manager has the responsibility to correct the problem, instead of patrolling, intercepting and checking a large number of innocent people and interfering with their lives. "It is based on past events to predict future events without considering the complex factors of environmental change [7]. In fact, people's daily behavior patterns and urban geographical environment will affect the distribution of crime hot spots. In the field of crime prediction, there are other software models that are used to predict crime hot spots, ignoring the intelligence of basic patrol police officers. Mechanically dispatching the patrol routes of police officers according to the computer risk assessment will inevitably lead to the instinctive psychological conflict of front-line police officers, and it is also easy to be held by criminals to make the prediction invalid.

3.2. Strengthening Comprehensive Management

The map of crime location is public to people, which can help police in charge of all areas of the crime trends and perform their duties better. At the same time, the public security situation should be publicized to the masses to remind them to prevent being killed in the hot spot area of crime, to pay attention to their personal and property safety when they travel, consume and travel, and to protect the citizens' right to know about the crime situation. The responsible persons in shopping malls, hotels, banks, schools and other relevant places will also improve their awareness of prevention and take corresponding preventive measures, which are helpful to reform The comprehensive treatment of crimes in the hot spot area is also in line with the concept of third-party policing. For our country, in recent years, with the acceleration of urbanization process, the characteristics of strong spatial population mobility and unreasonable community planning, such as the combination of urban and rural areas, villages in the city and other specific cities, lead to the crime may continue to occur in this location. The implementation of Defense Space Design for crime hot spots cannot be at the cost of eroding community trust and increasing social exclusion [8]. This requires that future urban planning take into account the factors of crime prevention, and make the design of urban housing and road traffic more reasonable and scientific, strengthen the community constraints of the location, and prevent the occurrence of theft, robbery, robbery and other crimes.

3.3. Multiple Policing Measures

Although location policing is a key strategy developed in recent years, it is not an independent policing strategy. Community policing and Problem Oriented Policing are parallel policing measures. "Hot spot policing" puts forward the distribution of police resources and the target orientation of policing activities, but the solution to the crime problem within the crime hot spot still depends on various specific policing measures[9]. The choice of policing strategies and corresponding measures should not only pay attention to the diversity of methods, but also pay attention to the key levels. Location policing has advantages in focusing on key levels, but it is a little inadequate in the diversity of methods, which is relatively single. If it is not combined with community policing or problem oriented policing, it cannot solve the crime problem well. [10] On the contrary, a new pattern of crime prevention can be formed by complementing place policing with community policing and Problem Oriented Policing. In fact, location policing focuses on the traditional law enforcement activities in the places with high incidence of crime. As in fig 2, in these places, the police use some methods of traditional policing mode to strengthen their law enforcement level. Location policing is welcomed by law enforcement because of the innovative policing strategy in the traditional policing methods.

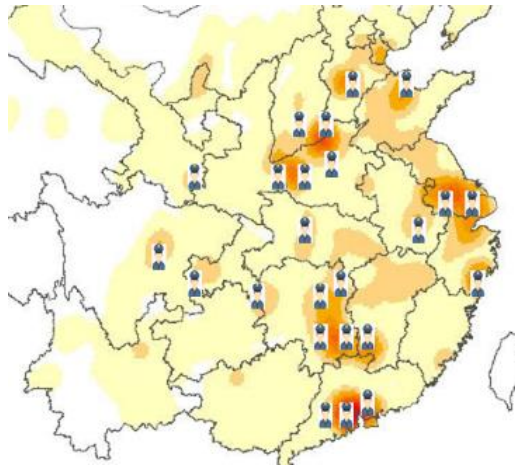


Figure 2. Police Force Distribution based on Hot Spots.

3.4. Improve the Means of Crime Prevention and Control

With the extensive and in-depth development of the economy, high-tech means of crime emerge in endlessly. In contrast, the scientific and technological means of crime prevention and control seem to be relatively backward, which has brought great hidden danger to social public security. In this case, it is particularly important to make statistics of data, information and knowledge related to security through analysis model. In 1994, the New York Police Department put the computer crime statistics information system into use. In place policing, the discovery, monitoring and analysis of crime hotspots need the support of science and technology. Some researchers use geographic information system to verify the distribution of crime in urban space, which makes the hot area of crime appear prominently in the map [11].

3.5. Strengthen Theoretical Research

The research methods are often interdisciplinary, combining the theories and research methods of geography, environmental science, statistics, social metrology, law, criminology, public security and other disciplines. With a more research perspective for the sake of openness, research methods are also more diversified. In contrast, the current situation of research on location policing in China is worth rethinking. First of all, the basic concept of location policing, the scope of application and application scheme of location policing in China are not elaborated in depth and in detail. Most of them focus on the introduction and combing of foreign theories, are not combined with China's policing practice, and are lack of city specific locations in accordance with China's national conditions.

4. Suggestions on Improving Community Safety Management

4.1. Set up a Specialized Police Communication Channel and Resource Allocation Center

Space-time factor is one of the main driving factors of community crime. Any criminal has certain purpose and tendency in the choice of crime location. Rational criminals tend to commit crimes near their residences or familiar places. Secondly, they commit crimes in places that are not recognized by other individuals and can realize anonymity of crimes. Finally, a series of criminals are often cleverly set up to avoid the "buffer zone". On the one hand, they can cover up their own crimes fear. On the other hand, is also prepared to avoid the blow. Therefore, based on the time and space hot spot of community crime, monitoring facilities should be installed in the hot spot area where crime may occur, security investment should be increased, and community crime early warning should be improved.

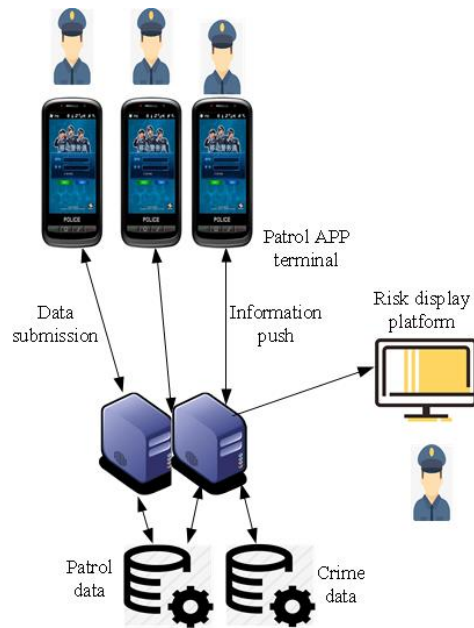


Figure 3. Patrol Command and Dispatch.

4.2. Establish Multi-level Community Security Prevention and Control Team

Neighborhood relationship is the focus of community crime. Unity and harmony of neighborhood relationship is the basis of community crime prevention and control. The broken window theory emphasizes that the more neglected and unprotected things are, the more likely they are to become the targets of crimes and provide reasons for crimes. Therefore, the second core element of building a safe community is to establish multi-level, three-dimensional public security prevention and control team, and constantly strengthen group prevention and control. At the same time, as one of the basic functions of community, social participation also requires community residents to actively participate in community security prevention and control. The community "creates opportunities for all members of the community, so that the wider community members can actively contribute to the process of influencing the development of the community and share the development results equally". By actively mobilizing the participation of the community, we will continue to improve the neighborhood watch system led by the people, realize all-round and continuous patrols, and strengthen community security.

4.3. Spatial Coding based on Community Crime Data

Based on the scale and structure of the community, the security coding of the community space is another core element of the reform of community policing and the improvement of the construction of community prevention and control system. In the construction of Ping a community, the specific data collected by specialized police communication platform, community police office, community residents Management Committee and other institutions are used in the form of grid to code crime data such as address name and address range, and the accuracy of coding is strictly controlled within 200m. Its main purpose is to use the probability statistical method, while monitoring the community in time and space, to locate the spatial coordinates of each crime case, and effectively carry out criminal intervention.

5. Summary

The value of improving geospatial prevention and control mechanism in the construction of safe communities is the scientific combination of spatial applied geography, public security and community

governance. Based on the hot issues of driving community crime, it is not only the innovation of community governance, but also helps to innovate the reform of community policing, improve the way of police intervention, make rational use of community resources, and apply limited resources to the key areas and hot areas of crime, especially the potential areas where malignant criminal cases may occur. Secondly, to give full play to community forces and take the mass line is the key way to improve the efficiency of police work, especially to solve the limited police force. Analyze the crime space, set up public security liaison officers in hot spots such as frequent, frequent and frequent community crimes, set up community patrol teams, and strengthen the prevention and control of community crime space. Finally, strengthen the construction of functional community, fundamentally prevent and reduce community crime.

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