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Patrol Allocation Needs for Law Enforcement

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ABSTRACT

Patrol allocation is relevant to contemporary law enforcement because police administrators constantly have to justify their request for extra manpower and its effects on the safety of the citizens they serve. For example, the Huntsville Police Department is a department that employs forty-seven total officers and was used to test this topic. Of this number, twenty of the officers are patrol officers. Their duties entail answering calls for service, preventative patrol, and working traffic. This department is responsible for the safety of 26,492 citizens who reside within the city limits. In addition to these citizens, Huntsville has an even larger daytime population, which includes commuter students of Sam Houston State University and employees of the Texas Department of Public Safety who reside outside of the city limits. The purpose of this research is to see if there are enough patrol officers employed by the City of Huntsville (or a town of this size) in order to serve their citizens with confidence.

Attempting to determine how many police officers should be allocated to the patrol function is a very complicated procedure. This evaluation looked at several different methods in attempting to determine how many patrol officers a police department should have. The method of inquiry used by the researcher included: a review of articles internet sites, journals and a comparative study. After all the data was gathered and evaluated, it can easily be seen that the Huntsville Police Department is severely deficient when it comes to manpower in the patrol division. The City of Huntsville must begin efforts to remedy this issue so that the citizens will be provided with adequate service and security.

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INTRODUCTION

For many years police agencies have been trying determine how to properly allocate their resources in order to best serve their public. Police agencies have been struggling to figure out how to determine how much manpower they need in order to provide the best possible protection and service to the citizens. With the advent of community oriented policing and the more recent problem oriented policing models, police agencies must be able to place the right amount of officers on the streets in order to implement these plans. How to determine this police allocation is a problem that police departments have been facing for many decades.

In the early days of policing, officers were just expected to answer calls for service. However as policing as progressed over the years, officers have been asked to become an active participant in the prevention of crime as well. With this change in services provided, police departments can no longer depend on calls for service statistics to determine how they allocate their patrol units. According to Brotheim (2003), "Almost without exception, every law enforcement agency in the country and some of its contract components has, at one time or another been asked to either justify current staffing levels or to justify requests for additional staffing" (p. 9).

The Huntsville Police Department, which was used as a test city, is no exception to this. This project will focus on the ways that the City of Huntsville has determined their police staffing needs and what factors need to be considered when attempting to get closer to the state average in police allocation. It will examine how a police department will be impacted by the anticipated increases in the population in the city.

The researcher will use a comparative study in order to see how police departments of the same size compare with each other in their ratios of patrol divisions. The study will compare

patrol officers per 1,000 residents, the total number of officer per 1,000 residents, patrol officers per square mile. The researcher will then test the following hypothesis: Most departments are severely below the standards as set out by the Department of Homeland Security. The Huntsville Police Department, in particular, is in severe need of patrol officers in order to maintain public safety, citizen satisfaction, and continue their implementation of the problem oriented policing philosophy.

The administration of police departments will be interested in the findings of this study because it will give them an in-depth look as how their staffing requirements should be adjusted. The administrators who are held accountable to the public they serve will be able to compare their department with other departments of equal size throughout the state and see what shortcomings there may be.

The patrol officers of the department will benefit as well from the results of this project. If the department follows the findings of this project it will help in the amount of stress the patrol officer faces on a daily basis by reducing the large volume of calls they must respond to and will improve employee morale. The ultimate winners in this study will be the citizens that the police department serves. If the department can better allocate their human resources, then the citizens will benefit from better protection and hopefully a lower crime rate. Also, other departments will be able to look at this study, use the City of Huntsville as an example and determine if their current methods of determining patrol allocation are the best and how they compare with agencies of the same size.

REVIEW OF LITERATURE

Police administrators in all departments must face the problem of providing a high level of service to their community with a specific number of personnel (Iannone & Iannone, 2001, p.

291). There are a wide variety of things that a patrol officer might have to face in a typical day of work. This wide range of incidents can include: “crimes in progress, crimes discovered, open windows in businesses, or the home of neighbors, family disputes, disturbances or annoyances, parking violations, downed power lines or impassable roads, sick or injured persons, missing persons or animals, and the proverbial cat stuck in a tree” (Sviridoff, 1982, p. 2). With this in mind the question that must be answered is, what is the total number of officers that are required to provide an acceptable level of service (The Traffic Institute, 1993, p. 1)?

The first thing that must be done is define what patrol is. According to Jan Chaiken, patrol is referred to as “uniformed officers who ride in mobile vehicles and engage in such activities as responding to calls from the public for emergency services” (Chaiken, 1975, p. 1). This report was written in 1975 and the way of looking at patrol has changed a great deal. With the introduction of community oriented policing and problem orienting policing, there have been several types of patrol defined. It is now common for patrol officers to divide their time between three activities. The break down of time is as follows: one third of an officer’s time they are responsible for answering calls for services, one third of their time is spent on things such as crime prevention, community relations, and other proactive services that a department may deem necessary for an effective patrol unit, and one third for administrative duties such as writing reports, conferring with superiors and meals (International Association Of Chiefs Of Police, n.d.). Due to a more community based shift in policing styles, a police administrator must be aware of all of the phases of police activities that a patrol officer is faced with. The administrator must also be aware of the time spent in each of these activities.

The study conducted by the Traffic Institute of Northwestern University breaks down these three phases of patrol. Reactive patrol is described as service-on-demand. These are the

calls that come in from the community in which a citizen is requesting assistance and have been assigned by a dispatcher. The second element is that of proactive patrolling. The writers of this study break this down further into two components. The first is that of self-initiated activity. This includes the issuance of citations and warnings for traffic violations, traffic direction and control and general field interrogations. The other portion of the self-initiated activity is that of uncommitted patrol time. This refers to general patrolling of the roadways and interaction with the community members. The general patrolling can be either moving or stationary patrol and is meant to create a visibility factor to deter crime. The interaction with the community is the actual getting out and meeting the members of the community by the patrol officer. This is accomplished by such things as foot patrols, door to door contacts and community meetings. Lastly the study defines administrative time as the time that does not fall into the other categories. Examples of these activities are: court time, personal time, training, and patrol car maintenance (The Traffic Institute, 1993).

With these activities in mind a police administrator must attempt to determine how to allocate their staff into the patrol function. Traditional systems of deploying police resources have failed to keep pace with changing patterns of demand and as a result overstaffing and understaffing of patrols have become inevitable. It has been found that there is little appreciation for resource management issues among police managers. There is also a lack of management information regarding both demand and the availability of officers (Woolfenden, 1999). This is something that must change in order to agencies to properly allocate their personnel so that the community is served to the best of the agency's ability.

Many law enforcement agencies have experienced significant staffing changes in conjunction with increased community growth over the last two decades. When agencies focus

on the future, questions will arise, such as what new forms of organization they must create and how they should deploy their forces (Moty, 2006). In order to come up with solutions, many alternatives have been tried. Many times, the shift supervisors must use overtime to satisfy minimum staffing needs. While many of the officers stated that they are willing and do work overtime, in their opinions, the constant need to fill patrol shifts has left officers feeling overworked (Current practices of the Baltimore Police Department: The Internal Reality, 2001).

The total number of officers available to a patrol administrator will vary from community to community depending on factors such as budget limitations, the availability of qualified applicants, the extent of crime, and the level of police service demanded by the public. The problem with this is that many police functions do not allow themselves to be examined by precise time and motion studies. These would be able to allow the administrator to precisely determine the patrol needs. Therefore, rules of thumb and experience will usually dictate the amount of public monies allotted for policing (Iannone & Iannone, 2001, p. 291).

In order to help police organizations to determine their patrol allocation strategy, several studies have been completed. One of the first studies completed was the Kansas City Preventive Patrol Experiment, which was completed in 1973. This experiment looked at the belief that the presence or potential presence of police officers on patrol severely inhibits criminal activity. The experiment divided the normal patrol areas of Kansas City into three different experimental areas. The first area was termed the “reactive” area. In this area, patrol units only entered the area when they were dispatched to a call in that area. The second area was the “proactive” area. In this area, the police visibility was increased two to three times its usual level. The last area was the “control” area, in which the normal level of patrol was maintained. The authors of the experiment gathered data from victimization surveys, report crime, arrest data, and surveys of

citizens and businesses. The analysis of the data gathered revealed that the three areas experienced no significant differences in the level of crime, citizens' attitudes towards police services, citizens' fear of crime, police response time, or citizens' satisfaction with police response time (Kelling et al., 2003). At face value, it would seem that this study shows that the answer to crime prevention and general public safety is not the hiring of more police officers. The problem with this study is that it was conducted before a time of community-based policing was introduced. The officers in the proactive area only patrolled the area more. This means that they simply drove through the area more and were merely more visible. We have learned from both the community oriented policing and problem oriented policing models that there must be more interaction between the patrol officer and the community in order to there to be a significant impact on crime rates and the feelings about the police from the community.

According to Kelling et al. (2003):

The findings of this experiment do not establish that the police are not important to the solution of crime or that police presence in some situations may not be helpful in reducing crime. Nor do they automatically justify reductions in the level of policing. (p. 3)

With the advent of the other styles of policing, one must look at other studies when attempting to determine their allocation methods. In 1975, Jan Chaiken wrote a report on how departments should determine how to use mathematical equations to determine allocation methods. The first thing that she established that one needed to determine was the amount of patrol units that would be busy on call for service on average. She used the equation of average number of units busy on calls for service is equal to the average call rate multiplied by the average unit-hours per call. This would allow an administrator to predict the approximate call rate and average number of unit-hours per call. An administrator would be able to look at this

and determine how many officers are needed at any given time. However, she admits that the problem with this method is that calls for service do not occur at orderly predictable times and the length of time required to handle a call is not exactly the same for all calls. She also points out that patrol units are sometime unavailable for reasons other than calls for service. As discussed earlier, these are such things as court, meal breaks, etc... She pointed out that this is one viable option to determine the number of patrol units needed by an administrator, but it has its flaws as well (Chaiken, 1975). Again, it must be pointed out that the theories of the community based policing has still not been introduced at this point.

After the years of these studies, many workload studies were conducted and many attempts were made to establish formulas as to how the workload affects the amount of officers needed. In 1999 Chief Inspector Sue Woolfenden submitted a report to the Merseyside Police Department. She advocated the use of a computer program in order to determine that correct patrol allocation for their department. She used the software package, Staff Wizard. It was designed specifically to match officer deployments to demand. It took into account factors such as geographical size, miles of road, desired response time, service time per call, the number of both emergency and non-emergency calls and administrative activities. The computer program also gave them the option to allocate time for proactive, self initiated and community orientated activities. With the use of this system, they determined the departments needs and showed that they were not meeting the needs of their community (Woolfenden, 1999).

In 2003, Hal Brotheim wrote in the Journal of California Law Enforcement stated that he had come up with a proven staffing methodology. He stated that by using one formula, a department could determine its needs for both the present time and it also allowed for the prediction of future staffing. It was suggested in his writing that a standard of 40% of

preventative patrol time should be maintained. By using this number he first took the population of a community and multiplied it by .41. He then took a random sample and determined that it took an average of 33.35 minutes to complete a call for service. By using a rounded off number of thirty minutes for each call, he determined that an average officer could handle 856 call for service per year without impacting preventive patrol time. His final formula for staffing projections was as follows: $([\text{population} \times .41] + \text{total call for service})/856 = \text{number of needed personnel}$ (Brotheim, 2003).

In 2004, the City of Greensboro completed a comparative study as their approach to determine patrol allocation needs. They first collected data from their city. The data collected were the total calls for service, number of call handled through telephone response units, response times, number of officers per call, a shift relief factor and a time of day and day of week analysis. Once they had collected all of this data, they compared it to cities of the same size. The comparative data that was collected were as follows: part I crimes per 1,000 residents; calls dispatched per employee; calls dispatched per sworn officer, calls dispatched per capita, average response time to high priority calls, sworn officers per 1,000 residents, total employees per 1,000 residents; sworn officer per square mile; and sworn officers per road mile. By completing this study, they were able to determine that they were behind in service provided as compared to the other cities, but could not determine the number of officers that they actually needed (Greensboro Police Department, 2004).

One can see that there are many ways that an administrator can attempt to determine their patrol allocation needs. There is not an answer that will work for every department. There are many things that must be considered such as budgets, and policing styles. Agencies coping with budget constraints can choose to reduce uncommitted, prevention-focused time, thus expanding

the time committed to response calls. This strategy reduces patrol staffing requirements, which may risk public safety. Alternatively agencies can choose to be more proactive and allocate a higher percentage of each officer's time to crime prevention, problem solving, community relations, and other proactive activities. However, this strategy increases manpower requirements. The International Association of Chiefs of Police prefers the more proactive approach to policing (International Association Of Chiefs Of Police, n.d.). The most important thing for administrators to remember is that they are dealing with people and not machines. Many functions of the patrol officer are intangible and the need for these activities is not susceptible to accurate measurement. Therefore, the total number of officers assigned to the patrol force will usually be based on estimates, which in turn rely heavily on records of past experience and operations (Iannone & Iannone, 2001).

METHODOLOGY

The City of Huntsville, which was used as a test location, is located approximately 50 miles north of Houston, Texas and is located in Walker County. The city limits of Huntsville incorporate 31 square miles. The two primary employers for Huntsville are the Texas Department of Criminal Justice (TDCJ) and Sam Houston State University. There are currently five institutional division facilities in operation within the city limits.

According to the United States Census Bureau reports that the 2000 population as 35,078. Included in this population are 8,586 TCCJ inmates. If these individuals are taken out of the population numbers, the population is 26,492(U.S. Census Bureau, n.d.). According to Dee McFarland, with the Huntsville Chamber of Commerce, 5,358 students at Sam Houston State University report their residence as Huntsville in the 2000 census. However, there are currently 15,300 students enrolled at the university. This shows that population of 26,492 that the U.S.

Census Bureau reports is severely flawed due to the number of students that reside in Huntsville, but list their parent's residence in census reports (D. McFarland, personal communication, March 8, 2005). The 2000 Census reported that there were 12,515 employed civilian population of sixteen years or older. Of these individuals, 27.4% were employed in educational, health, and social services and 17.3% were employed in public administration. This further shows that the State of Texas and the university, which is also a function of the state, are the two primary employers and industries in the City of Huntsville. The 2000 Census further reports that the median household income is \$27,075 per year (U.S. Census Bureau, n.d.).

There are currently 54 full time employees at the Huntsville Police Department, which includes 47 licensed police officers. The patrol function currently is allotted 20 positions. In addition there are four patrol sergeants, a two man bicycle patrol, a canine unit, and a traffic officer. 19 of the patrol officers are split into three ten hour shifts. The 20th officer mans a swing shift between the day and evening shift. The patrol unit is responsible for responding for calls for service, enforcing traffic laws, and general proactive patrol duties as time allows. The bicycle patrol is assigned to a specific area of town. They are only responsible for proactive patrols and problem oriented policing programs. The traffic officer is responsible for traffic enforcement and traffic accidents. The canine officer responds to narcotic searches, alarm calls, and crowd control. The bicycle patrol officers, the traffic officers, and the canine officer do not respond to general calls for service. In addition, the sergeant that is working on a shift does not respond to calls. He is available to answer patrol officer questions, citizen complaints, various administrative duties, and may assist on calls for service if all patrol officers are busy. Basically, the patrol officers handle all of the calls for service. There are also minimum staffing requirements for the Huntsville Police Department. From 2 A.M. to 4 P.M., there must be a

combined three officers working. From 4 P.M. to 2 A.M., there must be a combined four officers working. These numbers include both the patrol officers and sergeants. It is possible during the morning hours for there to be two patrol officers and one sergeant working and the minimum staffing requirements would be met. In this situation there are only two officers responding to calls for service, with the sergeant filling in when needed.

This study compared the patrol division of the Huntsville Police Department with patrol divisions from other police departments. The criteria for comparison were population, and square mileage. The range in population was from 37,640 to 24,485 with the average of the cities' population being 30,640. The range in square miles was from 70.04 to 10.36 with the average of the cities' square mileage being 24.18. The City of Huntsville fell into these averages. The study compared the ratio of patrol officers per 1,000 residents, the total number of officers per 1,000 residents, as well as the ratio of patrol officers per square mile. It compared the Huntsville Police Department with the average of the comparison cities in these same ratios. Data was collected from the individual police departments, the Chamber of Commerce in the comparison cities, and information from the United States Census. Once all of the comparisons were completed, the hypothesis that follows was tested: The Huntsville Police Department is in severe need of patrol officers in order to maintain public safety, citizen satisfaction, and continue to implement their problem oriented policing philosophy.

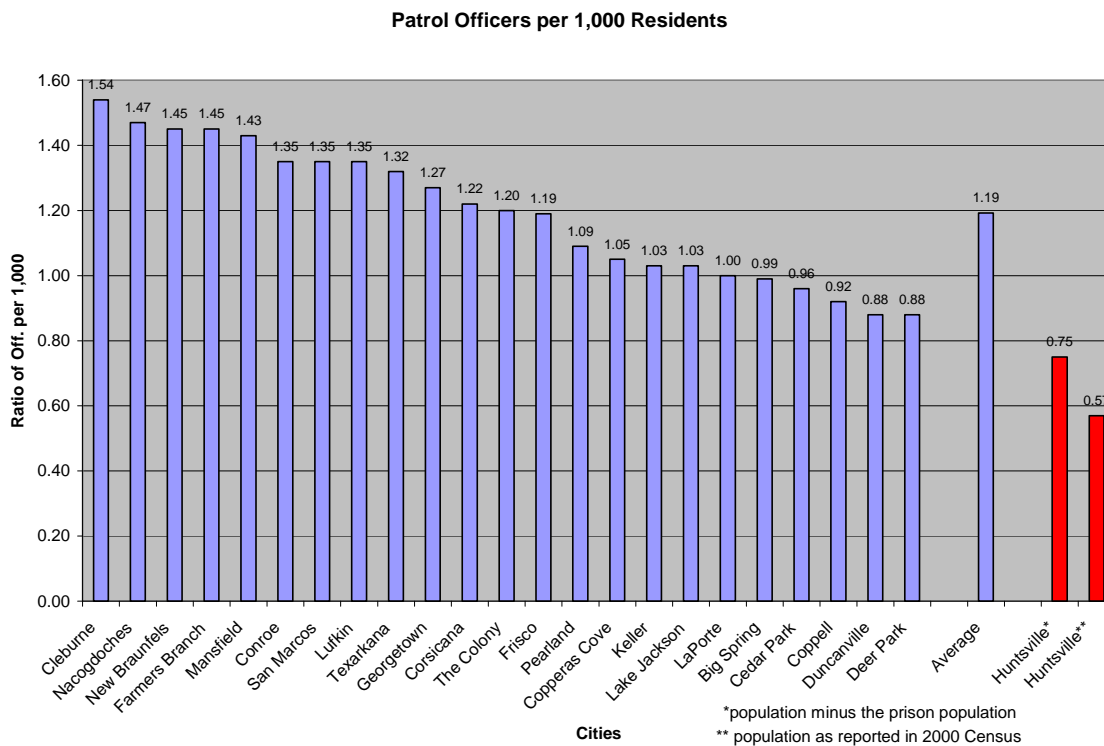
At this time no day time population studies have been completed for the City of Huntsville or any of the comparison cities. It is known that there are a large number of individuals who do not live within the incorporated city limits of Huntsville, but work during the day or night within the city. These citizens require the same level of police service as do those citizens who reside within the city. A second confounding factor is that of the university

students. It is unknown if there will be anyway of determining the number of students who commute to the City of Huntsville to attend school and the number of students that actually reside within the city limits. These numbers are important also because when the students are driving, eating lunch, shopping and attending classes they must be equally served by the police.

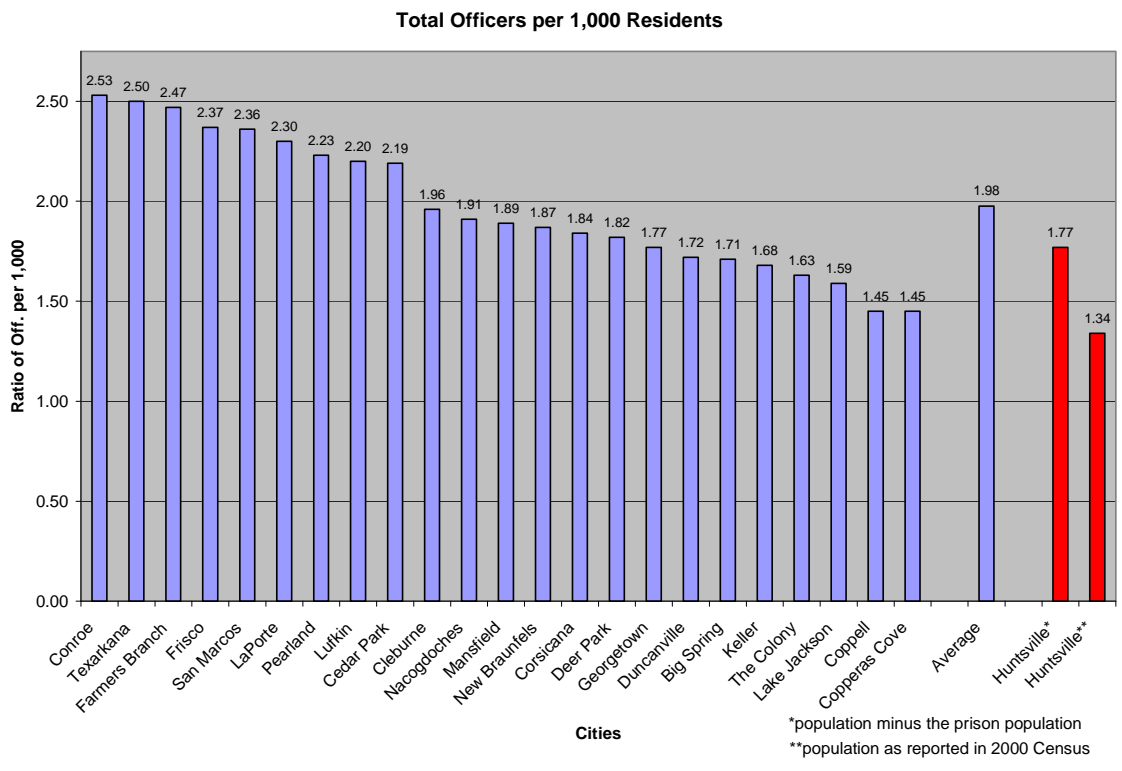
Better results could be found if there was more time or resources. This could be established with the use of surveys of both the officers who work in the respective cities and the citizens who reside there. A survey of the officers would help to show the difference in both the physical health and the mental health of the officers in the different cities. It would show if the officer's health is affected by the amount of workload that is proportionate to the ratio of officers to 1,000 citizens. A survey of the citizens that are served in the respective cities would show how satisfied they are with the police service they are receiving. Again this could be compared to the number of patrol officers that service that community and then compared between communities. This in-depth study could help further show the patrol allocation needs of the Huntsville Police Department.

FINDINGS

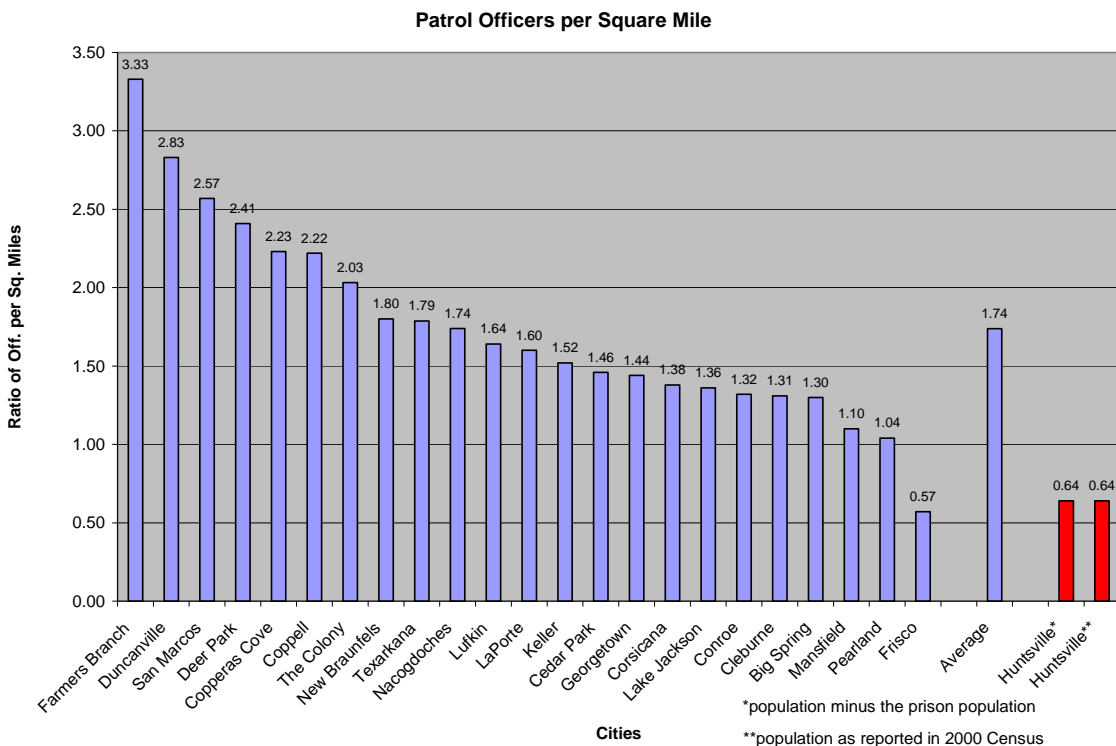
This study used the population of 26,492, which is the 2000 population as reported by the U.S. Census minus the prison population within the city limits of Huntsville. The first ratio that was compared was that of patrol officers per 1,000 residents. There was a high of 1.96 officers per 1,000 in the City of Cleburne and a low of 0.75 officers per 1,000 in the City of Huntsville. One can see that the City of Huntsville is well behind the average in the ratio of patrol officers per 1,000 residents, which were 1.19 officers per 1000 residents.



The second ratio that was compared was that of the total number of sworn officers per 1,000 residents. There was a high of 2.53 officers per 1,000 in the City of Conroe and a low of 1.45 officers per 1,000 in both the cities of Coppell and Copperas Cove. The City of Huntsville's ratio was 1.77 officers per 1,000 residents. The average of all of the comparison cities was 1.98. Again, Huntsville is behind the average, but it does not appear on the surface that the department is that far behind the average. However, when you delve deeper into the numbers, one can see that there are four school resource officers included in the number of total officers. Most school districts employ their own police force, but the Huntsville Police Department instead provides these services to the school district. If these five officers are removed from the equation the ratio goes down to 1.58 officers per 1,000 residents. This again shows that the City of Huntsville is far behind in providing adequate services to their citizens.



The last way that the Huntsville Police Department was compared to other departments was that of patrol officers per square mile. There was a high of 3.33 patrol officers per square mile in Farmers Branch and a low of 0.57 patrol officers per square mile in Frisco. The average of all of the comparison cities was 1.74 patrol officers per square mile. The City of Huntsville came in a third time below the average at 0.64 patrol officers per square mile. The only city that was lower in this ratio was that of Frisco. When these two cities are compared one can see that Frisco has almost double the square mileage and has double the amount of patrol officers. This last comparison shows once again that the City of Huntsville must make staffing a priority for the police department.



DISCUSSION/CONCLUSIONS

The literature and research indicates that the Huntsville Police Department patrol division is severely undermanned. There are several ways in which the number of patrol officers can be determined. When all of these methods are used, the patrol division comes up well short of its needs. The first way that was looked at is the formula developed by Hal Brotheim, which was discussed earlier. When this formula is used, the Huntsville Police Department should have a staff of 41 officers in its patrol division. With a current staff of 21, it can be easily seen that more officers must be hired.

The best way to determine the patrol allocation needs for the department is to use the comparative study results that were used. Again, the problem that is faced is attempting to figure which population should be used. If the population as reported by the U.S. Census is used, then there should be 42 patrol officers to get to the average of 1.19 officers per 1,000 residents.

However, most individuals would say that the population that should be used is the one which subtracts the number of inmates in the prison units; however, this population does not adequately represent the number of college students in Huntsville. With this being said, to meet the same average ratio of officers per 1,000 residents, the department would need to employ 31 patrol officers. Regardless of the population, the City of Huntsville needs to hire between ten and twenty-one patrol officers to provide a better service to the citizens that it serves.

The last way to determine the needs for the patrol allocation is to look at the comparative study as it relates to officers per square mile. In order to get to the average of 1.74 officers per square mile, the Huntsville Police Department would need to hire an additional 34 officers in order to get to 55 patrol officers and bring the department to this average.

It is clearly evident that the City of Huntsville must address this shortage in manpower, so that the citizens can be provided an adequate level of service and security. The funding of these additional employees is where the largest piece of the problems lies. Not only would the salaries of these new officers have to be budgeted for, but their benefits, and all needed equipment would also have to be figured into the budget process. The City of Huntsville has a very small tax base for its size. The two major industries inside of the city are the Texas Department of Criminal Justice and Sam Houston State University. With both of these agencies being state run agencies, they do not pay property taxes or add to the tax base in any other way.

It is my recommendation that the City of Huntsville come up with a way to increase their tax base. There are two possible solutions. The first would be to raise the level of property tax that the city collects. The City of Huntsville has not raised property taxes in twenty years. They have instead lowered the tax rate in because of rising property values. This tax rate was lowered so that the citizens would be paying the same amount of taxes even though their property values

were rising. In essence, the City of Huntsville has been working off of the same amount off of the same tax base for the past twenty years.

The second way in which they can increase the tax base is to raise the sales tax within the City of Huntsville. If this is done, the percentage of the tax increase should be ear-marked for public safety. If this is done, the citizens of Huntsville will not disagree with this rise in taxes because they will realize that they will be provided with adequate police services.

Regardless of how the city raises the money to employ and outfit more patrol officers, it must be done. The citizens of Huntsville deserve to feel safe in their everyday lives and deserve to receive the service in which they are ultimately paying for. The administration of the City of Huntsville and the city council must stop ignoring this growing problem and find alternatives in funding the police department so that the citizens of Huntsville receive the service that they deserve and expect.

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