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An Analysis of Staffing Models for Large
U.S. Municipal Cities

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ABSTRACT

Agencies are challenged to determine what staffing levels meet current organizational needs as well as forecasting the needs and demands of the community in the future. For this reason municipal police departments were selected for this study. The sole requirement for selection concerned city population. In an attempt to identify industry standards selected agencies were surveyed. Statistical information for each agency was collected and analyzed. The research revealed that the majority of agencies that answered the survey utilize the work load strategic staffing model. Although the Work-Load Strategic staffing model was determined to be the most predominant model utilized by the surveyed agencies, the comparative model cannot be discarded. The research revealed that even though the work load strategic was the most appropriate model the comparative model was at the foundation of every publication, report, and acknowledgement concerning staffing levels.

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INTRODUCTION

Currently law enforcement executives are facing greater scrutiny than ever before. This examination covers every possible facet of department organization, specifically the management of public resources. Fiscal responsibility, resource justification, and accountability are just a few highlighted areas that need to be constantly addressed in order to mitigate future problems. This can be accomplished by continuously evaluating the department's service delivery both internally and externally. Internal evaluation can consist of reviewing data collected by police personnel, records, and budgets. External evaluation can be accomplished through budgetary reviews by city hall, citizens and external management audits.

Budgetary review and accountability is of paramount importance to law enforcement executives as communities demand fiscal responsibility. One category in particular represents the largest expenditure in most, if not all, municipal law enforcement agencies budgets. Personnel expenses are the greatest category of expenditures. This total cost includes not only wages but also benefits provided by the city. Agencies are challenged to determine what personnel staffing levels meet current organizational needs as well as forecasting the needs and demands of the community in the future. The purpose of this paper is to examine departmental staffing levels from a sampling of large municipal cities in the United States and determine which method/model most efficiently and effectively utilizes these scarce public resources.

The prologue of the 1999 FBI Uniform Crime Report states:

"Each year when *Crime in the United States* is published, many entities—news media, tourism agencies, and other groups with an interest in crime in our Nation--use reported Crime Index figures to compile rankings of cities and counties.

These rankings lead to simplistic and/or incomplete analyses which often create misleading perceptions…." (p. iv,)

This opinion is particularly important because the national authority on monitoring crime statistics for the United States acknowledges the limited application of the values at the onset of the report. However this disclaimer is trivialized and minimized by politicians and community members. This report, with all the flaws, is the definitive report card for the department to the community.

A wide range of dynamics and variables need to be discussed when determining appropriate staffing levels. The primary issue is that the community has entrusted law enforcement executives with the privilege of managing public funds in order to provide a service to the community. Police agencies should, and the community expects, that fiscal stewardship be exercised in order to provide the best possible service at the lowest possible cost. Additionally, examination of this topic should determine which methodology, or model, ensures the optimization of public resources in evaluating personnel staffing levels and forecasting future growth. Empirical research related to which criteria should be used to address this issue is limited, making it difficult to determine an appropriate response. Several different philosophies are prevalent concerning what variables are pertinent in making personnel calculations and what variables are supercilious. Generally each philosophy cites statistics and variables that justify their cause. Terms such as "Industry Standards" are used in an effort to categorize the practices of agencies into one specific philosophy.

Methodology utilized for this topic will include research from publications and results of surveys sent to a sample of municipal agencies. It is hypothesized that staffing models based on workload will be affirmed as the dominate industry standard and most effective and prudent

means to analyze current and future personnel levels. This research will not attempt to discredit alternative philosophies but rather how they relate to efficiency.

REVIEW OF LITERATURE

Historically, manpower planning has not been a high priority of law enforcement but rather of problem solving within personnel administration (Hudzik, 1981). Staffing issues in the past have been the result of attempting to solve community problems by adding more officers rather than addressing causative factors. Loosely translated, agencies have added more officers during years that crime rates have increased to "solve the problem" and not added any when things were optimistic for the community. Law enforcement has, and with a certain degree of success, moved from this philosophy to a more academic approach to the issue surrounding personnel, staffing, and analyzing trends. This shift is a result of a collective effort by law enforcement executives to elevate standards and conduct of law enforcement personnel, including police administration. It also represents a shift to problem oriented policing, a policing model that looks to determine the causative factors of problems and solve them. A more formalized management structure and response to this problem rather than the ad hoc assumptions regarding budgetary issues has greatly benefited the profession. As with many changes in government this has been brought about largely by public outcry for government stewardship, performance, and accountability. Over the past several decades executives have also utilized audits to determine the effectiveness in the efficiency and economy of operations and also for achieving objectives and goals (Jiao, 1999).

Through enacting a scientific approach to the planning and research aspects of the organization, executives can increase accountability and justification of expenditures.

Kuykendall (1975) cited that many agencies have instituted Planning and Research Units as a means to understand current organizational impacts and forecast future potential impacts. This trend continues today. There is no uniformly accepted or published industry standard to analyzing personnel needs for the department. "Industry Standard" is utilized by some managers, executives, and auditors rather loosely referring to their own practical and professional experience. This lack of a formalization results in confusion and inconsistencies. There is no consensus on any specific personnel formula, program, model, or its application. Executives have to be self-reliant in determining the most appropriate model for their department and community.

Several factors influence the adoption of personnel models including geographic location in the country, sentiments from the community in which the department serves, and, probably most importantly, political influence. Hudzik (1981) cites an instance of local politics effecting state police levels because local sheriffs felt threaten by their presence in the area. Hudzik (1981) further stated that a national manpower-planning model for the criminal justice system has limited feasibility based on the local control feelings most communities possess. This remains true today.

Research information concerning this topic is sporadic and limited. Due to varying factors effecting staffing, researchers are faced with limitations. Factors include population, calls for service, Uniform Crime Reporting (UCR) statistics, geographic size of community, economic conditions, and most importantly, though probably under-estimated, political factors. Adding to the problem is that officers perform many functions and it is difficult to obtain a tangible measure of their responsibilities (Iannone, 1994). Departments rely heavily on historical experience and data to determine patrol force staffing levels (Iannone, 1994). This is important

because of the large percentage of funds being directed towards department personnel. Seventy to ninety percent of police operating budgets are directly allocated for personnel (Thibault, 1985).

There are several staffing philosophies emerged across the nation. Some are more heavily utilized as communities have embraced the reliability of the information to determine personnel levels. Kuykendall (1975) cites four models: Intuitive, Comparative, Workload-Functional, and Work-load-Strategic. It is necessary to examine the basic framework of each model. This foundation has remained relatively unchanged since this publication. These models are particular to the law enforcement community.

Kuykendall (1975) states that the Intuitive model, the most primitive of the staffing models discussed, takes into consideration three variables: 1) police and management knowledge; 2) experience; and 3) unspecified reasoning (educated guessing). This type of methodology is most commonly utilized by smaller agencies with very limited resources (Kuykendall, 1975). A reasonable assumption is that the margin of error increases exponentially as this model is employed by larger agencies. One can extrapolate that the larger the agency the more resources required, the greater void present when analytical planning is not involved.

Probably the most widely recognized model, both in and out of law enforcement, is the Comparative model. This comparison can be done using a variety of variables including crime rates, calls for service (CFS), and geographic location within the nation, most notably by population. This reasoning process is a comparison of the ratios to determine the manpower disparity (Kuykendall. 1975). This approach reduces complex factors to simplistic terms which are beneficial and also problematic. The benefit of this model is the easy in which justification or requests can be communicated to political entities, the media, and residents. The negative

issues are that there is no account for the quality or level of service provided, geographical size of the community, or demands placed on agencies by the communities and political groups (Kuykendall. 1975).

Kuykendall's final model is the Workload model. This approach derives personnel levels from analyzing past historical trends and using the information to forecast future demands. Two methodologies emerge from this model: Workload-Functional and Workload-Strategic. Workload-Functional is the result of the time required for police activities and the number of time-consuming activities (Kuykendall, 1975). The only difference between Workload-Functional and Workload-Strategic is that Workload-Strategic accounts for variables related to the amount of time dedicated to activities which produce intangible results such as visibility, crime prevention, and education programs (Kuykendall, 1975). Workload-Strategic would appear to be the most comprehensive model but it is problematic. It is difficult to forecast personnel when the staffing model takes into account intangible variables. Crime prevention is important to law enforcement but how do you measure how much crime was prevented? How much crime was deterred by patrol visibility?

It is logical to assume that intangible variables are difficult to forecast but tangible variables do not pose any less of a challenge for executives. According to Kuykendall, officer time, a major factor in the formula, has to be viewed after considering several factors including: number of working days in a month, sick time usage, military leave, training time, court time, and final adjustments for overtime usage (positive), and compensation usage (negative) (1975). This consideration is commonly referred to as the "relief factor" in workload staffing models.

Law enforcement is not the only profession dealing with this issue of personnel staffing. Executives can learn from the experiences of other public entities as well as the private sector.

Guvenc Alphander (1982) outlines a human resources principle "time series" as a means to forecast personnel levels in the organization. Time series is a mathematical formula forecasting future needs based on the assumption that these needs will not deviate from past historical data beyond an acceptable margin (Alphander, 1982). As in the Workload model there are certain operational aspects that are taken into consideration in the analysis. Workload trends, trends associated in seasonal peaks and reductions, cyclical issues affecting staffing, random incidents challenging the workforce, and incidental issues such as natural disasters which may or may not occur are all taken into the mathematical formula (Alphander, 1982).

Additionally the feasibility of implementation is important. According to Bartholomew (1983) two planning points are relative to law enforcement. Organizations must take into consideration motivations, aspirations and expectations of applicants, and the effective acquisition of these stated applicants (Hudzik, as cited in Bartholomew, 1983). Because of the length of time normally associated with the hiring and training of new officers, effective acquisition is a necessary factor of the staffing model. Retention history or the attrition rate is also a dominant factor in maintaining optimal personnel levels. Given the time period it takes to hire, equip, and train newly hired individuals it is extremely important to forecast department needs prior to the need being realized.

METHODOLOGY

It is difficult, if not completely impossible, to develop, hypothesize, or propose a universal staffing model applicable for all agencies. For this reason the research will examine some basic variables and model development. To determine the most efficient methodology in determining staffing levels, a broad examination of the problem will be conducted. This

generalist approach will seek to identify what if any "Industry Standard" is being utilized and determine, if possible, the soundest staffing model. Industry Standard will be defined as the actions taken by a majority of agencies surveyed concerning staffing levels. This action will include the total number of officers employed, officer assignment, and performance measures.

Municipal police departments were selected for this study. The one requirement for selection concerned city population. Only municipalities with a population range between 250,000 to 499,999 were questioned. A comparison determining commonalities and differences among the selected agencies was explored. This comparison will be done viewing a multitude of variables. Data for this comparison will include both statistical information collected by the United States government and results of a departmental survey. Because statistical information is constantly being updated and can vary among different sources, a common source was be utilized for each comparison. U.S. Department of Justice Bureau of Statistics and UCR data were the primary sources for all statistical information apart from survey answers.

FINDINGS

Statistical information was available concerning multiple aspects of the selected departments. The United States government has become very proficient in surveying and pooling information from different agencies across the nation and compiling comparative reports. The challenge becomes a question of identification, interpretation, and extrapolation. Transforming this raw data into useful information leading to ultimate implementation of programs, in this case staffing levels, is difficult, time consuming, and tedious. The extrapolation process refers to the process by which as conclusion can be drawn using recorded information which indirectly impacts the proposed question. A majority of the statistical

information utilized during this evaluation comes from two sources, the Bureau of Justice

Statistics and UCR data collected by the Federal Bureau of Investigation (FBI). An overview of

the research reveals that thirty-nine U.S. cities met the selection criteria for evaluation (Figure 1).

These cities had to provide municipal police service to a resident population ranging between

250,000 and 499,999.

Figure 1. Selected Cities.
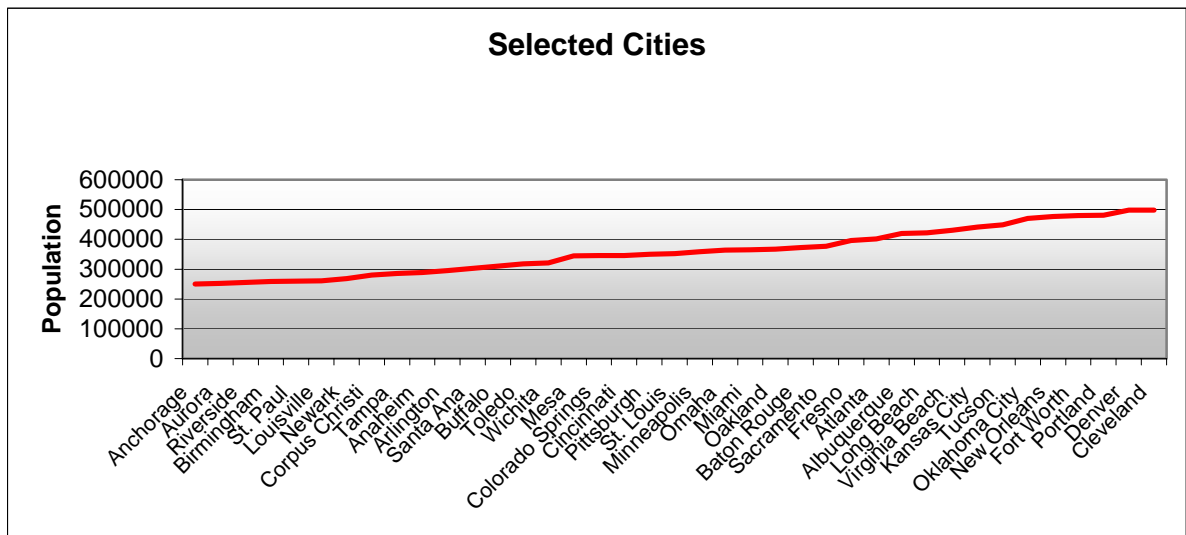
These thirty nine municipal agencies represent twenty-two states were including: 15 western

cities, 12 southern cities, 9 mid-western cities, and 3 northeastern cities (Figure 2).

Figure 2.Geographic Location.

Geographic Location

- 23%
- 8%
- 38%
- 31%

West ■ Midwest □ Northeast □ South
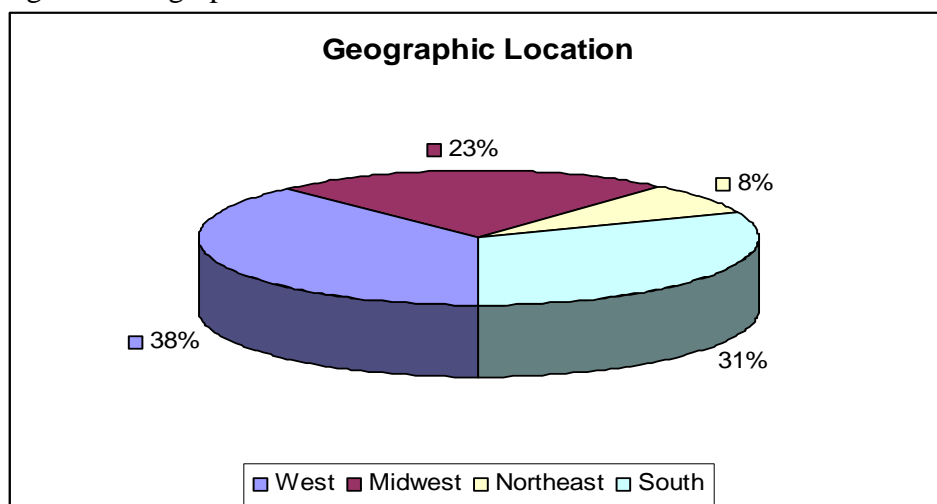
The geographic identifier was determined according to UCR reporting guidelines. The average officer to resident ratio for the selected cities was 25 per 10,000 and the average population was 356,358. UCR data indicates that the average total crime index was 7405. These figures were generally in line with national statistics for the same reporting period. According to the 1999 UCR report the national average number of full-time officers for every 10,000 inhabitants was 25. Although the selected cities mirrored the national average as a whole, the national average for comparable cities was 32 officers per 10,000 inhabitants.

Depending on the agency, this officer/population ratio can be misleading (Figure 3). A number of factors concerning organization structure, level of service, and program goals effect the distribution of these officers. Officers can be deployed in a variety of assignments but not all assignments require a sworn officer. Some positions require an officer but do not have a direct impact on the public and/or the crime rate. It was necessary to look at the deployment of officers within the selected cities and reduce the results to a comparable figure. This analysis covered total officers, total officers authorized (including vacancies), officers assigned to field operations and officers assigned to answer calls for service (CFS).

Figure 3. Officer to Population Ratios.
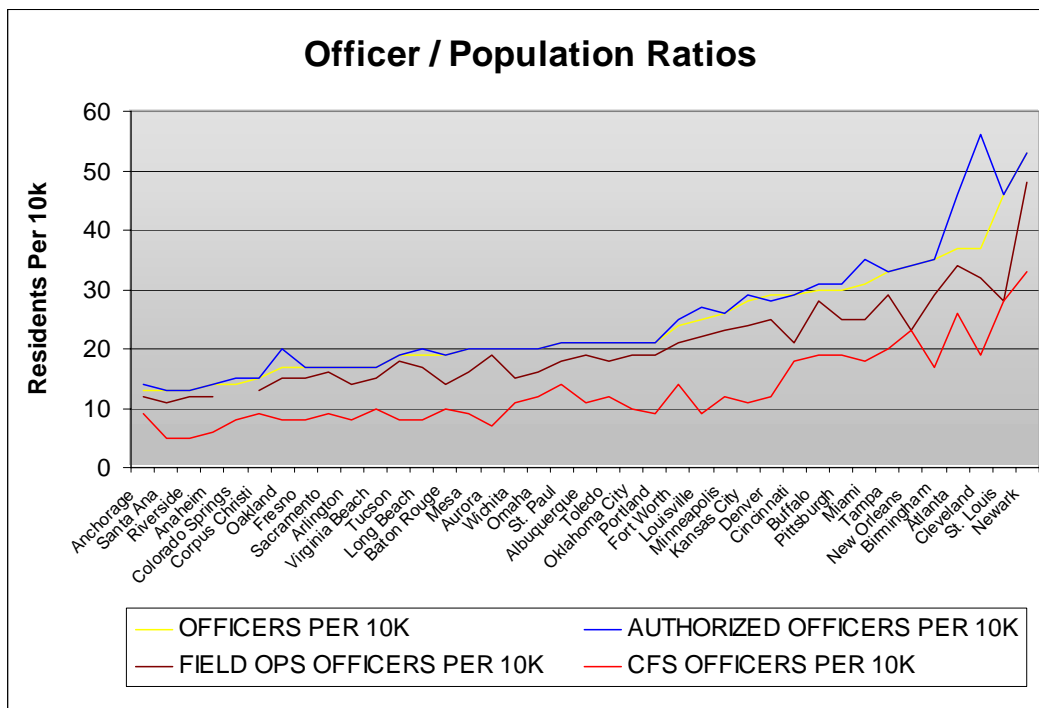
Which trend line is being taken into consideration greatly affects the officer/population ratio. Analysis reveals the following averages per 10 thousand: 24 Officers, 25 Authorized Officers, 20 Field Operations Officers, and 12 CFS Officers. Half of the officers employed by the selected cities were not available to respond to calls for service. Considering this issue, certain aspects of field operations have an impact on such functions as traffic, critical incidents, warrant service, and K-9 units, the field operations ratio may provide a more accurate depiction.

The Bureau of Justice Statistics stated that in cities with a population over 250 thousand during the 1990s UCR violent crime decreased by 34%, property crime decreased by 31% while the number of fulltime officers increased by 17% (Reeves, 2002). During the same reporting period operating budgets for police departments serving cities over 250 thousand totaled more than 13.1 billon dollars. The average cost per resident increased by $24 to $266 per resident, an increase of 10% (Reeves, 2002). All these facts were independently listed facts rather than

correlative variables. No direct justification or rationalization was made between the reduction of the crime rate and the increase in sworn personnel.

Research found that there was a temporal gap between publications concerning staffing levels. Many of the publications were written in the late 70s through the mid-80s. Many of the studies were the product of increased interest in the law enforcement community after the race riots and civil rights movement of the 60s. Although this movement developed the basic models of staffing such as the Intuitive, Comparative, and Workload models, progression past the development stage could not be located.

Numerous recent publications (mid-80s to present) were discovered in professional literature concerning personnel deployment according to shifts. Overall staffing levels for the department were reduced to stating that the numerous variables present had to be addressed at the local level. This acknowledgement and the lack of specific justification on theory further emphasize the Workload-Strategic model.

To further investigate this point, agencies were polled in the survey to determine some of the factors or variables considered on the local level that affected staffing levels. A forty percent response rate was realized for the survey. All but two agencies stated that their policing philosophy was either Problem Solving Policing or Community Oriented Policing or a combination of both. Staffing variable philosophies could generally be described into six different categories (figure 4.) These variables include population, UCR crime values, queuing, calls for service, encumbered time, and response times.

Figure 4. Survey Staffing Variables
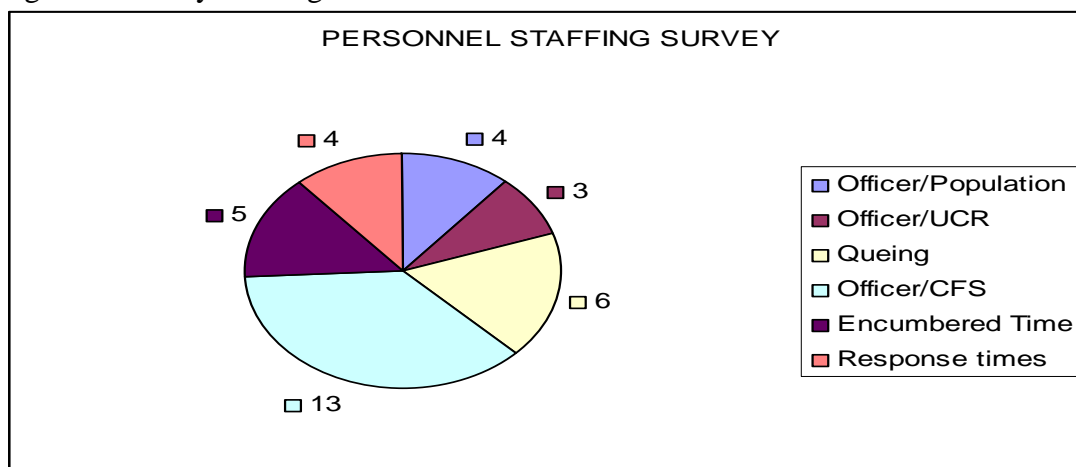
One agency did not have any philosophy concerning staffing levels and four only utilized one variable. Of these singular variable cities only one relied on population as the sole factor. The other agencies utilized at least two and as many as four different variables in an effort to determine and forecast staffing levels for the department. Fifty percent of the agencies utilized a combination of calls for service and/or queuing and/or encumbered time.

The preface of the UCR further explains this point. The FBI cautions readers against comparing statistical data from selected agencies using population as the only variable. Thirteen multifaceted variables are acknowledged as crime factors by the FBI but no attempt is made to develop any analysis of these variables. Furthermore some of these variables are intangible and can not be empirically measured. This does not devalue or de-emphasize these factors but it is important to understand that they are present.

UCR data, although useful, attempts to serve many groups with different concerns, objectives and goals. According to the FBI the goal of the UCR report is to compile national statistics related to crime for law enforcement, researchers, academicians, the media, and the populace.(1999). The last of the two groups are of particular interest.

Although the inherent flaws of UCR data have been explained it remains factual that many communities and politicians view UCR data as the public report card for the specified agency, as compared to both other communities and to itself from a historical perspective. Furthermore it reduces complex crime factors in America to simple, concise numerical figures. This arms the media with the type of repeatable information necessary to either inflame public fears or complement law enforcement activities as successful. This can present the problem of creating a false sense of anxiety or security in the community. These are the unintended consequences of the UCR program.

Even during the time of the publication in 1975, Kuykendall gave the indication that the Intuitive Model was less than desirable in larger communities because of the inability to establish empirical justification for staffing levels. Understanding the limitations presented by UCR data eliminates the feasibility of the Comparative Model as an effect tool for determining staffing levels. This leaves the two workload based models: Workload-Functional and Workload-Strategic.

DISCUSSION/CONCLUSION

Law enforcement executives are faced with increasing demands for accountability. This accountability stresses not only the day to day actions and conduct for the department but also the fiscal operations. As citizens and political action groups monitor government expenditures more closely, the need to clearly and convincingly justify resource allocation becomes more and more important. Due to the fact that personnel expenses account for the majority of the police budgets, calculated forecasting of personnel needs as the city grows is a necessity.

Staffing dilemmas are identified but the solutions are not. Determining which staffing model is the most appropriate remains obscure. The research revealed that there are limited publications concerning this topic. After examining this issued and the problems associated with the research it is more understandable why there are limited publications. Too many variables exist to establish a national or industry staffing model. Researchers realized thirty years ago that local leadership over agencies would want to retain local control and not follow some nationally accepted model (if one could be developed). Even within a certain staffing philosophy such as the work load model issues arise that question the integrity of the model. Issues such as the determination of which variable to consider and how much weight each variable will have in the total calculation of personnel needs.

The research revealed that the majority of agencies that answered the survey utilize the work load strategic staffing model. This model takes into consideration three main variables: total calls for service, amount of officer time on call, and proactive patrol time for visual deterrence. Again a problem with the research question and methodology is the importance given to each variable, justification for that importance, and the combination of such for the total staffing formula. It is important to understand that what ever importance is given to intangible variables in the staffing formula, over eighty percent of the agencies indicated that call for service information was important in determining staffing levels.

Although the Work-Load Strategic staffing model was determined to be the most predominant model utilized by the surveyed agencies, the comparative model cannot be discarded. Regardless of the lack of scientific validity this model remains important because of its use in the media, the community, and employees. The effectiveness of this model lies in the ability to take complex information and reduce it into understandable concise figures easily

understandable by the public. This is the model that, regardless of which model the department utilizes, will be used to compare other cities and departments. This research further demonstrates this finding given that every variable evaluated was "comparatively" viewed amongst the surveyed cities.

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