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Crime Data for Effective Personnel Staffing and Deployment

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ABSTRACT

Data analytics are used by professional sports teams to properly deploy their defenses and make their offenses even more productive. These professionals also use statistics to determine how well they are doing. The analysis of data is used to determine financial worthiness of their employees. These teams and employees often have a short time to succeed and so turning to data to maximize potential only makes since.

Scheduling and deployment of law enforcement personnel is often left to the experience and intuition of the managers. The culture of law enforcement is often resistant to change and may exhibit an attitude of why change, when it has always worked this way. Law enforcement is facing a greater demand for fiscal and operational accountability. The analysis of data held within the computer aided dispatch system and the report management system holds valuable answers to scheduling and deployment issues. Law enforcement should use crime data analysis to schedule and deploy their patrol personnel. Effective scheduling helps to limit overtime due to ineffective schedules. Once work day schedules are developed, the deployment of personnel can be made based on locations. Analysis of data will allow for a concentrated effort. Effective data analysis creates an efficient schedule and the efficient analysis identifies hot spots for deployment into areas of need.

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INTRODUCTION

Law enforcement is expected to do more with less. The widely accepted motto of "to protect and to serve" is not as readily defined as a set of tenets applicable across law enforcement, but it is often defined by the communities served. The tenet of protection covers both the citizenry and property. The tenet of service covers both the community and also encompasses stewardship of the resources granted to law enforcement to include finances and the people who join in a life of service for the betterment of their community.

According to Walton (1958), law enforcement officials must use the manpower available more efficiently in light of rising taxes and manpower shortages. The workload presented at the time was studied and formulas were developed for deployment of personnel. The personnel were deployed geographically and the division commanders were given the authority to distribute personnel. Knowing the history of the area, types of offenses and calls for service, personnel can be deployed where they are needed most. Walton (1958) had stated "Our responsibility to the community requires that we do no less" (p. 171) and this is true today. The formulas developed gave the administrators the ability to distribute personnel equitable according to need.

The hit and miss approach to scheduling and deployment often relies on a commander's expertise and not on known factors. Whether there is successful scheduling and deployment of personnel is dependent on matching the number of officers on duty with the hours of need and in the geographic areas in need. The idea is to maximize the effort, with the manpower available, without sacrificing the motto of "to protect and to serve".

Law enforcement, as a whole, collects data during the course of doing business from the first call for service to the end of the investigation. Agencies utilize Computer Aided Dispatch (CAD) to gather information and dispatch calls for service along with a Record Management System (RMS) to compile data gathered during the course of investigations. Both systems house a wealth of information that often time is overlooked. As an example, the data contained in a CAD system can offer time of day, day of week call volume for calls for service, the location of the event, and include the type of disorder being reported to the agency. Another example, the information in the RMS data will offer more specifics about what was reported, the action taken, and the people involved.

Crime analysis has been found to have several definitions with a prevailing common idea: the close examination of all related data and spatial information, to further law enforcement's mission. The information contained within the CAD or RMS can also help evaluate how the agency is performing. The shortages of officers in relation to calls for service or the opposite, the overage of officers in relation to calls can be identified. Using data available, analyzing the time and places, will allow for effective data-driven strategies to be developed (Santos & Bruce, 2014).

The primary reason for having a schedule is to deploy personnel as effectively as possible; matching the staffing to meet the need. Knowing the need is accomplished through analysis of the available data. Staffing is available through data being kept with the organization's employment records. The coverage requirements may be somewhat subjective and agency dependent. Law enforcement workload, coverage requirements, shift designs and work pattern can be determined through analysis of

data.   With a greater demand on law enforcement for fiscal and operational accountability; law enforcement should use crime analysis to schedule and deploy patrol personnel.

POSITION

Demands for law enforcement services are not easily predicted, but can be seen as a function of time. One of the goals of a law enforcement manger is to schedule personnel to meet the demands and to be efficient while doing so. Effective and efficient scheduling of officers necessary in relation to the services demanded is to limit shortages of on-duty personnel during peak times and overages of on-duty personnel during lax times. Typically, law enforcement supervisors use two approaches to deal with understaffing; both, over time, can be detrimental to the officers. One is to encourage the officers to work harder and do more during those peak times. The second is to hold officers over from one shift to another or creating mandatory call-backs to cover the peak times. Neither of these would be optimal as research as indicated that overworked employees will suffer from fatigue and other related health issues (Vila, Morrisson, & Kenney, 2002).

Analysis of police records contained in computer aided dispatch systems (CAD) and records management systems (RMS) provide the information to map the fluctuations of time of day and day of week relating to call volume or the workload driven by calls for service from the public, and the self-initiated workload generated by law enforcement personnel during these same time periods. With the analysis of this data, effective scheduling, whether it is the standard 8-hour model or a 10-hour model or a 12-hour model, can be made based on the time of day and day of week greatly reducing

the need for overtime to cover the known peak times (Barnum, 2011). Identifying the work model appropriate for the agency and knowing when to schedule the resources is only a part of the equation, knowing where to deploy the resources can also be determined through analysis.

The demands of law enforcement come from many areas within the boundaries of the communities being served. These boundaries may be defined by town or city limits, county or state lines, and even borders of countries. These boundaries are further broken down into regions, sectors, or beats. Regardless of their designation, boundaries may be created based on geographic boundaries, population totals or census tracks. The computer aided dispatch and the record management system of an agency would also capture geographical information concerning calls for service, crimes and crash sites. The analysis of this information as well as other factors will yield spatial and geographical data that have become identified as "hot spots" (Weisburd, 2018).

As a schedule reflects the hourly and daily amount of available resources, the identification of these "hot spots" reveals areas in need. Agencies may consider using this information to create a staffing and deployment model to reflect the minimum resources to address the need (Wilson & Weiss, 2014). This in turn will put more boots on the ground in the greatest area of need at the greatest time of need.   Research has shown that extra police patrols in hot spots reduces crime in those places (Sherman, 1998)

Studies have shown that concentrated efforts by law enforcement in hot spot areas have a significant effect on crime and disorder (Weisburd, Braga, Groff, &

Wooditch, 2017). The Data Driven Approaches to Crime and Traffic Safety (DDACTS) model focuses on location analysis and crime data to deploy law enforcement resources. The main premise is on concentration of locations and high visibility of law enforcement personnel within the areas identified by analysis (Weiss, 2013).

The COMPSTAT model also is associated with a location and the crime data from that location (Weiss, 2013). In a crude explanation of this model, law enforcement administrators would gather to discuss the data and develop intervention plans to deal with the localized crime. In order to operate within this model, law enforcement must have accurate and timely data, effective tactics, rapid deployment of personnel and resources, and relentless follow-up and assessment. Both of these strategies require the analysis of data, the attention to specific locations and problems, and effective deployment of personnel.

Law enforcement administration success is tied to the ability to foster cooperation from the citizens being served. Communities' interest in the activities of local law enforcement mean communities will hold law enforcement accountable. (Lumb, 1996). This is true of the efforts to lesson the effects of crime and disorder and the management of the resources granted. Law enforcement administrators have two very important areas of responsibilities: personnel and the budget. Both of these are internal and external responsibilities (Hernandez, 2008).

Communities grant law enforcement the finances to complete the task given. Law enforcement must exercise stewardship. A steward is a caretaker of property entrusted to them. Stewardship is the careful and responsible management of something entrusted to one's care (2019 Merriam-Webster Dictionary). Stewardship is an ethic

that involves diligence and purpose of duty. The lack of stewardship erodes integrity (Ali, 2012). Managing, staffing, scheduling, and deploying personnel efficiently to reduce crime and disorder is stewardship of one of the resources granted to law enforcement, their staffing. This stewardship of personnel in this manner helps reduce the overtime costs that affect the agency's budget.

COUNTER ARGUMENTS

The police culture questions the legitimacy of analytical processes and relies on hunch and or experience to drive decision making from staffing to the use of crime data analysis products. The hunch and experience method of making decisions is habitual because of engrained habits of the past.   Law enforcement place value on the ability to make decisions and anything that threatens this ability is seen through the lens of skepticism ("The Organizational and Practical Considerations," 2018). Law enforcement will defend this intuitive decision-making process because of some historical precedent that is individualized to the agency's staffing needs even if there is no analytical basis for the decision (Wilson & Weiss, 2014).

However, law enforcement agencies can navigate through any resistance from police culture with effective communication that prepares everyone for change. The law enforcement administrator begins the communication process with the message of the importance of efficient staffing and deployment and what changes are needed. At every opportunity the administrator has, assert the value of the change ("The Organizational and Practical Considerations," 2018).   The chief administrator sets the tone by giving value to change and communicating this value to others within the organization.

Communication helps the agency to have buy-in to the change and that the change will be beneficial to the agency as a whole as well as the employees within. Allowing the employee to have a voice in the change aides in the change because of the voice the employee had in the implementation of change. With a successful communication process in place and adhered too, the police cultural resistance to change will be overcome. This communication process prepares the employee for change before change is to begin and reduces the resistance to the components of change (Ali, 2012).

Some argue that those in law enforcement may alter crime data to their benefit. Law enforcement agencies may choose to follow the CompStat model to reduce crime and disorder within their communities. This not only involves the use of crime statistics and analysis but accountability measures for those being held responsible for reduction of crime and disorder. CompStat was known as having confrontational meetings where commanders were dressed down and embarrassed in front of their co-workers when the analysis of the numbers did not show the desired reduction (Giacalone & Vitale, 2017). CompStat could be used as a tool to punish commanders and when it is used in this manner, it creates an environment to cheat on the numbers.

These same commanders or supervisors may push for more enforcement activities within areas that may not be proportionate to other areas. The officers act out of self-preservation rather than out of problem-solving or out of what is best for the community. So, officers then step up enforcement activities by increasing the amount of summons officers who may not need to issue or just simply inflate data to avoid the

fallout of low production. These issues were brought out in both the Baltimore and Chicago police departments by the Justice Department (Giacalone & Vitale, 2017).

However, effective implementation of strategies using crime data analysis, to include CompStat, lowers crime rate, increases community perception of quality of life, and fosters teamwork within the law enforcement organization (Willis, Mastrofski, & Weisburd, 2007). By clarifying a department's mission to reduce crime, having organizational flexibility to shift resources, and identify problems, can be effective in combating overstating the data. Having organizational flexibility grants authority to make decisions and to implement them. Departments that have lower organizational flexibility often use a more traditional approach to allocating resources and approach to crime fighting. This is restrictive and may not allow the resources to engage the problem and invite overstating return of effort.

Another important factor is understanding that developing strategies opposite of each other creates misunderstanding and frustrations among the rank and file (Willis, Mastrofski, & Weisburd, 2007). The executive can motivate employees by having a strategy that is focused on one approach and guided by accountability. The executive and the structure below should develop a climate of elevated tolerance for risk as this encourages new approaches toward crime problems (Willis, Mastrofski, & Weisburd, 2007). With the elevated tolerance, different approaches can be used, such as tactics of involving the community more in solving their unique problems, using "Broken Windows" approaches, and problem- solving approaches (Kelling & Wilson, 1982). By the very nature of having an elevated tolerance, the need to inflate data is diminishing. Using crime data analysis is an effective approach to the deployment of resources.

RECOMMENDATION

During the course of law enforcement activities, agencies collect information concerning time and place, people, calls for service, reports of crime and disorder, and officer's activity. This data is contained within CAD and RMS that can be mined to answer questions relating to the crime rate, allocation of resources, and grade law enforcement's efforts to protect and to serve. Given all the data available, law enforcement would be amiss not to gather it and use it to be more productive and stewards of the resources granted to them. Law enforcement should use crime analysis to schedule and deploy their patrol personnel.

Scheduling of personnel has been done intuitively and based upon experiences of administrators without any empirical information and on the basis of, it have always been done this way. Appropriate and efficient scheduling helps limit overworked staff members. As research indicates, fatigue and other health risk are associated with extended work hours (Vila, Morrison, & Kenney, 2002). Effective scheduling would help in balancing the workload among officers, minimizing the overtime and the times of surplus (Taylor & Huxley, 1989).

The need of the community for law enforcement services fluctuates over the time of day and day of week. This fluctuation can be mapped showing the times of need throughout the day and which days have more need. Having an effective schedule and work day model will help limit the overtime and budgetary impact overtime brings (Barnum, 2011).

Law enforcement is often limited to the boundaries of their town or city, the state or the county they are in. These areas are further broken into smaller geographic areas

known as regions, sectors, or beats. Regardless of the name applied, they are defined by geography, population, or census tracts. The CAD and RMS provide location of events and calls for service that can be mined to show a workload or need for that area. Analyzing this data creates hot spots that show concentration of calls for service and reports of crime and disorder. This provides data that would allow the proper deployment to areas of need rather than to areas of lower need.

Studies have shown that concentrated efforts by law enforcement in hot spot areas have a significant effect on crime and disorder (Weisburd, Braga, Groff, & Wooditch, 2017). Once these hot spot areas are identified, the data can help with deployment of personnel to meet the need. The hourly and daily analysis develops the schedule and identifies the time of need. The analysis of location data highlights the area. Combining the two will allow the most effective deployment needs by time and place. Once these are identified, the methods of approach can be determined by the agency. DDACTS and CompStat are just two approaches to the use of data analysis to aid in the deployment of personnel. Law enforcement can also use a combination of approaches in these areas once the need is identified as long as it does not create a confusing atmosphere.

Stewardship is the careful and responsible management of something entrusted to one's care. It is an ethic that involves diligence and purpose of duty. The lack of stewardship erodes integrity (Ali, 2012). Communities grant to law enforcement resources that need to be managed. These resources are people and finances. Law enforcement use of data analysis for scheduling and deployment is good stewardship of what has been entrusted to the department.

Law enforcement values the ability to make decisions and rely on officer's hunches and experience to make decisions. Law enforcement has a culture that often interferes with change. Combining these two aspects of police culture causes officers to view the use of crime data analysis through a lens of skepticism. This can be overcome with law enforcement leadership to effectively communicate the value of using data analysis. Strong communication from the beginning and allowing the employees to have a voice will create buy-in. This was exemplified in a study of a midwestern town ("The Organizational and Practical Considerations," 2018).

The adaptation of CompStat or CompStat style strategies can lead to law enforcement members inflating crime data to prevent embarrassment in front of peers. The more troublesome issue that may arise is the data may not reveal favorable outcomes in crime reduction. This would then lead commanders to pressure subordinates to increase issuance of summons and other punitive actions in areas it is not needed. However, developing a climate of elevated tolerance for risk would encourage new approaches to reduce crime. The law enforcement executive can empower organizational flexibility that gives authority to make decisions and to implement new approaches. These provide an ownership and gives a sense of accountability that would be needed.

Law enforcement should use data analysis to schedule and deploy personnel to meet the needs of the community and "to protect and to serve". A recommendation would be to develop a full-time crime analysis unit to conduct timely analysis of the agency's data to aid in crime prevention activities, staffing and to evaluate how the department is doing.

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