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ABSTRACT

A DESCRIPTIVE STUDY OF CERTAIN METHODS AND THEORIES OF CRIME PREVENTION AND DETERRENCE AND THEIR RELATIONSHIP TO EDUCATION AND TRAINING IN CRIMINAL JUSTICE PROGRAMS

By

Albert Gerald Isaac

This study was initiated by consideration of two underlying assumptions:

1. That certain methods and theories of crime deterrence and prevention which are in use throughout the field of Criminal Justice, and which form a basis for a good deal of the training and education in that field, are founded on tradition and "common sense" value judgements and are as yet untested.

2. That it is vitally important, especially in view of the nation's rising crime totals, that research be directed toward these certain methods and theories in order that police administrators, trainers, and educators may have the benefit of proven practices to use in their professions.

Following these assumptions the author set out to answer the following questions:

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1. Considering the historical basis of the theory that relates visibility and mobility in police patrol to crime deterrence and prevention, what is the present status of the theory?
2. Is this theory based on untested assumptions, and has it received credibility through traditional use while being carried on by the medium of training and educational programs in Criminal Justice?
3. In police programs which use and promote the theory of visibility and mobility as effective in crime deterrence and prevention, does a data base exist which can provide a starting point for future research aimed at testing and evaluation of this theory?

The effort to answer these questions prompted this study of police patrol, particularly as related to speed in mobility as embodied in the helicopter, with the added intention of generating some useable hypotheses for future research. It was also intended that some useful recommendations might result.

Thus the objectives of this study are two-fold in that it will describe the processes under discussion for purposes of inspection by researchers while at the same time it demonstrates some of the systems in present use which are being developed to evalulate patrol theories and methods with an eye to generating useable hypotheses and some acceptable and helpful recommendations.

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Chapter I describes the purpose and scope of the study, describes the problems of theory and method in police patrol and presents the basis in history for these theories and methods.

Chapter II consists of a review of the literature which expounds the theories and explains the methods of police patrol and relates them to the administration, training, and education of police officers.

Chapter III provides a view of the sources and methodology of collecting the data used to describe the processes which are under study.

Chapter IV furnishes a description of the data obtained. This chapter offers some minimal data analysis but only with the intention of providing a more complete description.

Chapter V is a summary of the study. It presents justification for the description, a general overview of the previous chapters, and an answer to each of the questions asked at the outset. As a further answer to these questions, the author provides some of his own conclusions and finally, as the ultimate end of a descriptive study, offers hypotheses for future research which are generated by this study, and recommendations for consideration by the profession of law enforcement.

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A DESCRIPTIVE STUDY OF CERTAIN METHODS AND THEORIES OF CRIME PREVENTION AND DETERRENCE AND THEIR RELATIONSHIP TO EDUCATION AND TRAINING IN CRIMINAL JUSTICE PROGRAMS

By

Albert Gerald Isaac

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Education

1976

Dedicated to

My wife, Virginia

For encouragement, and oh,
so much patience

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Arthur F. Brandstatter, Director of the School of Criminal Justice and former Detroit police officer, for help and guidance.

And I want to acknowledge with gratitude the special aid given by my committee:

Dr. Dale Alam for last minute heroics in my hour of need;

Dr. Walter Scott, for giving me a view of the unchanging face of education;

Dr. Charles A. Blackman, Chairman, for gentle prodding and erudite direction;

And of course, my teacher, Dr. Robert Trojanowicz who has made me understand that knowledge is worth any effort.

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INTRODUCTION

Purpose and Scope of Study

The purpose of this study is to provide a description of those methods and theories of police patrol which rely on the belief that visibility and mobility have a direct effect on crime by deterring or preventing criminal actions. The study is intended to provide useful data to researchers who may wish to test and evaluate these methods and theories.

The study also proposes to describe the influence that those methods and theories exert on the persons who manage police agencies and train policemen as well as those who structure curricula and teach criminal justice courses in higher education.

Because the theory of visibility and mobility is related to speed of movement, the study will focus on the fastest of all police patrol vehicles, the helicopter.

Pertinent information concerning the police theories of visibility and mobility will be discussed and examinations will be made in an effort to determine whether some data base exists which might be the foundation for research in evaluation and testing of those theories.

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Limitations of the Study

This study is limited by the narrow scope of information pertaining to police service evaluations insofar as they relate to crime deterrence and prevention along with the scarcity of material which relates police theories and methods to higher education programs. The thesis is generally based on all such material that was uncovered and the questionnaire results lack any direct personal contact between author and respondents except by mail.

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CHAPTER I

THE THEORETICAL SETTING OF THE STUDY OF POLICE PATROL

In order to properly explore any police theories or methods it will be useful to observe at least part of the history of that profession. In this setting it may be possible to find the basis of the theory that relates visibility and mobility in police patrol to crime deterrence and prevention.

The functional programs of most police organizations are generally patterned after the military with basic divisions of line and staff.

The line division is charged with the duties most directly bearing on public safety and law-enforcement such as patrol, investigation, and traffic control.

The staff function is expected to provide support services like personnel, record keeping, training, laboratory work, and educational programs.[1]

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[1] V. A. Leonard, Police Organization and Management (Brooklyn: Foundation Press, Inc., 1951), p. 83. See also A. C. Germann, Frank D. Day, and Robert R. J. Gallati, Introduction To Law Enforcement and Criminal Justice (Springfield: Chas. C. Thomas, 1969), pp. 144-47.

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A great deal of the procedure used in the line, or "street" function of police agencies is derived from a background and history of tradition. Such concepts as uniforms, patrols, visibility, and weaponry, to name but a few, are traditionally deemed to be part of the "right" way and are considered necessary, proper, and most efficient.

The selection and training of recruits, as well as the recycling of experiential knowledge back into any department's own educational system, is based on the foundation that proficiency must be built around these time honored concepts of policing a community.

However, when these same ageless concepts are viewed in the light of the two very important facts of lack of research and lack of results in diminishing, or even controlling crime, they may not appear to be the most efficient or even the most useful methods available to police departments.

Scant research has been done on any of these traditional methods of police functioning. There is a real need for a closer look at such police practices as patrol, to determine whether or not this is the most efficient method of protecting the public from certain types of criminal incidents.

The patrol function is largely based on the theory of deterrence of crime through visibility and mobility. This theory posits that a person will be less inclined to commit a criminal act in the "presence" of police.

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Additionally, the theory holds that a patrolling officer will, through mobility, come upon crimes in progress and thus prevent the completion of the crime or arrest the perpetrator.

With the use of the speed of the motor car the officer is able to cover a far greater area much more rapidly than on foot and to provide a considerably increased visibility and thus increase the appearance of police "presence." Following the theory of visibility and mobility, this should indicate a greatly increased efficiency in the police mission of protecting the public from certain types of criminal incidents.

Since, theoretically, the faster the patrol and the greater the area covered, the more efficiency that evolves, the use of helicopters in patrol functions ought to enable an area coverage far greater than ever before and provide much more visibility, if it is true that there is some relationship between visibility, mobility, and the crime rate in the community.

Interestingly, one study observes that the police do not initiate, and cannot remove, the human conditions that give rise to and stimulate crime, and this study says that, as a result of this, the police departments of America have a limited ability to act against crime.[2]

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[2]President's Commission on Law Enforcement, Task Force on the Police (Washington, D.C.: Government Printing Office, 1967), p. 1.

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Nevertheless, the communities that employ them insist on looking towards the police for a solution of the problem of crime.

And, because of the expectation that police departments are able to solve the problem of crime, it becomes vital for the practitioners in law enforcement to actively seek solutions. It becomes a constant priority of the police community to provide some public safety services which are based on scientifically tested procedures which are proven as capable of providing deterrence or prevention of crime.

In order to accomplish this priority mission it will be necessary for the practitioners of criminal justice to engage in research geared to provide scientific testing and evaluation of all of those areas of the profession where the methods and theories are as yet unproven in value.

Areas for Study Concerning the Theory of Visibility and Mobility

Therefore, this study will:

1. Review the historical background of the theory that relates visibility and mobility in police patrol to crime deterrence and prevention and attempt to determine how the theory began. This is important to any further consideration of the theory in its present state since the beginning of a theory provides the philosophical setting for future use.

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2. Probe the literature of law enforcement in an effort to discover whether any evidence exists to indicate that the theory has been subjected to scientific testing in use. The literature should provide some insight into whether the theory has been tested or granted acceptance through "common sense" value systems and passed on from one police generation to another to become traditional through repetition.

3. Examine some of the methods being used by police departments to evaluate programs founded on this theory to search for a data base for future test and evaluation.

It is of added importance that the relationship of visibility and mobility in police patrol to crime deterrence and prevention be tested and evaluated when it is realized that the theory becomes a part of the curriculum of the police training school and also becomes part of the curriculum of criminal justice programs in higher education.

Historical Background of the Theory

In the early English history of community protection from crime the monarch Alfred the Great (870-901) began the system of mutual group obligation, where all the local citizens were responsible for his own and his neighbor's actions. It was everyone's duty to raise a "hue and cry" when a crime happened and round up citizens to pursue the miscreant like a baying pack. If the criminal escaped, all

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[4] Ibid.

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the pursuers were fined by the Crown.[3] This responsibility was visited on ten family groups known as "tithings." Subsequently, ten tithings became a "hundred" and, in turn, groups of "hundreds" were formed into "shires." The "reeve" of the shire at first was expected to see that the citizenry carried out their "hue and cry" duties, but later branched out to take part in the pursuit.[4] From that day to this, the shire reeve, or sheriff, has had "posse comitatus," the power to enlist the aid of citizens to chase criminals.

During the reign of Edward I (1272-1307) the system of community protection known as the "Watch and Ward" came into use in the larger English cities. This system utilized householders to protect against fire, guard the city gates, and arrest perpetrators of any criminal offenses. These people were appointed from a rotation roster to serve the community at no pay. They were allowed to hire substitutes and as a result, the protection force of any given city was made up of the human dregs of the area.[5] The system eventually deteriorated; or improved, as the viewer beholds, to a system of regular, paid, night watchmen who seemingly did little more than roam the streets at night shouting the

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[3]J. Daniel Devlin, Police Procedure, Administration and Organization (London: Butterworth and Co., 1966), p. 3.

[4]Ibid.

[5]Germann, Law Enforcement and Criminal Justice, pp. 48-49.

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time, the weather, and the fact that "All is well!" whether it was or not.[6]

In 1748 Henry Fielding designed a plan for the prevention of crime in England which suggested a need for well paid policemen, mobile highway patrol, and a force of runners to move swiftly to the scene of a crime. These plans resulted in the formation of an inner city "foot patrol," an outer "horse patrol" and the famous "Thief Takers" the Bow Street Runners, who responded swiftly to the scene of a crime.[7] It is notable that here was the germ of a long continuing theory that the ability of a police department to affect crime has a direct relationship to its ability to respond rapidly to the scene of a crime. This theory is rooted in the subject of this research.

Just past the mid-point of the eighteenth century, England saw the start of an industrial revolution. Machinery for large scale production was replacing manual operation and enormous industrial growth evolved.

With this growth came hordes of workers to swell the cities and create the first slum areas. This industrial revolution also created a whole new population, the industrial wage slave and dependents, living in virtual poverty

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[6]President's Commission, Task Force on the Police, p. 4.

[7]Germann, Law Enforcement and Criminal Justice, p. 4.

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and unable to escape from the tangle of obligatory subservience.

The magnet of industry drew more people into the cities than were readily absorbed and this brought about a teeming poverty where a quest for survival initiated a new era of crime and ushered in the first examples of juvenile delinquency. Crime increased at an incredible rate as law breakers engaged in every crime known to man at that time.

Every road was a working area for highwaymen, footpads literally covered city streets (they are called muggers now), bank robberies numbered in the hundreds per year and prostitutes were practicing their profession in all areas of the country.

Many citizens began carrying arms, and householders were using animal traps to protect their homes from burglars. Vigilante groups were formed and interestingly, the cities also began to try a new tack in the struggle to eradicate crime, a savage criminal law.[8] The severity of the penalty for law violations was increased until even the offense of picking pockets was punishable by death, but it is notable that at public hangings of pick-pockets, others of the brethren were mingling with the crowd plying their trade. The theory of using punishment as a deterrent was found wanting.

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[8]T. A. Critchley, A History of Police in England and Wales (London: Constable and Co., Ltd., 1967), pp. 32-34.

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There was much discussion in England at this time concerning ways and means of facing the problem of protecting citizens from criminal actions. There were also numerous police groups besides the Bow Street Runners. There was the Merchant Police, a group hired by commercial establishments, including banks, to protect against theft in commercial establishments; the Marine Police, hired by the West India merchants to protect the docks and ships; the Parish Police, hired by parishioners for protection inside the parish boundaries, and the virtually useless Watch and Ward, which was still in existence.[9] But none of these had any official responsibility to, or communication with, the public at large.

A later police commission found that the reason for the failure of the police systems in existence at that time was the fact that "no scheme could reconcile the freedom of action of individuals with the security of persons and property."[10] And, it might be added, one of the difficulties facing the citizens of America in the latter part of the twentieth century arises because of the same reason.

However, in the early 1820s Sir Robert Peel, British Home Secretary, made a very significant observation

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[9]Germann, Law Enforcement and Criminal Justice, p. 54.

[10]Royal Commission on the Police, Final Report (London: Her Majesty's Stationery Office, 1962), p. 10, note 6.

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that, although the police could not eliminate crime, poor police methods could contribute to social disorder and good policing could have an impact on the control of crime. As a result of his beliefs, Sir Robert introduced and guided through the English legislature "An Act for Improving the Police In and Near the Metropolis."[11]

Sir Robert's police plan provided for some fundamentals of community policing that are still in effect to this day. These included:

1. A stable, efficient, quasi-military force
2. Government control of police
3. Development of police strength by time and area needs (records)
4. Central headquarters
5. Securing and training of proper personnel
6. Probation periods for new policemen[12]

This first force of one thousand men were the first police groups to wear a regular uniform. They were, as might be expected, placed under the control of the Home Secretary who created them, and, in fact eventually came to be known, after their founder, as "Bobbies," which they are called even now. This police force proved tremendously successful in combatting crime, was followed by requests from rural

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[11]Ibid., p. 16, note 6.

[12]Germann, Law Enforcement and Criminal Justice, pp. 55-56.

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The Traditional Passing of the Theory to America

America followed the mother country through virtually the same paths on the way to selecting some workable means of protecting people from those who would harm them in their daily lives. The first attempt at citizen protection was in 1636 in Boston, where the citizens formed a night "Watch" which had its counterpart in New York two years later with the added innovation of rattles, to warn evildoers that the "Watch" was near. In this situation, the "Watch" was made up, as in England, of the human dregs of the city, and was even used as a punishment when town drunks were forced to serve on the "Watch."

The first daytime paid police were created by ordinance in Philadelphia in 1833 and these were eventually followed by Boston in 1838 and by New York in 1844, where the legislature provided funds for municipal forces throughout the state. In 1845 New York City got their first police organization, and then Chicago, New Orleans, Cincinnati, Baltimore, Newark, and Providence followed suit with organized city police departments. This probably can be seen as the beginning of the present day method of policing communities, when it is noted that in 1856, New York City adopted full uniforms, which led to the adoption

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of regular uniforms for police forces virtually everywhere in America.

It is interesting to note that the early days of policing saw many evils caused by the spoils system which created a new department of police every time a new mayor was elected. The members of the new group won special promotions, granted enforcement favors and helped in political battles against opponents of the administration.[13] In some instances, the method of electing police officials was tried, but only served to increase political chicancery in the departments where it was used. The road to freedom from complete political servitude began to appear after 1881, when a dissatisfied office seeker assassinated President James Garfield. The reaction to this affair led to the passing of the Pendleton Act in 1883, which extended Civil Service to federal employees and eventually was incorporated in most of the governmental positions.[14]

Another improvement to appear on the police horizon at the turn of the nineteenth century was the advent of the training school to replace the system of having a recruit policeman learn his job duties and how to carry them out from whichever older officer he happened to be near while

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[13]Bruce Smith, Sr., Police Systems in the United States (2nd ed.; New York: Harper and Bros., 1960), pp. 105-6.

[14]Germann, Law Enforcement and Criminal Justice, p. 60.

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new on the force.[15] Not until the 1940s and even later, however, did most police departments establish permanent training schools intended for the purpose of preparing a recruit to be a proper law enforcement officer.

Training a police officer to do his job properly, necessarily involves preparing the officer to do a very complex job. As early as the third decade of this century the Missouri Crime Commission reported that in the ordinary American city an officer was expected to be responsible for the enforcement of thirty thousand federal, state, or local laws.[16] But the history of the profession in America reveals no new methods or theories and demonstrates a dogged determination to cling to tradition in the beliefs concerning visibility and mobility in patrol as the keystone of crime deterrence and prevention. The "common sense" philosophy prevailed and the fact that the theory was based on untested presumptions apparently went unnoticed by trainer and teacher alike.

Significance of the Study

One notable commission, highly staffed with many knowledgeable experts in all fields, including a few in law

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[15] Elmer D. Graper, American Police Administration (New York: MacMillan Co., 1921), pp. 109-10.

[16] Preston William Slosson, The Great Crusade and After, Vol. XII of A History of American Life, ed. by Arthur M. Schlesinger, Jr., and Dixon R. Fox (New York: MacMillan Co., 1931), p. 102.

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enforcement, has arrived at the conclusion that although many departments are reorganizing and modernizing in use of technology and improved techniques and other departments are on the threshold of doing so, it is the departments that remain static which cause a burden on the machinery of justice, and are detrimental to the process of achieving a truly professional police service.[17] It remains to be shown, however, whether the failure to control crime occurs more often in sophisticated departments than in old fashioned ones.

Additionally, it should probably be noticed that a well known and widely used police education text, in describing some of the negative aspects of police service, point to certain problem causes. Two of these, in particular, bear some scrutiny. In the first, mention is made of the fact that prohibition era habits of the public and police of the era caused some of the present day problems for public and police today.[18] If the authors are suggesting that prohibition created either an apathetic public or a dishonest police system they are either triply naive, or assume their readers will be. Honesty is owned individually as the result of one's own value systems and not visited from era to era by legal systems.

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[17]President's Commission on Law Enforcement, Police, p. 7.

[18]Germann, Law Enforcement and Criminal Justice, p. 63.

Secondly, the same authors note damages done to law enforcement during 1941-1945 when departments accepted the "scrapings of the manpower barrel" and gave poorly qualified individuals civil service tenure.[19] It makes one wonder where the authors got such data, if it is data, and if they have ever checked to see source of recruitment in the many personnel problems that are happening today and which include young officers involved in robbery, rape, murder, and narcotics. Or perhaps one might view the further statement of the same authors that depression recruiting (1929-1941) somehow brought fine young people into police work, who were able to withstand the temptations of prohibition.[20] Factually, it is probably one of the existing educational frustrations that even in a fine text book on policing, such unempirical generalizing happens, apparently as a result of the authors following traditional belief systems.

There are, in the United States today, over 40,000 police agencies of one sort or another employing more than 400,000 people. The vast majority of these are local police departments, most of them small agencies in towns and villages. There are about 50 federal agencies, 200 state level groups, 3,700 city, and 3,100 county police

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[19] Ibid.

[20] Ibid.

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agencies. Thus we are still faced today with one of the foremost problems of the community of old in that the process of enforcing the law is extremely decentralized and each officer's authority is usually confined to a single, comparatively small jurisdiction.

And while the delicate balance between protection of rights and protection of people rules against any all-encompassing and overriding police authority, it is a fact that decentralization creates barriers between agencies, brings about a difficult style of communication and precludes, in many instances, inter-agency aid and cooperation. Some federal and state agencies have helped in coordination in a few cases but generally fragmentation exists. The problem of decentralization must be confronted by greater inter-agency cooperation and communication at the local level.

In the main, more police manpower is generally cited as one of the foremost needs in communities where crime is an important factor of daily living. And, generally, police personnel has continued to increase in numbers without any certainty as to whether or not there is a positive relationship between the number of police and the amount of crime. As a result, no one knows, or has any real indicator of the per-capita need for police enforcement personnel in any community.

In the five year period from 1969 through 1974 the national average of police personnel per 1000 inhabitants

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rose from 2.2 to 2.5. Nationally, large cities of 250,000 or more inhabitants had, as a group, risen from 3.1 to 3.5 police employees per 1000 inhabitants.[21]

Presumably, increases in police manpower are part and parcel of specific attempts to prevent crime in America. Usually, during those periods when the rise of crime is more visible because of the phenomena of elections and campaigns, the public outcry is for more policemen and stiffer laws.

But, it is noted historically that the severity of punishment has little deterrent effect on crime.[22] And it would seem that the addition of more police personnel is also, in and of itself, a failure at controlling crime when we note that in the same period, 1969 through 1974, the population rose from 201,385,000 to 211,392,000, an increase of about 5 percent while crime climbed from 7,366,900 offenses to 10,192,000, 38.3 percent higher.[23]

During this five year period, crimes against property rose 37 percent, murder climbed 40 percent, assault 47 percent, rape 49 percent, robbery 48 percent, and burglary 53 percent. Included in the robbery category are

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[21]Clarence Kelley, Crime in the United States (Washington, D.C.: U.S. Government Printing Office, 1974), p. 221.

[22]Germann, Law Enforcement and Criminal Justice, p. 54.

[23]Kelley, Crime in the United States, p. 55.

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large rises in street robbery, chain store robbery, robbery of commercial houses, and bank robberies.[24]

Murder is not one of the crimes which is generally greatly impacted by police patrol methods since the crime so frequently occurs indoors and between relatives or acquaintances. It is such crimes as robbery and burglary which are supposedly subject to suppression by proper and frequent police patrol. Many police administrators, both ancient and modern, as will be shown, contended that the presence of a police officer could deter crime by first removing the opportunity and second by convincing the miscreant, by the same presence, that any attempt at crime will fail.[25]

This gives rise to the theory of visibility, the omnipresent policeman who, while really not omnipresent, projects such an image by appearing in many different locations while patrolling, through the use of speed in mobility.

The significance of the study then, lies in the very serious possibility that the public safety may well be in jeopardy because the police efforts against crime are based on untested assumptions which may be totally erroneous. It is vital, therefore to:

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[24] Ibid., pp. 11-55.

[25] These theories are advanced by Vollmer, Wilson, Chapman, Brostron, Smith, and International City Managers Association plus many others whose works are reviewed later.

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1. Locate these assumptions, identify their origins and trace their use and maintenance in police service to the present time.

2. Describe certain police methods and theories, their reliance on these untested assumptions and the relationship of this reliance to police procedure, training, and education.

3. Use this information to point the direction of future test and evaluation of these assumptions and, in the event that test and evaluation prove the assumptions are false, to aid in the development of new theories and methods of crime deterrence and prevention.

Goal of the Study

And so, while the manpower needs remain largely undefined, the management of police departments seek ways to improve the performance and ability of their present staffs.

The attempts to improve the present staff capability are channeled in two directions; one toward the refinement of the recruiting, training, and education processes to provide departments with the finest and best educated personnel available and one toward improving the physical systems and methods to arrive at the most efficient point in the prevention and detection of crime and the apprehension of criminals.

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Therefore, this study will deal with the theory of visibility and mobility which concern the deterrence and prevention of crime and the apprehension of criminals, and the theory's relationship to the training and education processes in criminal justice programs. The study will aim to provide a complete description of the theory's background, origins, and present status and to probe for evidence of a data base to provide material for future test and evaluation.

Design of the Study

This study, then, will trace the history of the theory of visibility and mobility as related to crime deterrence and prevention and discuss the philosophy of policing that arose out of the history of the theory.

The literature of the profession will be used as a probe instrument for the dual purpose of determining the present status of this theory in police training and education and to try to locate any testing or evaluation procedures in regard to the theory.

In addition, some probing of the profession of policing will be conducted by questionnaire to ascertain perceptions of the practitioners and to get a look at the methods of evaluation now in use or under discussion concerning the theory of visibility and mobility.

The linking of visibility and mobility to crime deterrence and prevention necessarily implies that speedier

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mobility provides increased visibility and, of course, greater crime deterrence and prevention capability. Therefore, the study will focus on the fastest of all forms of police patrol mobility, the helicopter. All available data concerning these vehicles will be presented in this study for use in future evaluation.

Limitations of the Study

The theory of visibility and mobility in police patrol as effective in deterring or preventing crime will not be tested or evaluated in this study. That must await actual field test conditions to be conducted under scientific guidelines over a goodly period of time in several areas. This study will only be concerned with the first basic step in research leading to test, a full and accurate description of the process in question.

Therefore, this study will make no judgements as to the value of the theory but will concern itself with an attempt to provide full information for future researchers. It is hoped that the study will provide some usable hypotheses and some practical recommendations for the utilization of the data obtained in the study.

Summary

Chapter I has identified the setting of the study and provides a view of the philosophy of police patrol. This chapter details the birth of the theory which contends

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that visibility and mobility are effective in deterring and preventing crime and notes that the theory began in England and was transported to the American colonies to become part of the criminal justice program in the United States.

This chapter also points out that, although it became apparent that crime and police personnel were both increasing far more rapidly than the nation's population, the theory was retained unscathed.

Even though concerns about police training and education began to surface there is no indication of any concern among trainers or educators of the police that a good deal of the subject matter of police training and education might be based on a theory that was untested and unevaluated and arose from "common sense" values to be carried through the profession by tradition.

Chapter II probes further into this theory by examining the literature of the profession of law enforcement. The statements, writings, and teachings of those who were the administrators, trainers, and educators are examined to trace the philosophy of the theory to its present day status.

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CHAPTER II

REVIEW OF THE LITERATURE

In this chapter the literature of law enforcement will be used as one of the probe instruments of the study. There is a scarcity of information concerning the relatively new phenomenon of law enforcement and the search for the philosophy of such a theory as visibility and mobility must be gleaned from what literature is available.

Information about the testing and evaluation of police patrol methods and theories in relation to any effect on crime is virtually non-existent. The review of the literature in this chapter will demonstrate this lack of information.

It will be noted that Chapter II provides frequent references to the lack of a proven method of testing police patrol methods and theories.

Those methods of testing and evaluation which are noted in the literature are geared to demonstrate the effectiveness of one police program or another in providing "work" statistics. These are often a compilation of calls for service, numbers of persons contacted, paper

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accumulated, or locations and conditions observed. While it is undoubtedly important to report the functions of any agency, these reportages do not constitute testing or evaluation in relation to the effect of the function on crime deterrence or prevention.

The literature of policing describes the philosophy of patrol very positively in many instances and is often unhesitating in deciding that certain police methods and theories can actually, when used "effectively," result in changing the intention of a potential criminal from commission of a crime to honest endeavors.

Here in Chapter II can be seen the tendency of police administrators, trainers, and educators to pass police method and theory from hand to hand, almost verbatim in some instances, without questioning whether or not the process has ever been tested or evaluated.

Views of the Rationale of Patrol

Since the use of the helicopter in police service is directly related to the police mission of crime prevention, it will be useful to discuss those theories of police patrol service relating to the use of conveyances to provide mobility and, even further, to discuss those theories which relate high visibility and speed in mobility of patrol directly to crime deterrence and prevention. These theories are the foundation of the training and education curricula

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of police academies and criminal justice schools regarding patrol practices.

From the earliest times in police history there is evidence of the use of various forms of patrol. Much of the literature stresses the importance of "effective patrol" as a deterrent to crime. However, there is nowhere to be found a definition of "effective patrol" other than an assumption that it is any patrol method which controls or prevents crime in a particular area. Williams (1967) says, "If you are on the job where and when you are most needed, the troublemakers and crooks will decide that your beat is not a profitable one in which they can operate."[1]

The President's Commission on Law Enforcement noted that: "Efforts must be made to schedule police patrol at the times when, and the places where, crimes are most likely to occur."[2]

While these principles are certainly worthy to consider as guidelines, they do leave much to the ability of a police administrator as a seer of future events.

There is a considerable body of literature which relates high visibility and rapid mobility to "effective patrol" but there are few studies which offer evidence of a

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[1]E. W. Williams, Modern Law Enforcement and Police Science (Springfield, Ill.: Chas. C. Thomas, 1967), p. 30.

[2]President's Commission, Crime in Free Society, p. 52.

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relationship between the actual deterrence of crime and "effective patrol" except as to areas of saturation. And even in cases of deterrence through saturation, there are those who view such efforts as resulting only in a temporary shift or displacement of crime.[3] History records little, if any, statistical documentation of what constitutes "effective patrol."

It is interesting to observe that the idea of paid professional police was still meeting with a great deal of resistance in the English speaking world during the latter part of the eighteenth century.[4] The inherent suspicion that policing would go beyond the simple concern for public safety and abridge individual freedom persisted in lands that were truly inundated with crime.

Nevertheless, the watchmen on patrol, such as the "Charlies," named after King Charles II, in whose reign they were initiated, were paid, although at a scandalously low figure. These watchmen were mostly drunks or buffoons who patrolled about the town announcing the time and weather to all honest citizens and their impending arrival to the

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[3]John G. Kinser, "Crime Displacement," The Police Chief 41 (August 1974):66-67. Also note American Bar Association Project on Standards for Criminal Justice, "Standards Relating to the Urban Police Function" (Tentative Draft, 1972), p. 56.

[4]T. A. Critchley, p. 35. Supra Chapter I, Note 8.

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lawbreakers.[5] Still, this system probably provided the best police protection in England at that time.

This system also provides early evidence of the theory of patrol and visibility, and even though the watch was manned by the less than excellent, its very regularity seemed to lend a certain stability to the community which many citizens of the time viewed as beneficial.[6]

Speed in Mobility Brings More Visibility

An early police historian, Raymond B. Fosdick (1920) visited seventy-two cities in the United States to study police systems. In discussing the patrolman, Fosdick opines:

> Conceivably, therefore, if he is alert and conscientious, no crimes will be committed in his vicinity. Highway robbers will not operate, burglars will not break in from the street, and pickpockets will be restrained from activity. If it were possible to maintain enough policemen continuously to cover all our city blocks we could be guaranteed against the commission of crime in our streets.[7]

Fosdick reports that the Detroit police department placed on the street over 150 Fords with one officer driver

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[5] Ibid.

[6] Ibid.

[7] Raymond B. Fosdick, American Police Systems (New York: The Century Co., 1920), p. 354. But also see American Bar Association, "Urban Police Function," p. 56. "It has never been doubted that the presence of a police officer at any given spot will deter the commission of a crime in the immediate view of the officer. But it is obviously not economically feasible to consider such a plan for policing. . . ."

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to replace foot patrolman. As a result of the new speedy mobility felony complaints were reduced the following two months. Fosdick tells of a Detroit official who stated that, because of this speed in mobility, two men were able to do the work that formerly required five officers.[8]

Along the same lines, the police commissioner of Detroit, William P. Rutledge, in a 1929 speech, noted that Detroit was the first police department in the nation to have a municipally owned police radio station used exclusively in police work. Rutledge foresaw a bright future in crime prevention with the addition of radio communication to the motor car's speedy capability:

> What is the most effective means we can employ to stem the tide of lawlessness? What weapon is the most formidable with which to battle the unseen army of criminals which constitutes the vicious minority--an army which acts as one man because it is bound together by a common desire to make a living by defying the law and preying upon society?
>
> I am convinced that in police radio we have found the weapon. The psychological effect of quick capture acts as a powerful deterrent to crime. The actual effect is being recorded daily on the log of our police radio in Detroit. We are catching and convicting more stickup men, robbers and other vicious criminals, than ever before. Prosecutions have increased fifty-four percent. All of which is discouraging the criminally inclined parasite, who will soon find it best to adopt honest employment as his means of livelihood.[9]

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[8]Ibid., pp. 311-13.

[9]Proceedings of the 1929 Annual Convention of the International Association of Chiefs of Police, "Radio in Police Work," William P. Rutledge (New York: Arno Press, 1930), pp. 68-71.

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This view of the deterrent effect of a highly visible, highly mobile patrol becoming the total nemesis of crime was shared by many able police administrators. It became the creed of police work.

August Vollmer, one of the most respected of early advocates of police professionalism said:

> . . . the mere sight of uniformed patrolmen diligently patrolling their beats, is sufficient in many instances to intimidate the professional crook and deter some of the community's weaker members from committing infractions of the law.[10]

Vollmer was deeply committed to the improvement of police service and was one of the earliest advocates of speed in mobility of patrol. He was extremely enthusiastic about motorized patrol:

> . . . with the advent of the radio equipped car a new era has come. . . . Districts of many square miles . . . are now covered by the roving patrol car, fast, efficient, stealthy, having no regular beat to patrol, just as liable to be within 60 feet as 3 miles of the crook plying his trade--the very enigma of this specialized fellow who is coming to realize now that a few moments may bring them down about him like a swarm of bees--this lightning swift "angel of death."[11]

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[10] August Vollmer, "The Police Beat," Samuel G. Chapman, ed., Police Patrol Practices (Springfield, Ill.: Chas. C. Thomas, 1972), p. 315.

[11] National Commission on Law Observance and Enforcement, Report No. 14, The Police (Washington, D.C.: U.S. Government Printing Office, 1930), pp. 90-98.

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These two principles of patrol, visibility and speed in mobility (or omnipresence) are repeated throughout the literature in a recurring theme as the proof of the value of patrol.

Vollmer also viewed the patrol system as the eyes and ears of the department executive and believed that the information discovered on regular patrol could be used by the police executive to formulate future plans.[12]

O. W. Wilson, another of the demi-gods of police organization characterized patrol as being as the base of the core of the police purpose of preventing criminal acts. Wilson says crime results from the co-existence of the desire to commit a crime and the belief that an opportunity to do so exists. Wilson sees the opportunity diminished by the presence of a police officer.[13]

Wilson notes that an impression of omnipresence is created by: ". . . frequent and conspicuous patrol at every hour and in all sections of the community."[14]

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[12]Vollmer, Police Patrol Practices, p. 315.

[13]O. W. Wilson, Police Administration (New York: McGraw-Hill Book Co., Inc., 1950), pp. 80-85.

[14]Ibid.

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Here again is a statement of the belief in the deterrent effect of a visible, patrolling policeman. But here, also, is added the requirement of high visibility created by a presence at all hours, everywhere. Obviously, this type of presence requires either a very large number of policemen, or a method of patrol which would assure coverage of large areas of the community rather quickly. Wilson specifically suggests speed in mobility.

Interestingly, O. W. Wilson also points out that the patrolman serves as the eyes and ears of the police administrator, a function noted by other police administrators in the description of the purposes of patrol.[15]

Wilson also notes that a patrol officer in an automobile can cover a far larger area than when on foot, and will, besides arriving at a given point much sooner, be in a better physical condition to take police action. And as a result of this increased mobility, Wilson finds the automobile patrol the least expensive and most effective method of patrol.[16]

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[15] Ibid., p. 81. Also note Vollmer, Police Patrol Practices, p. 315.

[16] Ibid., p. 94.

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The International City Managers Association also sees the patrol function as the eyes and ears of the police administrator. The information gathered by the patrol force is depended upon heavily by the administrator for solutions to police problems.[17]

This manual views the patrol function as all encompassing and believes that if the patrol function were to be 100 percent effective there would be little or no need for specialized operating divisions.

This work also sees the principal duties of the patrol force as the prevention of violation of statutes and ordinances, the arrest of offenders, and to give aid, relief and information. In order to carry out these duties there must be active patrol of all streets in all areas, particularly where crime occurs frequently. Patrol, this volume says, diminishes the potential offender's belief in the existence of an opportunity to successfully violate the law. It does not, however, say why this is so.[18] It can probably be assumed that this view is based, as with others, on the "common sense" principle.

Richardson (1974) writes of the first mechanical increase in police mobility with the advent of bicycles in the 1890s. Commissioner Theodore Roosevelt of the New York

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[17]International City Managers Association, Municipal Police Administration (Chicago: International Managers Association, 1954), pp. 255-65.

[18]Ibid., p. 256.

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police department, created a bicycle squad of one hundred men. These machine mounted men were better able to deal with runaway horses, law breaking bicyclers and, because of increased mobility, could cover a larger patrol area in less time.

Richardson also reports that by 1910 the automobile flying squad was common; its purpose to rush policemen to crisis or crime points.[19]

Richardson observes that response time is critical to effective police performance. He cites the results of a Los Angeles study which tells of criminal arrests made where average response time was 4.1 minutes and no arrest made where the average response time was 6.3 minutes. Richardson also cites that more than one-third of all arrests were made within one-half hour of the commission of the offense and almost half of all arrests came within two hours after a crime had been done.[20]

While this data seems to indicate that speed in arrival at the crime scene is essential to the possibility of arrest, one notes, according to the same statistic, that over half of the arrests came after two hours had passed.

Richardson mentions that computer systems are now in use to monitor response time and tells of the Chicago Police

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[19] James F. Richardson, Urban Police in the United States (Port Washington, N.Y.: Kennikat Press, 1974), pp. 117-18.

[20] Ibid., p. 117.

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Department's splendid, new speed oriented communication system and New York's advanced communication time saver called Sprint. He cautions, however, that no matter how swift the response to the crime scene, the results at that scene would be dependent on other factors, which are not susceptible to improvement by mechanical means. He cites that the result at the scene may be most affected by recruiting, training, and management. Richardson does not mention research as a factor.[21]

Samuel G. Chapman (1964) says of patrol: ". . . there is no more effective machinery for achieving the goals and objectives of law enforcement than through the medium of uniformed patrol."[22]

Chapman also sees that the police must be an effective crime fighting machine to make the streets of the community safe. Since each citizen cannot have his own policeman, or even have one on each block of his city because of the prohibitive cost of such a large police department, Chapman proposes that the solution lies in: ". . . the adoption of a type of patrol that convinces potential offenders that they lack the opportunity to commit crimes successfully."[23]

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[21]Ibid., pp. 117-20.

[22]Samuel G. Chapman, ed., Police Patrol Readings (Springfield: Chas C. Thomas, 1964), p. ix.

[23]Ibid., p. x.

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Chapman reiterates, as do many police experts, that desire and opportunity are the concomitants of crime. He feels, however, that the presence of an officer only stifles desire, while effective patrol diminishes the opportunity to commit the crime and must convince the crime planner of the high risk of arrest.[24]

By inference, at least, Chapman is pointing out that a police officer cannot, by his mere presence, obliterate a criminal desire, but the police presence can serve to convince the criminal that there is a small chance of success and a great risk of arrest. It should be added, though, that this small chance and great risk are directly related to this time and place.

In this same work, Brostron (1964) states that desire plus opportunity equals crime. Each element, he says, is dangerous but action occurs when they are combined. Brostron believes that if either element can be controlled, a crime cannot occur, but he looks on law enforcement as having very slight effect on criminal desires other than to blunt or frustrate them. He says that the opportunity to commit a crime is the point at which an effective patrol strikes.

Brostron proposes that Cain could not have killed Abel had a third party restrained Cain. In fact, Brostron feels that the mere presence of the third party would have

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[24]Ibid.

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had a sobering effect on Cain.[25] Again, it might be added, this might only be true so long as the restraint or presence continued.

It seems to be a truism, as cited by Brostron, that if it were possible to control either desire or opportunity, no crime would occur. It is also true that there seems to be no active research to indicate that any method has yet been discovered to control or curb criminal desires per se, or to control or even diminish criminal opportunity generally. A brief study of progressively rising crime figures year after year would seem to bear out this failure.

Brostron proposes that a department can do more work if the mobility is increased by adding men and cars, whose crime deterrent value, incidentally, is increased by painting the cars a conspicuous white. This added mobile patrol provides greater area coverage in less time and makes possible frequent passage of any given point, with instant radio communication. Again, high visibility and speed in mobility as the key ingredients of crime prevention.[26]

But Clift (1965) says that police are not just "thief takers." He sees the police as engaged in all phases

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[25] Curtis Brostron, "Strategy and Tactics," in Police Patrol Readings, ed. Samuel G. Chapman (Springfield: Chas C. Thomas, 1964), pp. 76-77.

[26] Ibid., p. 78.

of public safety and feels that the most important duty is the preservation of peace. Patrol is for the purpose of giving general assistance to the public. The public, according to Clift, does not necessarily want the police to be constantly running "hither and yon" but just "to be there."[27] Thus the promotion of the theory of deterrence through high visibility.

McNamara (1969), writing in the introduction to a reprint of Graper's book on police administration, states that the problems and controversies are the same in the last half of the century as they were in the first half.

Graper was one of the earlier advocates of speed in mobility when he noted that a booth system, employing one officer in a booth with a phone, and one officer on patrol, could cut the arrival time, at certain locations from forty-five minutes to eight minutes.[28]

Leonard (1951) points out that patrol is the most important phase of police management and observes that special divisions are necessary only to the extent that patrol falls short of 100 percent efficiency.[29]

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[27]Raymond E. Clift, A Guide to Modern Police Thinking (Cincinnati: The W. H. Anderson Co., 1965), p. 158.

[28]John McNamara, in Introduction to Elmer Graper, American Police Administration (Montclair, New Jersey: Patterson Smith, 1969), Intro. p. iii.

[29]Leonard, Police Organization and Management, p. 221. See also International City Managers Association, Municipal Police Administration, p. 255.

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Leonard holds that all other line units in a department, including traffic, detective, and the like, are secondary and collateral to the patrol function.[30] Leonard also points out that speed is important in increasing the response capability when answering calls for aid or when patrolling an area.[31]

Folley (1973) views the purpose of patrol as performing a distribution of police officers in such a manner that will eliminate or reduce the opportunity for citizen misconduct and increase the probability of apprehension if a person commits a crime. Folley cites these two items as a criminal's chief concern and says that where effective patrol minimizes his chances of success, he will refrain from committing a crime.

Folley points out that, in order to be effective, the patrol must minimize response time, and believes patrol must be motorized.[32]

Folley sees the frequent appearance of a police car as presenting an illusion of police saturation. He feels that the apparently obvious presence of police officers will discourage potential criminals. He notes the modern use of helicopters but sees these mainly as traffic controllers,

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[30] Ibid., p. 222.

[31] Ibid., p. 261.

[32] Vern L. Folley, American Law Enforcement (Boston: Holbrook Press, 1973), pp. 108-9.

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mercy wagons, area searchers, and as directors of ground patrol cars in felony chases.

Folley also relates speedy response directly to apprehension but does not furnish any data to explain the relationship.[33]

Caldwell (1972) proposes that to implement crime repression the patrol officer must deny the criminal the opportunity to commit crime, by creating an impression of omnipresence in his patrol district. Caldwell also repeats the oft made suggestion that the patrol officer ought to be highly visible in his uniform and patrol car to deter the criminal. He views that it is important to make up for lack of manpower or speed by strategically planned placement patrol personnel to provide rapid response.[34]

Caldwell's statement supports the view of the President's Commission (1967) which opined:

> The object of patrol is to disperse policemen in a way that will eliminate or reduce the opportunity for misconduct and to increase the likelihood that a criminal will be apprehended while he is committing a crime or immediately thereafter. The strong likelihood of apprehension will presumably have a strong deterrent effect on potential criminals.[35]

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[33]Ibid., pp. 114-19. It is interesting to find that one who proposes speed in response and patrol sees no such use for helicopters.

[34]Harry Caldwell, Basic Law Enforcement (Pacific Palisades, Cal.: Goodyear Publishing Co., 1972), pp. 31-45.

[35]President's Commission, Challenge of Crime, p. 1.

Some Doubts About the Rationale

But Misner (1969) shows that policemen in large urban areas spend less than 30 percent of their working time dealing with crime or other enforcement duties. Misner reports:

> Rather than patrolling on foot or on a bicycle, today's policeman has an automobile, even a helicopter. His basic tasks, however, are essentially what they were in 1910, and his increased mobility has reduced his casual, day to day informal involvement with members of the community.[36]

And James Q. Wilson (1968) draws attention to the complete lack of a proven methodology for testing law enforcement proposals. Because of this failure Wilson believes we stand the hazard of turning a practical problem into an ideological argument. He notes that some are passionately choosing sides over whether the best method is to arm or disarm the police, to love or hate the courts, and to hire or fire prison guards. Wilson sees as a possibility that, because of emotional arousal over crime, we may dangerously oversell our ability to repress or lower crime rates. Wilson finds that, in order to secure from Congress enough funds for a program that may reduce auto theft by 5 percent, we may have to guarantee Congress and the people a 20 percent reduction in murders.[37]

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[36] Gordon E. Misner, "Enforcement: Illusion of Security," The Nation 208 (April 1969):488-90.

[37] James Q. Wilson, "Crime and Law Enforcement," Agenda for the Nation, ed. Kermt Gordon (Washington, D.C.: The Brookings Institute, 1968), pp. 179-206.

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Suggestions for Testing or Measuring the Rationale

There have been, in recent years, some suggestions for evaluation of police programs but it will be noticed that the overwhelming majority of the plans for improving police production, and evaluating this improvement, deal with management problems and tend to revolve around the paper count and data processing procedures. Personnel problems are dealt with along with programs for streamlining the process of policing a community. Many new methods have been proposed and designed that make use of the latest technology for communication. Training method evaluations abound, but very few of the newest efforts at improving the police services are concerned with researching the basic tenets of the profession in relation to their impact on crime.

There was an interesting research test in New York during a four month period of 1954. The purpose of the experiment was to determine precisely what number of men would provide adequate policing in a busy New York precinct.

The Twenty-fifth precinct was peopled by White, Negro, and Puerto Rican citizenry and was considered one of the most lawless areas of the city. Basically, the police personnel assigned to the unit for the four month period were more than doubled.

Compared with the same four month period of 1953, felonies were reduced from 1102 to 488, a drop of 55.6 percent. All crime went from 1,757 down to 1,273 a loss of

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27.5 and the number of cases cleared by arrest increased from 568 to 948. The clearance rate rose from 32.3 percent to 74.5 percent.

The writer of this report insisted that it was not a "saturation" experiment, but whatever the semantics, the personnel was doubled, and true, the statistics were, as the report said "dramatic."[38]

However dramatic the results of this experiment were, they were also incomplete since there was no follow-up of any kind and no study of the crime statistics in adjacent areas. The assumptions that crime is either prevented, deterred, or merely displaced by such patrol practices can only be proven by proper experiment which is not conducted in a vacuum of inconclusiveness. This experiment was however, even though incomplete, at least a beginning attempt to try to find proper perspectives in policing through testing.

It has been demonstrated that while many police administrators frequently theorize that the presence of a police officer will destroy, or at least diminish, a potential offender's belief in the existence of the opportunity to successfully commit a crime, nobody provides any empirical proof of such a statement. Apparently the repetition of

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[38]Report "Operation 25," Police Patrol Readings, ed. Samuel G. Chapman (Springfield: Chas. C. Thomas, 1964), pp. 342-57.

this creed, plus its basis in what is called "common sense" give it a credibility without testing.

The American Bar Association (1972) notes that there is a widespread belief among police administrators that patrol activity constitutes the most important response that police can make to the crime problem but at the same time these administrators seek to devote more resources to patrol there is a growing awareness that relatively little known regarding the value of police patrol as a deterrent to crime.[39]

This study continues:

> It has never been doubted that the presence of a police officer at a given spot will deter the commission of a crime in the immediate area within view of the officer. But it is obviously not economically feasible to consider such a plan for policing nor is it likely that citizens would desire to have a police presence in the numbers that would be required for such coverage. There have been a number of dramatic highly-publicized experiments in which areas have been blanketed by police officers, but these have proved little more than the obvious, that the presence of a police officer will deter crimes in the immediate area subject to his view.[40]

Larson (1972) reports that preventive patrol is "supposed" to deter individuals from committing crimes but observes that there is considerable disagreement in police circles about how to achieve prevention and deterrence. Larson perceives that there is a need for extensive

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[39]American Bar Association, Urban Police Function, p. 56.

[40]Ibid., p. 57.

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experimental and analytical work to determine to what extent patrol deters and prevents crime.[41]

When it is considered that the twin theories of visibility and deterrence occupy important niches in police planning and equally high places in police training and education, the lack of research mentioned becomes a critical matter demanding full attention.

The literature of policing has furnished some measurement guidelines but most of those seem to be aimed at improving the internal operations in police departments, or providing for a more orderly distribution of personnel, services, and equipment based on efficiency scales and not necessarily geared to impacting crime.

One police training and performance study noted that:

> The very basic questions of what does a policeman do, and what skills and knowledge does the policeman need to do his job effectively, need to be answered. The methods used to find these answers must meet the standards of scientific research and must be rigorously tested at every step.[42]

The President's Commission (1965) decried the fact that:

> The most effective way of deploying and employing a department's patrol force is a subject about which deplorably little is known. Evaluation of differing methods of patrol depends on trying out those methods

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[41]Richard C. Larson, Urban Police Patrol Analysis (Cambridge, Mass.: MIT Press, 1972), pp. 33-34.

[42]National Institute of Law Enforcement and Criminal Justice, "Police Training and Performance Study," Director, George P. McManus (Washington, D.C.: U.S. Government Printing Office, 1970), p. iii.

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> over long periods of time and calculating the changes in crime rates and solution rates that the changes in patrol techniques have produced.[43]

Larson (1972) records the efforts of the St. Louis, Missouri police department to provide for scientific resource allocation based on predictions of numbers on units needed to answer calls for service. Larson notes that the 1966 St. Louis study demonstrated the feasibility of the quantitative approach to patrol resource allocation problems and also showed that there is a strong need for new models specifically related to police patrol operations, including response and patrol activities in the field. Larson adds that many administrative problems arise from a lack of policy oriented measures of patrol effectiveness.[44]

Larson further illustrates that using reasonable parameter values, the crime intercept possibilities of patrol appear remarkably small. For instance, if a patrol passes a given point once an hour, then the possibility of intercepting a one minute crime, a street robbery for one, is one in sixty, without calculation, it might be added, of the possibility of the crime not being observed by the patrol officer. Larson poses the question that monitorable street patrols require more research as to their crime deterrent effect.[45]

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[43]President's Commission, Challenge of Crime, p. 95.

[44]Larson, Urban Police Patrol Analysis, pp. 40-42.

[45]Ibid., p. 147.

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In general, it should be noted that Larson poses useful and accurate assessment methods which are based on the assumption held among police administrators that improvement of the police mobility systems, especially in regard to resource allocation, patrol presence and response time, will aid in the prevention of crime. There are no attempts by Larson in this book to show any relationship to crime prevention except by presuming that speed begets efficiency in performance.

Larson describes response time as ". . . a limited, but useful, proxy measure of effectiveness whose reduction is widely accepted as a desired goal."[46]

Some recent suggestions for measuring performance are notable if only because they indicate continuing efforts to discover some useful scale. The problem, as always, lies in relating the measurement to some result in impacting on crime.

Holzer (1974) suggests a measurement for evaluation of police service which consists of a count of total output functions, both as to paper work and street functions. Each item of output would become part of the total picture of police productivity. Holzer warns that there seems to be no effective way of measuring, or evaluating different items of output. He suggests that, because of this, measurements of output can most likely only be accomplished on a group

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[46]Ibid., p. 32.

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basis. This system would measure the entire police department's efficiency by piece-work.[47]

Knowles and De Laduranty (1974) observe that police agencies tend to evaluate employees primarily on the basis of personality and behavior rating scales. These authors point out that the duties and responsibilities of today's law enforcement officer have changed considerably within the past two decades but they note that the methods and procedures of evaluating the performance and effectiveness on an individual officer have remained relatively static.

Knowles and De Laduranty believe that research into present performance evaluation techniques is vital to determine if there is any real capacity to measure accurately and consistently the performance of policemen in a changing environment.[48]

Hirsch and Riccio (1974) contend that preventive patrol and response to calls for service are not the ultimate objective of police agencies but are necessary requisites for deterring or preventing crime.

These writers describe patrol service as a mix of crime and non-crime services with the mix balance determined by local objectives and priorities. They suggest placing

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[47]Marc Holzer, "Police Productivity: A Conceptual Framework for Measurement and Improvement," Journal of Police Science and Administration 1 (1974):459-67.

[48]Lyle Knowles and Joseph C. De Laduranty, "Performance Evaluation," Journal of Police Science and Administration 2 (March 1974):28-33.

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differing values for all police activity with the highest value based on such factors as the seriousness of the crime, frequency of the crime in areas patrolled, and length of time in the activity. They suggest, for instance, that an arrest for a serious crime in a neighborhood where serious crimes seldom happen, is of more value than one in an area of frequent crime incidence.[49]

This is certain to be one of styles of format used in measuring police productivity but it will have to be related to the impact that such performance has on crime in the community in order to meet the demands for more research into the subject of improving the police performance in crime prevention.

Morgan and Fosler (1974) suggest that in this economic downturn period, police productivity, in order to absorb the drain of less revenue input, must increase. These authors suggest that:

> There are great opportunities for improving police productivity in virtually every police department.
>
> With care and discretion police activities can be more precisely measured to provide the information to police managers that is needed for identifying problems and improving performance.

Morgan and Fosler observe that only at the department level can the tools of productivity improvement be tested. They suggest the following formulae for measurement:

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[49]Gary B. Hirsch and Lucius J. Riccio, "Measuring and Improving the Productivity of Police Patrol," Journal of Police Science 2 (June 1974):169-84.

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1. Making a greater proportion of existing patrolmen available for active patrol work (up to a reasonable limit; this does not necessarily mean preventive patrol).

   Measure:

   $$\frac{\text{Patrolmen assigned to active patrol work}}{\text{Total patrolmen}}$$

2. Increasing the "real patrol time" of those who are assigned to active patrol work.

   Measure:

   $$\frac{\text{Man-hours spent on actual patrol (time servicing demands for police service)}}{\text{Total patrol man-hours}}$$

3. Utilizing patrol time to best advantage. Broken down according to three principal objectives of patrol.

   •Crime deterrence. (1) Victimization survey, (2) Selected use of crime rates, and (3) Response time.

   Measures (for response time):

   $$\frac{\text{Number of calls of a given type responded to in under "X" minutes}}{\text{Total calls of that type}}$$

   $$\frac{\text{Number of calls responded to in under "X" minutes}}{\text{Resource devoted to response}}$$

   •Apprehension.

   Measure:

   $$\frac{\text{Arrests resulting from patrol surviving the first judicial screening}}{\text{Total patrol man-hours}}$$

   •Noncrime services.

   Measures:

   $$\frac{\text{Noncrime calls satisfactorily responded to}}{\text{Total noncrime calls}}$$

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$$\frac{\text{Noncrime calls satisfactorily responded to}}{\text{Man-hours devoted to non-crime service calls}}$$

$$\frac{\text{Disturbance calls for which no further attention is required}}{\text{Total disturbance calls}}$$ [50]

This presents an interesting view of the theory that production measurement must be department wide because, while suggesting that many factors of police activity be measured, the method includes the use of both crime rates and "quality" arrests, i.e., arrests which survive the first judicial screening.

And so, the search for a way to test the efficiency of the police in their mission of crime continues in the face of a real need to either prove the methods now in use or discard them entirely and perhaps start over again. The call for research must be answered, since the old reasons for doing things a certain way have not been tested.

One very important (historically) research experiment in patrol was conducted in Kansas City, Missouri, from October 1972 through September 30, 1973, designed to measure the effect of patrol on crime and the citizens apprehension of crime. The experiment summary noted that police patrol strategies have always been based on two unproven but widely accepted beliefs that visible police presence

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[50] J. M. Morgan, Jr. and R. Scott Fosler, "Police Productivity," Police Chief 41 (July 1974):28-30.

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prevents crime by deterring potential criminal and that the public feels safer because of this patrol presence.

Three controlled levels of patrol were utilized in the year long research. In one area, the police entered only in response to citizen requests; this was the "reactive" area. In a second, or "pro-active" area, the police visibility was doubled, and even tripled, while in the third, "control" area, the normal patterns of routine patrol and response were continued. Analysis of all data gathered in the experiment showed that these three areas did not undergo any significant change. There was no significant difference in the level of crime or citizens' fear of crime in any of the three areas.[51]

To measure the impact on crime the department used a victimization survey, police crime records, police arrest data and a survey of businesses. It was felt that the victim and business surveys would add supportive credibility to the other two sources of data. To measure citizen fear during the experiment, attitudinal surveys of area households and businesses were combined with a survey of citizens who experienced encounters with police and estimates of citizen satisfaction recorded by participant observers.

Twelve different findings were brought forth from the experiment, the most important of which were the

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[51] George F. Kelling et al., The Kansas City Preventive Patrol Experiment, A Summary Report, Preface Statement by Joseph D. McNamara, Chief of Police (Washington, D.C.: Police Foundation, 1974), p. v.

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findings that crime remained relatively constant as did citizen fear of crime.[52]

The vital segment of this experiment is that it was probably the first such research which faced the problem of testing some police beliefs which have been, as mentioned earlier in this paper, passed on from one generation to another generation of police administrators, trainers, and educators. The study may have stirred a century of silt from the bottom of the police think tank.

This experiment has been subjected to some criticism by other police administrators and researchers. Davis and Knowles (1975) pointed out that the Kansas City research provides five major hypotheses concerning patrol which suffer from or are suspected of both internal and external validity. Davis and Knowles point to some outright errors and infer that the experiment is so affected by external validity as to be generalizable nowhere except possibly Kansas City, Missouri, if even there.[53]

Davis and Knowles pinpoint errors in area size and consequent population density figures. They also note that certain conclusive statements, particularly those relating to citizen perception of patrol conditions and citizens fear of crime are largely from unsupported assumptions.

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[52] Ibid., pp. 20-36.

[53] Edward M. Davis and Lyle Knowles, "A Critique of the Report: An Evaluation of the Kansas City Preventive Patrol Experiment," The Police Chief 12 (1975):22-29.

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These critics note that certain patrol areas labelled "reactive" are, because of being contiguous to "proactive" and "control" areas subject to almost continuous patrol observation. They note this condition would reflect a different "presence" of patrol than claimed by the researchers.[54]

Kelling and Pate (1975), conductors and authors of the Kansas City experiment and subsequent Summary Report and final Technical Report, defend the five hypotheses dissected by Davis and Knowles on the basis of pointing out that the criticism was aimed at a summary report which was intended for non-technical readers. The authors answer questions concerning:

> Hypothesis 1--The Victimization Survey--found no statistically significant differences in crime in any of the sixty-nine comparisons made between reactive controls and proactive beats.
>
> Hypothesis 2--measured direct and indirect effect of the experiment on citizens' perceptions and found no significant differences in citizen perception of patrol in any of the three areas.
>
> Hypothesis 3--Citizen fear of crime was found to be not significantly affected by differences in patrol procedure in the three areas.
>
> Hypothesis 4--The amount of police response to request calls was not significantly affected by variations in patrol procedures.
>
> Hypothesis 5--The patrol variations had no significant effects on traffic accidents.[55]

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[54] Ibid., p. 25.

[55] George L. Kelling and Tony Pate, "Response to the Davis-Knowles Critique," Police Chief 12 (1975):32-38.

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Kelling and Pate demonstrate that the Summary Report on the Kansas City patrol experiment is not technically complete in all aspects. The authors ably defend the criticism of Davis and Knowles point by point and end the defense by observing that both the summary and the final report are heavy with warnings that no generalizations are claimed for this study, and they warn of the limitations inherent in any experiment which is specifically conducted as to area and time. They do suggest the possibility of useful comparison of the data.[56]

This Kansas City experiment is probably the first scientific experiment concerning police patrol procedure since the beginning of the profession. The critical dialogue initiated by Davis and Knowles, which is responded to by experimenters Kelling and Pate is a new and healthy indication that police departments can and will subject some of the "time honored" concepts of policing to the scrutiny of experimental research.

Murphy (1975) notes, in commenting on the Davis-Knowles critique, that it takes courage, confidence, management skill, and an open, informed mind for police administrators to face the hard challenges of experimentation in large urban police agencies.[57]

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[56] Ibid., p. 38.

[57] Patrick V. Murphy, "A Commentary, The Davis-Knowles Observations," Police Chief 12 (1975):30.

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Enter the Helicopter, More Speed--More Visibility

Undoubtedly, police administrators, following the theory of visibility and mobility in crime deterrence and prevention looked on the helicopter as a beautiful new tool for prevention patrol because they: ". . . offer a potential for demonstrating a police presence, for searching a large patrol area, and for responding rapidly . . ."[58] But there is no evidence that any of these administrators viewed the new tool in police technology as one that would put the crooks out of business as noted earlier in the remarks of two prominent police chiefs welcoming the addition of radio equipped police cars to the crime prevention capability.[59]

Guthrie and Whisenand (1968) report that the helicopter came into police use in New York City in 1947 and from then until now has come into use in many departments in the United States. The first evaluative test of helicopters as an asset to patrol took place in Lakewood, California, over an eighteen month period of 1966-67 under the auspices of the Los Angeles Sheriff's Department with funding from the Office of Law Enforcement Assistance of the Department of Justice. Evaluation was by California State College. Guthrie and Whisenand report that among the

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[58]President's Commission, Science and Technology, p. 14.

[59]Cf. supra Rutledge p. 30; Vollmer p. 31.

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conclusions reached in the study which was called Project Sky Knight or PSK, were these:

1. Although the PSK helicopters were utilized as patrol vehicles, it must be recognized that some patrol activities are not capable of being handled effectively by aircraft.

2. Evaluation of PSK and future projects of a similar nature cannot be based on statistical data alone.

3. Under certain conditions, aerial units can substitute for or totally replace ground patrol vehicles.

4. The helicopter cannot maximize its capabilities if it is narrowly confined to geographical areas that parallel those of ground patrol units. Not only does the helicopter operate in a dimension new to police patrol, it must be programmed so that its unique capabilities will be maximized.

5. In urban and suburban areas it is not generally feasible for helicopters to land and give assistance, except in extreme emergencies.

6. Even experienced helicpoter pilots cannot operate police helicopter units effectively without special police training.

7. Despite earlier assumptions, special identifying markings of phsyical locations throughout a city patrolled by experienced pilots and observers are not necessary.

8. While it is recognized that "on-view" patrol has certain values and that original observations may very

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well initiate important activities of Sky Knight, it is suggested that Sky Knight patrols should be primarily task-oriented and that a far greater amount of patrol time should be on a specifically assigned basis rather than in merely orbiting around the patrol area.

9. Relocation of Sky Knight base of operations from an airport facility to the Sheriff's Lakewood Station parking lot proved to be of extreme importance. Having the police facility as a base of operations should always be given preference. This allows helicpoter crews to communicate informally with ground patrol unit crews and supervisors in the police station.

10. The performance of the observer in the helicopter is the single most important determinant of the degree of effectiveness achieved in operating helicopters as police vehicles.

11. All helicopter observers should be selected from officers assigned to ground patrol units and then provided with special training.

12. It is highly probable that the police helicopter will be used, at times, for providing assistance to other city or county departments. Because of this probability, the helicopter should have the capacity to seat, if only on a temporary basis, three people.

13. The optimal benefits of the helicopter in police work will occur only if sufficient geographical area

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is involved and the level of called-for police services (number plus type) is moderate to large.

14. One problem quickly became evident, and that was the threat of community rejection of the project before it could really get started. There was substantial and negative public reaction to the noise of the helicopters being used in aerial surveillance of the city. Resorting to an expediency, Sky Knight patrols were flown at higher altitudes during the next three months, and subsequent to this increase, complaints decreased in number. However, Sky Knight effectiveness was reduced to an unacceptable level.

The authors report that this last problem was solved when the manufacturer was able to effectively silence the rotors but the lesson of community acceptance had been learned the hard way.

Finally, Guthrie and Whisenand present statistics from the Los Angeles Sheriff's Department which indicate that, even with the removal of two radio cars from Lakewood's force, major crimes, including robbery and burglary, decreased in Lakewood while increasing in the rest of Los Angeles County. The authors observed that one might reasonably claim that the absence of increased crime or decreased police service was probably due to the presence and operations of Sky Knight units.

Guthrie and Whisenand contend that the benefits of such service in terms of community satisfaction, officer

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security, and crime deterrence cannot be measured objectively. They believe that even the cost-effectiveness of helicopters must be rationalized subjectively and suggest some abstract value returns such as the psychological dimensions of deterrence, omnipresence (of patrol) and repression (stifling opportunities for crime).

They also suggest that the helicopter can generate a regenerative community support through awareness of constant police protection.

The authors conclude that the helicopter has special capability in deterrence or repression in selected areas; minimal response time; increased omnipresence, night time observation; high speed chase of fleeing vehicles; and overall movement flexibility. They feel the only restraining factor involved would be the relegation of the helicopter to "routine" activities.[60]

It might be useful to comment at this point that while, as the authors say, crime may have decreased in Lakewood because of the helicopters, it might also reasonably be inferred, in the absence of other statistics, that the increase in crime in the rest of the county may have been because of the presence of helicopters over Lakewood.

Bower (1968) tells about the use of the helicopter in Denver, Colorado, and recounts the tale of tests

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[60] C. Robert Guthrie and Paul M. Whisenand, "The Use of Helicopters in Routine Police Patrol Operations: A Summary of Research Findings," Police Patrol Readings, ed. Samuel G. Chapman (Springfield: Chas. C. Thomas, 1972), pp. 266-75.

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conducted in which detectives posing as suspects were chased over highways and finally brought to heel in the bright searchlights of the police "chopper." He reports that the chief in Denver felt the police had a new valuable crime fighting tool and by "pinpointing" areas of illegal activity from robbery to purse snatching, the "eyes in the sky" would patrol them. Bower observes that the helicopter was also seen as useful in high mountain rescue work in ski areas.[61]

There are many articles and stories similar to the Bowers information that have appeared from time to time in daily newspapers around the country. Generally, these accounts tell of a rescue from water, a highway chase or a city incident in which the use of the helicopter is described in glowing terms. Some early attempts at justification were couched in such terms and phrases but none really approach the factual level needed for evaluation.

Much of this type of literature may have more historical value than any use in determining the efficiency of helicopters in the prevention of crime. Occasionally, such a story carried statements which convey the message of success in fighting crime, as in an article by Ayoob (1974) which reports that the Massachusetts State Police helicopter came into use in 1970 and is highly useful in high speed chases and combat situations. Ayoob also cites

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[61]Don Bower, "Crime Copter: Denver's Car in the Sky," Police Patrol Readings, ed. Samuel G. Chapman (Springfield: Chas. C. Thomas, 1972), pp. 275-81.

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the helicopter's application in crowd control as an observation post. Ayoob adds that this helicopter has done wonders in traffic control, criminal investigations, pursuit and rescue but does have its limitations. Ayoob furnishes no further evidence of either usefulness or limitations.[62]

Krumrei (1974) reports that the Detroit Police aviation unit has, in two years of operation, converted the community's complaints about noise into demands for helicopter presence in the air. The unit schedules helicopter flights from 6:00 A.M. to 2:00 A.M. coinciding with precinct work load. During prime crime hours, four helicopters are kept in patrol over the four sections of the city. Krumrei provides statistics which indicate that during the 1971 tests of the helicopters major crimes decreased in all of the test areas. These figures are alone and unsupported and contain no follow-up or indication of contiguous time or area results.[63]

A further example of this type of evaluation presentation is made in a later report on Project Sky Knight (PSK)[64] by Whisenand (1973):

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[62]Massad F. Ayoob, "Small Helicopter Wings Are Effective for Law Enforcement," Law and Order, November 1974, pp. 77-80.

[63]David T. Krumrei, "Up, Up and Away," Michigan Police Officer, Winter 1974, pp. 26-65.

[64]See Guthrie and Whisenand supra at page 57.

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City of Lakewood, California (5-10-68). In responding to a burglary just occurred call in a resiential area at 11:35 p.m. The Sky Knight helicopter observed two males of a similar description inside a nearby school yard. Ground units were directed by the helicopter to the location where investigation proved the males commited the burglary. They were subsequently arrested and the stolen property recovered. (Refer File Y-555-207)[65]

And, Whisenand also reports:

City of Bellflower, California (5-10-68). The Sky Knight helicopter responded to a silent burglary alarm at an electronics store during early morning hours. Being the first unit to arrive, Sky Knight contained the building, utilizing spotlights, until ground units arrived and observed a window pried open. A check of the interior resulted in one suspect being arrested for burglary. (Refer Y-555-159)[66]

Whisenand tells of the early returns from the initial helicopter tests in Lakewood, California, under a grant from the Office of Law Enforcement Assistance (now the Law Enforcement Assistance Administration) during eighteen months of 1966 and 1967. He observes that the Los Angeles Sheriff's Department had used helicopters since 1955 and provided some experiential information about them:

Assignments from the beginning were varied and numerous.

1. Rescues average more than one per week.
2. Rapid transportation of specialists annually saves many hundreds of man-hours and tax dollars.
3. Used as a surveillance platform, the helicopter has proven time and again that there is little hope for a suspect to escape once he has been spotted.
4. In major operations, helicopters provide field commanders with a highly mobile observation and communications command post.

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[65]Paul M. Whisenand, "The Use of Helicopters by Police," The Police Chief 36 (February 1968):32.

[66]Ibid., p. 34.

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5. The float-equipped helicopters have been instrumental in land and sea rescues and have, on several occasions, been used to tow disabled small craft.

6. As patrol vehicles, helicopters continually prove to be a major factor in the apprehension of criminal suspects.

7. High speed chases, gang fights, vandalism and numerous regulatory offenses are continually deterred by aerial surveillance.[67]

Whisenand does not furnish any specifics for items 6 and 7 other than footnoting that the information is from a report by the department. This is the type of statement which is typical of stories which describe new police technological tools. Statements like item number seven would probably by difficult to document in empirical fashion.

Whisenand mentions that Project Sky Knight (PSK) came into being in June 1966 with six major objectives:

1. Improve Police Response time.
2. Demonstrate successful daytime surveillance methods.
3. Initiate effective nighttime surveillance.
4. Increase patrol observation.
5. Increase officer security.
6. Reduce crime in the project area.[68]

If these objectives are listed in order of priority it is interesting to note that the objective of reducing crime in the area is last.

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[67] Ibid., p. 34

[68] Ibid., pp. 34-36.

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Whisenand tells us that eighteen months of experimental helicopter use produced a plethora of reserach findings which are reported in detail elsewhere.[69] But Whisenand does report here that the researchers place primary focus for success of the program on field commanders and for success of the units on observers, who must be in command of the aerial unit. Whisenand mentions that it was discovered that, while "on-view" patrol has certain values, helicopter units should be task-oriented and should patrol on specific assignment basis.[70]

Whisenand further narrates:

> City of Paramount, California (5-11-68). At a major disturbance scene, Sky Knight directed ground units in effectively dispersing approximately 200 juveniles. Nine persons were arrested for various offenses. (Refer File Y-556-429)[71]

and continues:

> City of Lakewood, California (5-28-68). While checking Lakewood Shopping Center area, Sky Knight observed a male loitering around vehicles in the parking lot, and eventually sitting inside one of the parked cars. A ground unit was directed to the male, and as a result of the Sky Knight crew's observations, the suspect was arrested for attempt grand theft auto. (Refer File Y-563-190)[72]

Both of the above instances are among those sprinkled throughout this article. These stories are repeated as

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[69] See Guthrie and Whisenand, supra p. 57.

[70] Whisenand, "Use of Helicopters," pp. 36-37.

[71] Ibid., p. 38.

[72] Ibid.

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narrated because they appear to be typical, as noted earlier, of stories concerning the use of helicopters by police at the beginning of such innovative programs. Each such recounting leaves the reader with some unanswered questions in his mind, such as, the final disposition of the arrested persons.

A predictive evaluation of the Santa Monica helicopter program was made by Chief Reinhold (1968) who provided these figures:

> Minimum daily air time would be ten hours, which will provide six complete (block by block) patrols of the city in each twenty-four hour period. A similar patrol intensity with patrol cars would require at least six cars, which (due to "called for" services, are seldom, if ever, available at the present time. Comparative annual costs for such coverage are:

TYPE OF PATROL	COMPARATIVE ANNUAL COST
Patrol Car	
Vehicles (6)	$ 21,900
Manpower (18)	178,848
Total	$200,748
Helicopter	
Aircraft (2)	$ 85,775
Manpower (6)	62,928
	$148,703

> Comparative equipment costs and special instruction during the first year of operation would equal $108,400 for the helicopter police patrol as opposed to only $20,100 for the six fully equipped patrol cars. However, after the first 21 months, the helicopter patrol will produce a minimum annual savings of $52,000.[73]

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[73] Earl Reinhold, "Helicopter Patrol," A Memorandum prepared for City Managers Office (Santa Monica, Calif.: March 26, 1968), pp. 4-5 quoted in Whisenand, "Use of Helicopters," p. 40.

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The obvious questions concerning this type of evaluation arise because of assertions that helicopters provide more intense patrol because cars are on "service" calls. One wonders who would answer the calls when helicopters replaced the cars. Or perhaps the assumption is that the helicopter patrol would be so intense that no service calls would be forthcoming.

At any rate, when one looks at how Chief Reinhold provides a financial statement and predicts by the use of those figures, a $52,000 annual saving, it becomes evident that the use of helicopters is often subject to some very unusual systems of evaluation.

It is also interesting to note historically that a later study of the Santa Monica department reveals that the city did get and operate two helicopters from 1968 to 1972. Two were necessary because one was usually grounded for maintenance. A full time mechanic was hired to provide from six to ten hours flight time in two shifts per day. Maintenance and fuel costs were approximately forty dollars per hour.

When it is considered that maintenance and fuel would cost $140,000 per year, for the ten hours of patrol, it can readily be seen that the police chief's predictive evaluation was, to say the least, inaccurate and incomplete. In addition, the citizens of this 8.3 square mile community virtually bombarded the police department with complaints

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about noise from the night patrols. In 1972 Santa Monica abandoned the use of helicopters.[74]

Lateef (1974) offers a brief evaluation of the PHASE project (Police Helicopters For Area Selective Enforcement) which was initiated in Columbus, Ohio, by the police department in 1972. Lateef points to the decrease in crime areas patrolled by the three helicopters in use there, but notes the existence of other variables, such as better communications and more officers per unit area.

Lateef directs attention to the reduction of 14 percent in the crime rate in Columbus in helicopter patrolled areas and the increase of 4.9 percent in non-helicopter patrolled areas and suggests the possibility that the incidence of crime has merely been shifted to a different location. This report is largely incomplete as are many such early evaluations.[75]

Maltz (1971) does one of the early summaries of the use of helicopters in law enforcement. He observes that the burgeoning use of these machines by police are attributable to two factors--the steady increase in crime and the growing financial assistance to law enforcement agencies

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[74] J. M. Chester et al., A Preliminary Survey of State, County and Local Law Enforcement Agencies Utilizing Air Borne Vehicles (McLean, Virginia: Mitre Corporation, 1975), Vol. I, pp. 12-13.

[75] A. Bari Lateef, "Helicopter Patrol in Law Enforcement--An Evaluation," Journal of Police Science 2 (March 1974):62-65.

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from the Law Enforcement Assistance Administration of the federal government. Maltz also points to the encouragement of police agencies using helicopters and attributing reductions in crime rates to the use of helicopters in patrol service.

Maltz tells of the Lakewood, California, helicopter project (Project Sky Knight) in 1966 and the 1969 Kansas City, Missouri, helicopter program and notes that neither project had a follow-up study or any study of the adjacent areas to test for crime displacement. Additionally, Maltz points out that Kansas City failed to allow for seasonal crime rate variations.

Maltz also indicates that there is a difference in whether the deterrent effect rose from the helicopter "presence" creating actual risk of apprehension or if it sprung from the program's publicity which could bring about a "perceived" risk of arrest. Maltz sees the latter as creation of a risky program using a "paper tiger."

Maltz dissects the theory of deterrence in connection with helicopters and discusses the actual ability of a police observer to see crimes in progress from five hundred feet in the air. He believes that an effort ought to be made to measure the deterrent effect of helicopters as to all conditions of patrol.

Maltz suggests that the proper use of helicopters should involve the analysis of the types and number of incidents for its use. These should be temporally

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coordinated with predictive uses in order to have helicopters in the air and possibly prepositioned. This, Maltz notes, is an old police manpower position play.

Maltz pointed out, as has earlier been noted, that helicopter evaluations are frequently baseless. He shows a model of that method contrasted to his proposed evaluation model.

Model:

1. Present (As it might appear in a police department's annual report): In 1970, the police helicopters were instrumental in effecting three arrests of robbery suspects. This is a 50 percent increase over 1969.

2. Proposed:

Dispositions of 146 "Robbery in Progress" Calls

	Success, e.g. arrest	No Success	False Calls	
Helicopter Used	3	17	24	Success rate using helicopter: $\frac{3}{20}$ = 15%
Helicopter Not Used	6	44	51	Success rate not using helicopter: $\frac{6}{20}$ = 12%

Helicopter not used because:		Helicopter used unsuccessfully because:	
Not scheduled to fly at that time	21	Unable to locate suspects	8
Unscheduled maintenance	10	Long time delay in getting to site	5
On another assignment	8	Other	4
Pilot not available	4		17[76]
Other	7		
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[76] Michael D. Maltz, "Evaluation of Air Mobility Programs," The Police Chief 38 (April 1971):34-39.

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This is not a particularly useful method of determining impact on crime but may be handy as a contrast to the skimpiness of what Maltz designates as the "present" method. The idea proposed by Maltz that all helicopter patrol ought to be evaluated as to deterrence is a very significant point which leaves only the question, how?

Davis (1971) tells of the 1969-70 Los Angeles police helicopter program, Air Support To Regular Operations (ASTRO) which tested with the use of two helicopters in selected patrol areas. Patternless patrols were flown in peak crime hours.

Davis notes that the program was evaluated extensively, thoroughly, and scientifically by the Jet Propulsion Laboratory of Pasadena, California, as to effectiveness.

The Laboratory summary reported that in both test divisions the resulting changes where actual offenses committed were significantly lower than the predicted offenses, could only be attributed to the helicopter patrol operations.[77]

Davis defends the report in the light of the Maltz[78] criticism which delved into the difficulty of observers noting crime in progress. Davis tells of how one helicopter observed watched a pedestrian enter a store

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[77]Edward M. Davis, "Astro: Los Angeles Police Department Helicopter Program," The Police Chief 38 (November 1971):10, 66-67.

[78]See Maltz, supra p. 70.

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wearing one type of clothing and exit a few minutes later wearing different clothing. A radio unit was summoned and made an arrest, after investigation, for shoplifting.

Davis agrees with Maltz, however, in the risk of creating a "paper tiger" by posing a "perceived" risk of arrest and further agrees that a serious research into evaluation is needed which should include response time and cost effectiveness.[79]

Incidentally, it may be historically important to note that the arrest incident related by Davis may be the first claimed case of the use of the helicopter to deter such crimes as shoplifting.

Felkenes (1969) presents an interesting aspect of the use of helicopters for police speed control when he points out several instances where states were having problems in traffic enforcement because the ground officer received the information from the air officer. The traffic misdemeanor was not committed in the presence of the officer. This legal problem has been largely resolved by the use of the "radar" speed detectors on ground units, and which are practically the only methods in use presently.[80]

Felkenes also poses an interesting question concerning the use of helicopters in police surveillance during

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[79]Davis, "Astro: Los Angeles Helicopter Program," p. 67.

[80]George T. Felkenes, "Some Legal Aspects of the Use of Aircraft in Law Enforcement," The Police Chief 36 (February 1969):28-30.

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patrol over private property. Felkenes boxes the problem into a standard of reasonableness:

> . . . whether the thing done, in terms of its form, scope, nature, incidents and effect, impress as being fundamentally unfair or unreasonable in the specific situation when the immediate end sought is considered against the private right affected.[81]

Felkenes points out that any police use of long range cameras or listening devices ought to be constitutionally provided for. He suggests that the entire program may eventually need new legislation.[82]

Implications for Trainers and Educators

The literature reviewed in this chapter has amply illustrated the belief of police administrators in the theories of visibility and mobility as bearing directly on crime deterrence and prevention. These authors were largely authoritative police procedure experts, as police administrators, trainers, and educators, and have had an enormous impact on the retention and sharing of these theories in the field of criminal justice.

Tenney (1971) reported that the University of Southern California has offered law enforcement degrees since 1929 and Michigan State University had offered a

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[81] U.S. vs. Cook, 213 F. Supp. 568, (1962).

[82] George T. Felkenes, "The Right of Privacy: Police Surveillance by Aircraft," Journal of Police Science and Administration 1 (1974):345-48.

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Bachelor of Science degree in Police Administration since 1935. By the fall of 1968, there were 261 programs in law enforcement available in 234 separate institutions of higher education, according to a survey conducted by the International Association of Chiefs of Police.

Tenney noted that this survey found that the five leading texts in law enforcement courses in higher education included Wilson's Police Administration and the International City Managers Association's Municipal Year Book.[83] These volumes have become part of both training and higher education in law enforcement and both volumes promote the theories of visibility and mobility[84] as the prime patrol methods in crime deterrence and prevention.

In Chapter I it was pointed out that some police theories and methods have been built on a basis of tradition without actual test. It was observed that the theories of visibility and mobility as directly related to crime deterrence and prevention have been passed along from agency to agency, from administrator to trainer, and from teacher to pupil and have gained credibility in repetition.

As an example of this it is notable that one midwest police department issued a training bulletin which explained

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[83]Charles W. Tenney, Jr., Higher Education Programs in Law Enforcement and Criminal Justice (Washington, D.C.: U.S. Government Printing Office, 1971), p. 51.

[84]See Wilson, "Police Administration," supra at p. 32 and Municipal Police Administration, supra at p. 34.

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to officers those situations when a helicopter might be of use. This bulletin was composed largely of incidents from activity reports of a West Coast police department:

Crimes-in-Progress

1. At 2:19 a.m. on January 20, 1971, the helicopter responded to a reported armed robbery at 21st and Arkansas. The air crew observed a vehicle leaving the scene, and directed approaching ground units to stop it. Upon stopping, the occupants of the vehicle jumped and ran. During the chase the helicopter illuminated the area and two men were apprehended after a brief exchange of gunfire.

2. Responding to a silent burglar alarm at an automotive supply store, helicopter crews observed a burglary suspect attempt to escape through the darkness, utilizing a hole in the fence at the rear of the store property. Unable to avoid the lights from the hovering helicopter, the suspect surrendered to Deputies directed to him by air crews. (Sheriff file Y-365-966)

3. Dispatched to the Village Del Market on the report of two suspicious subjects. Located the subjects at the rear of the market. They then fled on foot. Ground crews were directed to the subjects. Two male adults arrested for attempted B & E. Time 12:36 a.m.

4. A car salesman observed a suspect speed from the lot in a stolen red sports car. He reported the theft to Lakewood Station. Sky Knight was alerted by radio and quickly located suspect and vehicle speeding through residential streets. Switching to air-to-car frequency, Sky Knight directed ground units toward an intercept. Aware of, but unable to escape the helicopter, the suspect panicked and lost control of the car, hitting a tree. Uninjured, he attempted to hide in bushes but was observed continuously by the helicopter crew and taken into custody at that location. (Sheriff file Y-275-010)

5. 1-12-72, 1207 hours, Helicopter #182 was dispatched to the location of a possible house burglary in progress. The helicopter crew arrived over the scene and spotted three subjects running from the rear of a house as a ground unit pulled up in front. They got into a black over red car and

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tried to elude us by driving around in circles. We directed ground units to pursue the subjects, after following the subjects for about ten minutes in a high speed chase. The three subjects jumped out of the car and ran in three different directions. One subject ran into a garage and the helicopter crew kept that subject pinned in the garage and directed ground units to him. We kept the other subjects in sight and directed the ground units to one subject and used the P.A. system to direct two citizens to capture the third subject, who was trying to escape on a transit bus.

6. At 6:20 p.m., Helicopter 181 responded to a disturbance with a gun involved at 773 1/2 South Front Street. As the cruiser officer was knocking on the door a subject was observed by the helicopter crew climbing out of a window onto the roof. He then crossed to an adjoining building, where he dropped to the ground. His location and direction of travel was radioed to 110 Cruiser and the subject was arrested.

Chases

1. Two armed robbery, kidnap and grand theft suspects fled on foot into the dark, after a collision with a police unit. A responding Sky Knight crew quickly observed the fleeing suspects and flooded the area with light, giving them no place to hide. Ground units easily located and arrested both suspects. (Sheriff file Y-345-678).

2. A sixteen year old reckless driver, pursued into Sky Knight territory by ground units of four policing jurisdictions at speeds in excess of 120 MPH, pulled to the side when overtaken from the air. His reason . . . "I thought I could outrun the police cars, but when I saw the helicopter, I knew it was all over."

3. At 5:40 p.m., Helicopter 182 responded to a radio call that two cruisers were involved in a chase at Starr and Dennison Avenues. The crew observed the two subjects, who had bailed out of the car, enter a building at Starr and High. They directed ground units to the location. As one cruiser arrived the two suspects ran out the rear door and north in the alley. The helicopter crew advised the ground units and the two subjects were arrested at Wall and Smith Place.

4. At 4:35 p.m., Cruiser 21 put out a chase involving a red motorcycle in a field south of Tamarack, east of Karl Road. 182 Helicopter spotted the motorcycle in a new apartment complex, notified and directed ground units to the scene and the arrest was made.

Missing Persons

Report of a senile lady who walked away from a nursing home on Swigart Road. We located the lady and directed a ground unit to her.

Location of Objects

At 2:50 p.m., Helicopter 182 received a request from the Homicide Squad to search the area north of Fifth Avenue and Leonard and east of Glick's Warehouse for a dress that was torn from a woman, in a rape, during the night. 182 Helicopter crew found the dress in a field of high grass on the west side of the warehouse. This property was recovered and held as evidence.

Location of Suspect Persons/Vehicles

1. Assisted ground unit locate a green Cadillace that was looking for in the area of Town and Country. Located the car and directed him to the car. Time 12:49 a.m.

2. At 8:32 p.m., Helicopter 181 was dispatched by radio to Glenwood and State Streets where a wanted felon was running from a ground unit. The subject was spotted by the helicopter and he ran inside a bar. This information was relayed to the ground units and he was caught and arrested.

3. 11-18-71, 1058 hours, Helicopter #182 was dispatched to Southview to assist ground units in locating several subjects involved in an unarmed robbery. The ground units were on foot in a wooded area in the park and were directed to the subjects by use of the aerial P.A. system. This resulted in six (6) arrests.

4. Dispatched to assist a ground unit who lost a suspicious car on Wilington Pike. We located the car and directed the ground unit to its location. Time: 11:00 p.m.

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5. Ground unit requested our assistance in locating a subject on a motorcycle who fled from him. Subject was located. Time 6:55 p.m.

6. At 8:13 p.m., Radio dispatched Helicopter 181 to locate a personal injury motorcycle accident in the wooded trials northwest of Riverside Hospital. The youth was found lying on the ground where he had wrecked and the emergency squad crew was directed to him by the helicopter.[85]

These incidents, repeated as part of a training bulletin, seem aimed more at selling the program than they are to be used for actual training purposes. Stories of this type can be found in other evaluations of police helicopter programs.[86]

This same department began helicopter patrol in July of the same year and the first reports were much the same as the type referred to in the training bulletin as witness these incidents reported in the local newspaper:

> To cut down on the response time for the 'copter, the craft spends as much of its on-duty time in the air as possible. It circles in various sections of the city for periods of about one and one-half hours each, according to Sgt. Jerry Mills, helicopter unit chief, and is ready to answer on a second's notice any crime-in-progress calls like robberies, burglaries, prowlers or high speed chases.
>
> One night about 1 a.m., police got a burglar alarm call from the drug store on South Cedar. The copter and a patrol car arrived at about the same time and the aerial craft covered the area with its glaring search lights while officers went in and found the burglar hiding behind a door. Mills said that was a classic example of what the copter is

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[85] Lansing (Michigan) Police Department, Training Bulletin #5, April 3, 1974.

[86] See Whisenand "The Use of Helicopters," Supra p. 66.

supposed to do--support ground units and contain a suspect with its lights and loud speakers.

Another night civilians reported four subjects going through Salvation Army boxes on the east side. The copter flew over and directed ground units to the looters.

Last Saturday night someone was reported going through trucks at the Lansing Candy Co. on May Street. Using its light, the copter followed one figure from the scene as he pushed a bicycle between two buildings, then got on and rode to Johnson Street, went north across Oakland to Porter, then west and finally cut between two houses and stopped beneath a blue spruce tree.

"Mind you," said Mills, "the observer identified it as a spruce tree, not just a pine. They radioed their information to a patrol car and the officers drove right up to the tree and arrested a juvenile. And it was a blue spruce, too."

And the third night out, the copter crew participated in a high speed chase of a car that sped west on Jolly from Logan at speeds up to 100 miles per hour.

Mills said the faster copter got close enough to the car to apparently convince the driver he couldn't get away, and the pursuit car easily caught up with it. Mills predicted that future chases may not reach such speeds when drivers become convinced they can't get too far.

In one of its most dramatic successes, the chopper was the first unit on the scene after it was reported persons were on the roof of Cumberland School. The copter's public address system kept the would-be vandals at bay until a police car arrived.[87]

These recitals are typical of the passage of patrol system values from one police agency to another without scientific testing. These statements are all the more in need of review when it is realized that some of them are a part of the training material offered to police officers in at least one department.

Without testing there is no other material available. There is no proven method to teach to police

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[87]Dick Frazier, "Eye in Sky Copter Here to Stay," State Journal, Sunday, July 7, 1974, p. B4.

recruits. There are no curricula for them in the area of police patrol which are based on scientifically tested and evaluated theory to be used in higher education programs in criminal justice.

Summary

It has been illustrated by the literature, that the addition of technological advances to patrol systems which increased visibility and mobility were often hailed as the beginning of the end of crime. This has not happened yet but the theories of visibility and mobility are still part of police training and educational programs.

If these theories are to have continued credibility in use, training and education, in the face of continually rising crime rates, they must be subjected to full and continual research until proven or rejected.

The report of the President's Commission (1967) pointed out the crux of the problem confronting both the trainer and the educator in criminal justice:

> Research methods must be devised to produce accurate understanding of current practices and, so far as it is measurable, their impact upon crime and the community. Adequate evaluation of existing practices may require the collection of a substantial amount of data not now gathered. Study of alternative practices may be aided by a willingness to engage in experimentation and demonstration projects.[88]

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[88]President's Commission, "The Police," p. 25.

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Public relations releases, stories and articles to please the community, and incomplete, inconclusive statistics have, thus far been the only proof offered that these theories are correct.

There has been a minimum of experimental research conducted in the field of criminal justice. In fact, the previously reported patrol experiment in Kansas City, Missouri, may well be the only scientific attempt to conduct an experiment concerning these theories.[89]

The literature reveals little information concerning helicopters and their use in police patrol as a highly refined and capable tool in patrol procedures. Their relationship to the theories of visibility and mobility in crime prevention and deterrence has widely been fostered on the basis of speed. Since there is a paucity of information concerning helicopters, this study will begin to provide what is seen as some basic information about these new tools with a view to providing the starting point for closer and more incisive looks into one area of the theories of visibility and mobility in crime deterrence and prevention.

The importance of those theories in the criminal justice system cannot be overstated when it is realized that these theories are an integral part of police practice, training, and higher education and when it is further realized that a goodly number of people may depend on their

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[89] C.f. Kelling, Kansas City Patrol, Supra p. 52.

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being factual. Because of this, it is essential that these theories be looked at in detail until all their components are identified and described, and then subjected to continuous research until their real impact on crime is proven.

In addition to using the literature of law enforcement as a probe instrument this study made use of two questionnaires to obtain additional data.

One questionnaire was devised by the Mitre Corporation for the Law Enforcement Assistance Administration and was directed to all agencies using aircraft in law enforcement. This data is unpublished at this writing and was used by special permission of the Mitre Corporation and designated as the Chester survey. The other questionnaire was devised by this author and was directed to police departments using helicopters in patrol work. Both questionnaires are detailed in Chapter III.

CHAPTER III

METHODOLOGY

Basis of Necessity for Description

This is a descriptive study of certain methods and theories of police patrol; specifically those concerning and associated with visibility and mobility. In Chapters I and II the material has illustrated the basis and beginnings of these methods and theories. It has also been shown there is a firm belief that speed in mobility contributes heavily to increased visibility and provides a greater capacity for crime deterrence and prevention. This belief is still part of the very cornerstone of police training, education, and planning. Because of this belief in the efficacy of speed, the study focuses on the use of the helicopter for patrol service.

It has been demonstrated that some previous studies of police patrol practices have been largely oriented to public relations and frequently consist only of tales about police chases and captures. Other studies have been conducted seriously, as though for the purpose of justification, but have failed to provide for validity. These studies

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have resulted in the release of statistics which are incomplete and conclusions which are invalid. This is especially true of helicopter studies. Campbell (1973) refers to the "one-shot" study, in which a single group is studied only once, subsequent to some agent or treatment presumed to cause change, as scientifically valueless.[1]

It is of critical importance to discover whether a relationship exists between visibility, mobility, and crime rates when it is considered that crime has reached levels which threaten the very life style of many communities.

It is of equal importance to probe for such relationship because police education, training, and planning rely heavily on the presumed existence of this relationship. And, as demonstrated in Chapters I and II, this presumed relationship is a large part of the very fabric of efforts to deter and prevent crime.

In order to properly evaluate a process, or to seek cause and effect by experimenting in a process, it is important to provide future researchers with a complete picture of that process as it exists.

An accurate description of an existing model is vitally important as a basis for suggesting avenues of evaluation. A true depiction of all the existing features

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[1]Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally, 1973), p. 6.

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of any phenomenon under study must be the first step leading to eventual evaluation and testing.

Sources of Data

One source of data in this study was the literature of the profession. The review of this literature in Chapter II was actually conducted as a probe to search for evidence of the philosophy which perpetuates the belief in visibility and mobility in patrol as effective in crime deterrence and prevention.

The literature also furnishes views of those leaders of the profession of policing as they concerned this theory both in relation to use in practice and promulgation in training and education.

As part of this picture, it was considered useful to conduct an inventory of all helicopters in use by police departments in the United States. This information, even without additional comment or analysis should be of value to researchers, whether experimental or historical. When viewed with other information sought in this study, it is considered that such data might provide one of the keys to some suggestions for eventual evaluation of the process for future testing. This evaluation would be doubly important because of its reflection on crime prevention and on criminal justice training and education.

Dewey (1938) made the point that "the belief that all genuine education comes about through experience does

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not mean that all experiences are genuinely educative."[2] This may turn out to be especially true of the repetitious experiential recounting connected with the use of helicopters in police patrol service. The continual reiteration of certain types of incidents which seem geared to gird the helicopter in policeman's clothes may be miseducative in the long run. The implied support of the theories of visibility and mobility without test are undoubtedly carried over to training and education programs.

In 1960 there were 31 civil government agencies including police departments using 97 helicopters. A small number were non-police agencies. By 1975, there were 203 civil government agencies using 632 helicopters. This number includes 154 police agencies using approximately 420 helicopters.

Although one large city police department began using helicopters in the late 1940s and some other police agencies made sporadic experiments with these machines, it was not until many surplus military helicopters were coupled with federal grants through the Omnibus Crime Bill,[3]

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[2]John Dewey, Experience and Education (New York: Collier Books, 1963 reprint), p. 25.

[3]Omnibus Crime Control and Safe Streets Act of 1968: "To assist state and local governments in reducing the incidence of crime, to increase the effectiveness, fairness, and coordination of law enforcement and criminal justice systems at all levels of government and for other purposes."

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that the phenomenon of the hovering patrol vehicle really blossomed in the criminal justice agencies of America.

Due to the relatively short time that this airborne patrol vehicle has been used by police departments there is no great bank of information available.

Lists of police agencies using helicopters in patrol service were obtained from two sources--the Aerospace Industries Directory (1974) and the Mitre Corporation's Preliminary Survey of Law Enforcement Agencies Utilizing Airborne Vehicles (1975).[4] These lists were combined into one roster which includes all police agencies in the United States involved in the use of helicopters as police vehicles.

In addition to providing a list of police agencies using helicopters, each of these sources provided some additional information. Aerospace provided an alphabetical listing of the agencies along with a brief inventory of the types of helicopters in use.[5] Aerospace also furnished some brief statistical data relating to certain types and models of helicopters.[6]

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[4]Aerospace Industries Association, Directory of Helicopter Operators in the United States, Canada and Puerto Rico (Washington, D.C.: Aerospace Industries Association of America, Inc., 1974); and J. M. Chester et al., Preliminary Survey of State, County, and Local Law Enforcement Agencies Utilizing Airborne Vehicles, vol. I (McLean, Virginia: The Mitre Corporation, 1975).

[5]Aerospace, Directory of Helicopter Operators, pp. 161-85.

[6]Ibid., p. 200.

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Chester's survey encompassed all law enforcement agencies using helicopters in local, county, or state government applications. This list also noted the number and kind of helicopter in use by each agency.[7] Chester also provided a considerable amount of data which has been absorbed in and dovetailed with other data obtained in this study. This additional data will be discussed later, in greater detail.

Techniques of Data Collection

The combined roster included 154 police agencies in 25 state, 64 county, and 65 local governments which were using helicopters. From this population was selected a sample which included at least one local, one county, and one state agency from every state where such service is in use in any police agency of these three branches of government. There are 11 states that have no such service in any branch of police service in the state. These are:

Arkansas	New Hampshire
Connecticut	New Mexico
Idaho	North Dakota
Maine	Oregon
Montana	Vermont
	Wyoming

The final sample consisted of 98 agencies, local, county, and state. Those agencies which were not using helicopters in crime patrol, such as fish and game agencies,

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[7]Chester, Agencies Utilizing Airborne Vehicles, Vol. I, pp. 17-53.

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were excluded from the study. To this list was added Puerto Rico and the Royal Canadian Mounted Police. These last two were included because of historical comparison considerations only.

Each agency was contacted by one mailing which consisted of three separate sections: the first was a letter of explanation which detailed the reason for the study, the second was a personal resume of the researcher and the third was a questionnaire consisting of 31 items. The questions were designed with the help and advice of the research section of the Education Department at Michigan State University. These questions were intended to obtain information concerning the purposes, costs, results, and effectiveness of the use of helicopters as perceived by the users.

Proposed Potential of Data

It was also intended that information obtained from questionnaire as well as information obtained in the review of the literature in Chapter II and the information from the Mitre Corporation, would be available to use in preparing evaluation designs for future tests or experiments of effectiveness in crime deterrence and prevention.

And finally, it is intended that such data be available to the training and education of future criminal justice students and practitioners, particularly those who

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will use the data for continuing research to test and retest all the methods of police patrol.

The author's questionnaire, although it consisted of thirty-one separate items, was actually constructed around five areas which could be the key issues in any attempt at evaluation of a community safety program for future test and experiment. These five areas constitute divisions of importance insofar as any future test program is concerned. Certainly they go directly to the issue of centrality as far as program purpose, process, and impact are concerned.

A method or theory of crime deterrence or prevention is closely allied to these five divisions since all relate to community function at large. These divisions are:

1. Demographic--encompassing both the physical and political aspects of the observed community.
2. Financial--including community financial involvement in the process of policing and those statistics which might aid in providing ways to search for cost-effectiveness of a helicopter patrol.
3. Purpose and utility factors--which is intended to probe for the utilization of helicopters in relation to the purpose for which they were obtained.
4. Accountability methods--these questions are aimed at learning how the results of the process are demonstrated through the use of performance and selected crime statistics.

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5. Evaluation--this group of questions seeks information about effectiveness through the use of selected area crime statistics and the perceived evaluations of the users of helicopters in police patrol.

The questions are not numerically grouped by question-function for the reasons that it was deemed statistically valueless in the face of the possibility that such grouping might lead the respondent to perceive an overemphasis on one or another of the areas probed. It was considered important to convey to respondents that this is a descriptive study which is intended to aid research and is not intended to portray any organization or its methods and results in a critical light.

These are the areas of probe, and the positions of the questions in the questionnaire:

- Demographic

1. The governmental unit providing <u>salaries</u> for your department is:

☐ 1. Village ☐ 4. County

☐ 2. City ☐ 5. State

☐ 3. Township ☐ 6. Other _____
(please specify)

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2. What is the "general description" of your jurisdiction? Name the two most prominent features:

Residential . . . . . _____
Agricultural. . . . . _____
Educational . . . . . _____
Military . . . . . _____
Governmental. . . . . _____
Industrial . . . . . _____
Natural Resources (mining, forestry, etc.). . . . . _____
Recreation-Tourism. . . . . _____

3. What is the official population estimate of your jurisdiction?

4. What is the total number of miles of public roads and streets (paved and unpaved) and the square miles of land in your entire jurisdiction?

Miles of public roads _____

Square miles of land _____

It is important, in any attempt to describe a process, to provide as complete and accurate a view of the physical environment wherein the process operates, especially in regard to the description of a process which is so related to that physical environment by its very nature, as is the helicopter. Obviously, it would be counterproductive to use an airborne vehicle for anti-crime patrol in areas of forest, water, or over very sparsely inhabited districts. On the other hand, this vehicle might be just exactly suitable for search and rescue missions in such areas. The later discussion of feasibility of various uses for this vehicle will also relate to the size of the area in which it is used and the number of people it serves.

• Financial

5. What is the TOTAL budget for your department for the latest fiscal year?

   Total budget for the latest year is $_____

6. What is the TOTAL budget of your entire city, village, township, or county for the latest fiscal year?

   Total budget for the latest year is $_____

7. What is the actual number of all officers and civilians in your agency today?

   _____ (officers) _____ (civilians)

10. If any helicopters were purchased through L.E.A.A. grants, did or will your department continue the program after expiration of the grant?

    Yes ☐ No ☐

15. What are the rank and salaries of your helicopter pilots?

No.	Rank	Salary
____	_____	_____
____	_____	_____

16. What is the total cost of housing your helicopters per year?

    _____

- Purpose and Utilization

8. How many items of the following mobile patrol equipment does your department own?

Cars	_____
Cycles	_____
Scooters	_____
Planes	_____
Helicopters	_____

9. Were any of these mobile items purchased by L.E.A.A. grants?

	Yes (number)	No
Cars	_____	☐
Cycles	_____	☐
Scooters	_____	☐
Planes	_____	☐
Helicopters	_____	☐

12. What type and capacity helicopters are in use in your department?

1. _____	5. _____
2. _____	6. _____
3. _____	7. _____
4. _____	8. _____

13. How are your department's helicopters utilized? (Please state amount of use in hours per month per unit in average 730 hour month.)

- [ ] Patrol, general, including searches
- [ ] Traffic, regular
- [ ] Traffic, emergency
- [ ] Medical, mercy, transport, rescue
- [ ] Personnel transport
- [ ] Other (please describe briefly)

_____

14. How are your helicopter pilots chosen for duty?

- [ ] Selected from department, then trained.
- [ ] Selected pre-trained from department.
- [ ] Selected pre-trained from outside department.

19. Does your department use helicopters on general patrol during all time shifts?

Yes [ ] No [ ]

20. Do you provide helicopter assistance to other police agencies or other units of government? (Total hours per month per unit.)

No. Units	Other Police (hours)	Other Governments (hours)
____	_____	_____

21. When using a helicopter in anti-crime patrol, do you use additional surface units to assist, or respond to, the helicopter?

Number of additional surface units per helicopter _____

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These items are specifically directed toward discovering how the helicopter is being used by police agencies as a deterrent to crime. It is also intended that a status or condition picture might be obtained which will help future evaluators avoid errors caused by lack of validity. Question number 21 points out such a possibility. Some departments, realizing that a helicopter can respond rapidly while on patrol, add surface units to speed up surface unit response to the need of the helicopter for cooperation. The resulting personnel and equipment configuration renders the statistics of that time and area incomparable to statistics of times and areas that are absent these same conditions. The internal validity of any test would be jeopardized by this bias which results from differential selection of respondents for comparisons.

This in turn would adversely affect the external validity of any experiment and render it totally ungeneralizable.[8] A part of any descriptive study should be directed toward the discovery and isolation of those segments of the process which lend themselves, by their very presence, to errors which jeopardize validity.

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[8]Campbell, Experimental Research, p. 5.

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• Accountability

17. In which of the following reporting programs does your department participate?

Yes	No	
☐	☐	F.B.I. Uniform Crime Report Program
☐	☐	National Safety Council Annual Traffic Inventory
☐	☐	L.E.I.N. (Law Enforcement Intelligence Network)

18. Has your department prepared a separate report of helicopter activity?

Monthly		Annually	
Yes	No	Yes	No
☐	☐	☐	☐

24. If your department believes either 22 or 23 above, is there documentation to demonstrate?

Yes ☐ No ☐

26. Has your helicopter program been specifically evaluated as to its relationship to crime?

Yes ☐ No ☐

30. Will you please forward the information sought in questions 18, 24, 26, 27, 28, and 29, as well as this questionnaire (when completed) to the researcher in the enclosed, self-addressed, stamped envelope?

This questionnaire grouping is programmed to demonstrate the importance of locating the source of some statistical methods of accountability. These figures could enable the future evaluator to "get a handle" on the problem of using certain performance statistics as proof of

productivity in the purpose or mission of the process while relating these same statistics to the results of using the process. For instance, if a process of building a home is accounted for by adding the total bricks and pounds of mortar used, a favorable result may ensue when compared to other house building efforts using these statistics. But in terms of comfort, convenience, and utility or, final intended result, such statistics and their final results in use, while they may be accurate and scientifically gained, are virtually useless because of their lack of relationship to the purpose.

Realizing that one can win the brick and mortar contest and still have a badly constructed house without comfort, convenience, and utility it then becomes apparent that these statistics must be used only in relationship to those statistics which bear directly on the purpose of the process. This is especially true of accountability use of statistics in the field of criminal justice.

It is briefly notable that the language in questions 24 and 30 may seem out of context because of their phrasing but it is recalled that these are accountability questions and their references to previous questions are in relation to their position in the entire questionnaire.[9]

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[9]See Appendix A.

• Evaluation

22. Does your department believe that the use of the helicopter in anti-crime patrol has reduced street crime?

Yes ☐ No ☐

23. Does your department believe that helicopter use has reduced any particular category of crime?

Yes ☐ No ☐ Category _____

25. Does your department consider the helicopter most valuable for:

☐ Patrol, including search

☐ Traffic

☐ Medical, mercy, treamtent, rescue

☐ Personnel transport

☐ Other (specify briefly) _____

27. Has your program revealed instances in which helicopter patrol seems to shift the crime to areas outside the patrol perimeter?

Yes ☐ No ☐

28. Has your helicopter program been evaluated as to cost per mission?

Yes ☐ No ☐

29. Has your scout car program been evaluated as to cost per mission?

Yes ☐ No ☐

31. Will you please state briefly the general view of your department toward the use of helicopters in police service?

These questions assess the user's view of the value of this patrol procedure. Specifically, these questions probe for indications of any impact on crime attributed by the users to this system of patrol. In any future attempts at evaluation, testing or experimentation will be critical for researchers to know where to locate those items which purport to have the greatest degree of pertinence to evaluation of any cost-effectiveness in relation to crime deterrence and prevention.

In addition to the questionnaire, this study has made extensive use of the material in the Chester study, Volumes I and II (1975) which also made use of a questionnaire to survey police agencies using helicopters and other aircraft. Some of the information obtained by the Chester survey will be combined and collated whenever possible with the data obtained in the present study. The purpose, of course, will be to provide a description of this process that will be as complete and accurate as possible with the use of the data available.

The present study also makes use of test and evaluation reports from the relatively few police agencies which included them as requested in this author's questionnaire. These reports furnish some useful information anent the views of police administrators who are trying to test and evaluate helicopter programs at the same time as they attempt to justify their very existence.

Summary

The data collection thus came mainly from three sources:

1. The literature of criminal justice. In this literature the philosophy of the theory of visibility and mobility in police patrol was sought. The literature was used to trace the passing of this theory from early police departments to those of the present day. In addition, this review of the literature pointed up the absence of research into and testing of police patrol methods and theories.

2. A survey conducted for the Law Enforcement Assistance Administration by the Mitre Corporation used a questionnaire address to law enforcement agencies using aircraft in their functions. The author of the present study was granted permission to use the unpublished data received in answers to this questionnaire. This data provided information about helicopter use and capability. The data also furnished valuable cost data as well as views of the users concerning the performance of helicopters.

3. A survey conducted by the author of the present study which probed police users of helicopters by questionnaire. This questionnaire was directed to police agencies which were using helicopters in their regular function. The data from this questionnaire provided information about the areas where these vehicles were being used as well as

views of the users about their value in crime deterrence and prevention.

Some evaluative information was obtained in both surveys but in neither case was any evaluative information supported by scientific test.

The two questionnaires covered virtually the entire law enforcement community in the United States. Information from both questionnaires was combined to provide data for many of the tables in Chapter IV.

4. Another source of data was found in the reports from police agencies which purported to test and evaluate their helicopter patrol. Although these data fail to pass the test of validity they go, nevertheless, provide some interesting formulae which might conceivably be of future use in testing and evaluation of police patrol.

The final picture drawn as the result of this study will, hopefully, prove useful to researchers of the future by providing the kinds of data which will lead to methods of evaluation, testing, and proving of certain police patrol theories and methods which might then be adopted and used by police administrators, trainers, and educators to provide a dependable program of crime deterrence and prevention.

CHAPTER IV

DESCRIPTION OF THE DATA

Bases for Evaluation

This chapter will describe the data obtained during the study from all sources as described in Chapter III. They also include 113 responses to the Chester[1] survey as well as 75 responses to the author's questionnaire. These responses, when categorized, will not be additive because, in some instances the data bases, though similar, vary because of the approach. The instant study does not consider data from respondents in either study that turned out to be disassociated from police agencies. These data, nevertheless, serve to accurately describe those functions and details with which they deal.

The description of the data gathered in this study begins with a roster of all law enforcement agencies using helicopters. Included with the roster is an inventory of the number of helicopters in use in each agency. This list

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[1]Chester, Preliminary Survey of Agencies Utilizing Airborne Vehicles, Vol. II, pp. 15-1579.

also provides specifications, performance, and financial information including cost of operation.

It was deemed useful, indeed necessary, for further research to present a view of what such a vehicle costs to obtain, what it does, and how much it costs to do it. This roster of agencies and inventory of vehicles will be further associated with community and area demographical data in order to complete the picture of the state of the art.

This chapter will also discuss and demonstrate some of the theories and methods of evaluating helicopter patrol effectiveness in the deterrence or prevention of crime which have been, or are now, in use by police agencies.

It is intended that this chapter should describe the setting wherein the researching academician should begin his efforts. In these data is evidence that should be useful in beginning evaluation or in planning action research to test the police theories of visibility and mobility in relation to their effectiveness in deterring or preventing crime.

Data from the Past

The National Institute of Law Enforcement and Criminal Justice (1971) presented a report describing how helicopters were being used in support of law enforcement activities as of March 1970. The report has an inventory of helicopters, including capabilities and costs, both initial and operating.

This report also includes data concerning police usage of helicopters in relation to the amount of time spent in the various police functions. It is designated as a report which is part of a longer range program designed to evaluate police use of helicopters which intends to include those factors which contribute to effectiveness in law enforcement, surveillance, rapid response time, preventive patrol, and deterrence. These will be coupled with cost, use, maintenance, and other factors for evaluation that is realistic.[2]

It becomes apparent that there exists a wide variety of calculations concerning the use of helicopters which fluctuate from agency to agency. Note, for instance, the difference between the helicopter manufacturers' computation of costs per hour of operation and those of the users.[3] These are virtually not comparable and this factor could develop into one of the primary problems to be solved before evaluation researchers are able to devise any cost-effectiveness formulas.

The National Institute report tells that law enforcement agencies have measured helicopter effectiveness in terms of decreased crime rates and numbers of criminals apprehended, but adds that it is not known to what extent

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[2]National Institute of Law Enforcement and Criminal Justice, The Utilization of Helicopters for Police Air Mobility (Washington, D.C.: U.S. Government Printing Office, 1971).

[3]See Tables 1, 2, 3, 4, and 5.

Table 1.--Law Enforcement and Related Missions Performed by Helicopters for Selected Agencies.*

		Chicago P.D.	Denver P.D.	Forth Worth, City of	Honolulu	Kansas City Mo. P.D.	L.A. County Sheriff	L.A. P.D.	Memphis P.D.	Nassau County P.D., N.Y.	New Jersey State Police	New York City P.D.	New York State Police	Penna. State Police	Pomona, Cal., City of
	Command Post		x			x		x	x		x	x	x	x	x
	Criminal Apprehension														
	High Speed Chase			x		x	x		x		x			x	
	Patrol--Rural or Vacant Areas			x		x	x				x	x		x	
	Patrol--Seasonal Areas in Off Seasons			x		x	x	x			x			x	
	Providing Intercept Direction/Control to Surface Vehicles or Foot Personnel			x		x			x		x			x	
	Response to Alarms					x	x		x	x				x	x
	Road Block--Setup								x		x			x	
	Search--Fugitives			x		x	x	x	x		x	x		x	
	Search--Vehicles			x	x	x		x	x		x	x		x	
	Stake Out					x		x				x		x	
LAW ENFORCEMENT	Surveillance--Active	x	x		x	x	x	x	x		x	x		x	x
	Surveillance--Covert	x		x		x	x	x				x	x	x	
	Surveillance--General	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Surveillance--Rooftop			x		x		x	x			x			
	Tracking Fleeing Suspects			x		x			x		x			x	
	Narcotics Detection							x				x		x	
	Observation Post			x		x			x		x	x		x	
	Officer Safety			x		x		x	x						
	Preventative Night Patrols with Lights	x	x			x	x		x			x			x
	Riot Control	x	x				x	x	x		x	x		x	
	Security--Valuable Surface Movements														
	Transport Prisoners								x						
	Transport Specialists to Crime Scene	x	x	x			x		x		x	x	x	x	
	VIP Security			x				x				x		x	
	Voice Control of Ground Events					x	x	x	x		x	x	x	x	x
	Aerial Photography		x	x				x	x	x	x	x	x	x	x
	Air Evacuation (Ambulance)		x				x	x	x	x	x	x		x	
	Ambulance Escort				x									x	
	Disaster Warning			x				x	x			x			
	Emergency Cargo Transport							x			x	x	x	x	x
	Fire Detection and Fighting			x	x	x		x	x		x	x			x
	Rescue			x	x	x	x	x	x	x	x	x	x	x	x
	Search--People Lost			x	x	x	x	x	x	x	x	x	x	x	x
PUBLIC SAFETY	Traffic														
	Accident Investigation			x				x	x		x	x	x	x	
	Accident Prevention										x	x	x	x	
	Debris and Other Safety Hazard Removal Assistance			x							x	x			
	Motor Assistance			x				x	x		x	x	x	x	
	Speed Control			x				x			x		x	x	x
	Traffic Control--Emergency							x	x	x	x	x		x	
	Traffic Control--Freeway and Highway			x					x	x	x	x		x	
	Traffic Monitoring			x	x		x	x	x	x	x	x		x	x
	Water Area Patrol	x		x	x					x	x	x			

*Data as of March 1970, National Institute, Utilization of Helicopters for Police Air Mobility, p. 23.

Table 2.--Comparative Helicopter Cost Data (Annual Basis).*

Helicopters	Annual Cost @ 600 Hrs/Yr		
	Direct Cost	Fixed Cost	Total Cost
Bell 47G-3B-2	$12,498	$16,226	$28,724
Bell 47G-4A	11,412	15,936	27,348
Bell 47G-5	10,032	13,036	23,068
Bell 206A Jet Ranger	21,054	30,450	51,504
Enstrom F-28A	11,220	11,600	22,820
Fairchild Hiller FH-1100	23,226	27,720	50,946
Hughes 300	7,956	9,753	17,709
Hughes 500	15,150	27,250	42,400

*Data as of March 1970, National Institute, Utilization of Helicopters for Police Air Mobility, p. 9.

Table 3.--Comparative Helicopter Cost Data (Per Hour Basis).*

Helicopters	List Price Basic Aircraft	Cost Per Hr @ 600 Hrs/Yr		
		Direct Cost	Fixed Cost	Total Cost
Bell 47G-3B-2	$ 55,950	$20.83	$27.04	$47.87
Bell 47G-4A	54,950	19.02	26.56	45.58
Bell 47G-5	44,950	16.72	21.73	38.45
Bell 206A Jet Ranger	105,000	35.09	50.75	85.84
Enstrom F-28A	39,750	18.70	19.33	38.03
Fairchild-Hiller FH-1100	98,000	38.71	46.20	84.91
Hughes 300	33,630	13.26	16.25	29.51
Hughes 500	95,000	25.25	45.42	70.67

*Data as of March 1970, National Institute, Utilization of Helicopters for Police Air Mobility, p. 45.

Table 4.--Cost of Helicopter Patrol Eight Hours Per Day (Annual Basis).*

Helicopter Type	Direct operating Costs (2920 Flying Hours)	Fixed Costs (3 Helicopters)	Helicopter Pilots (8 Pilots)	Total Cost
Bell 47G-3B-2	$ 60,823	$48,690	$88,000	$197,514
Bell 47G-4A	55,538	47,820	88,000	191,358
Bell 47G-5	48,822	39,120	88,000	175,942
Bell 206A Jet Ranger	102,463	91,350	88,000	281,813
Enstrom F-28A	54,604	34,800	88,000	177,404
Fairchild Hiller FH-1100	113,033	83,160	88,000	284,193
Hughes 300	38,719	29,250	88,000	155,969
Hughes 500	73,730	81,750	88,000	243,480

*Data as of March 1970, National Institute, Utilization of Helicopters for Police Air Mobility, p. 73.

helicopter patrols reduced crime or to what extent these patrols merely caused a shift in the location of criminal activities, or to what extent other factors played a part in crime reduction.[4]

This study further notes:

> Many aircraft types are ideally suited for some law enforcement tasks, but are inadequate for others. For example, small, economical three-place piston helicopters have proven to be useful in night patrols using high intensity searchlights to illuminate residential, commercial and industrial areas. This same type of helicopter, however, has been left far behind during high speed auto chases. This usually occurred where the pursued vehicle escaped on a highway, traveling into a strong wind.[5]

This report caused the Law Enforcement Assistance Administration to issue guidelines for state planning agencies regarding the procurement of helicopters for law enforcement agencies through grants from that organization. These guidelines provide a view of the perceived purpose and utility of these vehicles because the directive was developed on the basis of comments solicited by L.E.A.A. from a broad range of law enforcement agencies and manufacturers. These guidelines may be of interest and use to future researchers as keys to defining the purpose of such a vehicle.

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[4]National Institute, The Utilization of Helicopters, p. vi.

[5]Ibid., p. 34.

This directive was intended for the use of LEAA professionals and state planning agencies and suggests that the uses and functions of helicopters are many and varied:

Function and Utilization of Helicopters.

A. Since the police helicopter is principally employed in the routine day and night patrol function, the suggested missions and equipment specifications contained in this directive are oriented to this function.

B. Although these guides address the patrol function primarily, agencies are encouraged to consider the application of helicopters to their entire police responsibility.

C. Additional missions and/or topography, demographic make up, weather factors, etc. peculiar to a particular area of jurisdiction may result in variance to equipment specifications.

D. This guideline does not establish minimum helicopter utilization rates on the part of the applicant agency.

(1) Usage should be dependent on the specific mission performed and may vary considerably according to the type of missions. However, the grant application must include the existing and anticipated workload of incidents lending themselves to the use of helicopters, such as number of hours per year for each of the missions.

(2) If an agency feels it is unable to justify a helicopter program alone it is strongly urged to consider a cooperative program with law enforcement agencies from surrounding jurisdictions. Also if an agency cannot justify a helicopter for patrol only; a pro-rata share of the helicopter purchased to fulfill multiple missions is possible.

Missions. This paragraph details missions commonly performed by helicopters in police departments.

A. Patrol

(1) Routine. Regular and frequent aerial observation of prestudied and selected areas of jurisdiction, primarily performing as the air environment will allow, those activities attendant to the accepted normal police patrol function. It is considered that normally this aerial patrol will be conducted at an altitude 500 to 1000 feet above existing terrain at a speed of 40 to 60 miles per hour and be of approximately 2 hours duration.

(2) Response to Radio Calls. Appropriate reaction to incidents received through radio information. It is considered the response to emergency incidents will be conducted at maximum cruise speed.

B. Search and Rescue.

(1) Concentrated aerial search for particular persons or vehicles or sites in support of police activities related to crime control.

(2) Missing persons.

(a) Urban area--concentrated aerial search for particular persons in a metropolitan area (normally concerns missing juveniles).

(b) Rural or wilderness areas--concentrated aerial search for particular persons; flying recovered missing and injured persons out of wilderness and uninhabited areas inaccessible to roads.

C. Emergency Landings. Landing in emergency conditions, when a life or serious injury is at stake, when no ground support is available, when the life or safety of others is not jeopardized by the landing, and when the helicopter and/or its crew will be of great assistance in protecting or saving persons from death and/or serious injury.

D. Surveillance.

(1) Covert--normally conducted at altitudes in excess of normal patrol altitude.

(2) Overt--following person or auto without specific altitude considerations.

E. Investigation of Suspicious Ground/Water Activities. Regular and frequent requirement to investigate for confirmation of suspicious activities, persons, or vehicles, resulting from observation or radio intelligence. Includes detection and/or apprehension of suspects, in coordination with ground units. In waterways or harbor areas, includes investigation or identification of boats or water activities such as thefts and burglaries in or adjacent to harbors.

F. Pursuit. Air chase of vehicles or persons suspected/confirmed of being involved in crimes or other related activities and the vectoring in of ground personnel to intercept/apprehend.

G. Control Platform and Personnel/Equipment Delivery.

(1) Use as platform to command, control, and coordinate the activities of the police ground forces; particularly at events which draw large crowds and during civil disturbances.

(2) Transport of crime specialists (e.g., crime lab personnel) to remote or relatively inaccessible locations or other locations where the situation demands expeditious arrival. Delivery of equipment and services (e.g., illuminating lights, tear gas, photo equipment, etc.) as necessitated.

Helicopter Specifications.

A. General.

(1) Helicopter should be factory new, with all applicable improvements, service bulletins, and service letters complete and incorporated in the helicopter at the time of delivery, including aircraft and engine log books and FAA approved flight operations manuals.

B. Speed.

(1) Helicopter should be capable of a true air speed of 95 mph at normal patrol altitude (500-1,000 feet).

(2) It is recognized that rapid response is a primary advantage of the helicopter. Example variances of this specification are:

(a) In areas where speeds in excess of 95 mph are frequently attained by pursued automobiles, and where this is a frequent occurrence;

(b) In metropolitan areas where high speeds are not required, due to the small size and the high number of incidents in the area patrolled;

(c) To keep the response time for most emergency incidents during patrol to within ten minutes, depending on the size of the patrolled area and the anticipated number of such incidents.

C. Endurance. Endurance of the aircraft should be at least three hours at normal patrol speeds, at maximum gross weight on take off, and flying at normal patrol altitude.

D. Useful Load. Helicopter should be capable of the foregoing performance under patrol ready conditions with:

(1) Full fuel load

(2) Two-man crew (200 pounds per man)

(3) Necessary police and avionics equipment installed. This should include:

(a) Radios for airport control zones;

(b) Police radios compatible with radios in patrol cars;

(c) One intercom;

(d) One public address system;

(e) A steerable searchlight capable of supplying ground illumination of 1.0 foot-candles on the ground from 1,000 foot altitude above existing terrain. (This requirement is considered minimal; searchlights with increased capabilities consistent with cost are encouraged);

(f) Cabin heater and floats if required.

E. Overall Performance. Helicopter should be capable of sustaining these performance requirements at standard atmosphere extrapolated for the particular area, except for unseasonal extreme density altitude conditions not occurring more than one percent of the year. An analysis of local weather statistics in relation to the helicopter performance data substantiate the candidate helicopter's capability to perform under these conditions.[6]

The Vehicles

The initial inventory of agencies and their helicopters (Table 5) describes the vehicle by manufacturer and model. The inventory also details, where such information is available, the initial cost of obtaining the helicopter and source of funding.

Additionally, the cost of operating the vehicle is shown, along with a statement from each responding agency, regarding the flight time use of the helicopter. Finally, the inventory describes the capacities and capabilities of each type of vehicle.

It is considered that this kind of information will be necessary to the future researcher who is trying to discover some common denominator characteristics in programming for evaluation of police patrol methods and theories relating to visibility and mobility in deterring or preventing crime. It is also considered that educators will

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[6]Law Enforcement Assistance Administration Guideline --G7370.2, Helicopter Procurement, from James T. Devine, Assistant Administrator to LEAA Professional Personnel and State Planning Agencies, July 30, 1973, pp. 2-7.

encourage research which begins with the very basic shape and size of the items under scrutiny, and a camera-like study of the present state of any process being researched.

Table 5.--1976 Inventory of Law Enforcement Agencies Using Helicopters Including Specification Data.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Alabama														
State Troopers	Bell	TH13	66	75	Military Surplus	No Cost	25	$ 37.50	2-4	849	259	49-120	2	
	Bell	TH13	67	75	Military Surplus	No Cost	25	37.50	2-4	849	259	49-120	1	3
Escambia County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Jefferson County Sheriff	Bell	OH13	63	75	Surplus	No Cost	60	. . .	3	915	212	70-86	1	
	Bell	OH13	65	75	Surplus	No Cost	60	. . .	3	915	212	70-86	1	2
Tuscaloosa Police	Bell	47G	55	72	Surplus	No Cost	42	35.00	3	915	212	70-86	2	
	Bell	47G3B	67	73	Surplus	No Cost	42	38.00	3	1057	214	73-105	1	3
Alaska														
State Troopers	Hiller	12E	. .	74	Surplus	$1500	. . .	. . .	3	608	224	83-94	2	2
Arizona														
Highway Patrol	Bell	206B	72	72	$155,000	State	100	48.00	5	1745	299	136-140	2	2
Phoenix Police	Hughes	300C	72	74	54,000	City	80.5	30.00	3	860	202	81-105	1	
	Hughes	300C	74	74	67,000	City	80.5	30.00	3	860	202	81-105	2	3
Tucson Police	Hughes	269C	72	72	36,000	City	225	25.00	3	860	202	81-105	2	
	Hughes	269A	69	74	Surplus $500	City	225	25.00	2	560	150	75-90	2	4
California														
Highway Patrol	Fairchild Hiller	FH 1100	69	69	108,000	DOT Grant State	100	66.00	5	1354	302	122-127	2	
	Fairchild Hiller	FH 1100	71	71	125,000	DOT Grant	100	66.00	5	1354	302	122-127	1	3
Calaveras County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Imperial County Sheriff	Bell	TH13T	67	74	Surplus	County	90	35.00	2-4	1127	295	84-105	1	
	Bell	TH13T	66	75	Surplus	County	90	35.00	2-4	1127	295	84-105	1	
	Bell	TH13T	68	75	Surplus	County	90	35.00	2-4	1127	295	84-105	1	3

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Kern County Sheriff	Hughes	500	71	75	$ 70,000	County	100	. . .	5	1462	327	135-152	1	
	Bell[a]	47G3B	71	71	63,000	LEAA	100	. . .	3	1057	214	73-105	1	2
Los Angeles County Sheriff	Hughes	269B	69	69	40,000	County	54	$113.00	2	683	150	85-90	1	
	Hughes	269B	68	68	40,000	County	54	113.00	2	683	150	85-90	2	
	Hughes	269B	65	65	40,000	County	54	113.00	2	683	150	85-90	1	
	Hughes	269C	73	73	40,000	47% County 53% LEAA	54	113.00	3	860	202	81-105	1	
	Hughes	500	74	75	117,000	County	54	156.00	5	1462	327	135-152	2	
	Bell	47G3B	69	72	67,000	County	54	123.00	. .	1057	214	73-105	2	
	Bell	47G3B	69	69	67,000	County	54	123.00	3	1057	214	73-105	1	
	Bell	47G3B	72	72	67,000	County	54	123.00	3	1057	214	73-105	1	
	Bell	47G3B	62	62	67,000	County	54	123.00	3	1057	214	73-105	1	
	Sikorsky[b]	H-34	56	72	Surplus	No Cost	54	200.00	18	4725	247	97-122	1	
	Sikorsky	H-34	57	72	Surplus	No Cost	54	200.00	18	4725	247	97-122	1	
	Sikorsky	H-34	59	75	Surplus	No Cost	54	200.00	18	4725	247	97-122	1	
	Sikorsky	H-34	60	75	Surplus	No Cost	54	200.00	18	4725	247	97-122	2	17
San Bernardino Sheriff	Hughes	500C	74	74	118,000	75% LEAA 25% Other	300	42.50	5	1445	328	143-152	2	
	Bell	47G3B	71	71	74,000	50% LEAA 25% Other	300	36.00	3	1057	214	73-105	2	
	Bell	47G3B	73	73	74,000	50% LEAA 25% Other	300	36.00	3	1057	214	73-105	1	5
San Diego County Sheriff	Bell	47G5	71	71	52,000	LEAA	300	35.00	3	1260	340	84-105	2	
	Bell	47G3B	71	71	67,000	LEAA	300	35.00	3	1057	214	73-105	1	
	Bell	47G3B	69	74	56,000	LEAA	300	35.00	3	1057	214	73-105	3	6
San Mateo County Sheriff	Hughes	300C	69	70	63,000	County	220	100.00	3	860	202	81-105	2	2
Sonoma County Sheriff	Bell	47G3B	72	72	71,000	LEAA	50	65.00	3	1057	214	73-105	1	1

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Ventura County Sheriff	Bell	47G3B	71	71	$ 60,000	County	65	$ 90.00	3	1057	214	73-105	1	
	Bell	TH13T	67	73	20,000[c] Surplus	County	65	90.00	2-4	1127	295	84-105	1	2
Anaheim Police	Hughes	269C	70	70	50,000	City	310	47.00	3	860	202	81-105	1	1
Costa Mesa Police	Hughes	269C	74	74	56,000	City	250	32.00	3	860	202	81-105	2	2
Glendale Police	Bell	A7G5A	72	72	55,000	City	123	. . .	3	1118	222	85-105	1	1
Huntington Beach Police	Hughes	269B	68	69	42,000	City	200	78.00	2	683	150	85-90	1	
	Bell	47G3B	64	74	10,000[c] Surplus	City	200	78.00	3	1057	214	73-105	4	5
Community Safety Lakewood	Hughes	300B	64	66	40,000	FLEAA	290	28.00	2	683	150	85-90	2	
	Hughes	300C	72	74	51,000	City	290	28.00	3	860	202	81-105	1	3
Long Beach Police	Bell	47G5A	73	73	55,000	City	300	40.00	3	1118	222	85-105	1	
	Bell	47G2A	67	74	15,000[c] Surplus	City	300	40.00	3	886	238	70-100	1	2
Los Angeles Police	Bell	47G4A	64	64	40,000	City	128	59.00	3	1127	295	84-105	1	
	Bell	47G5	68	68	50,500	City	128	59.00	3	1260	340	84-105	2	
	Bell	47G5	71	71	61,000	City	128	59.00	3	1260	340	84-105	2	
	Bell	206B	67	67	104,000	City	128	104.00	5	1745	299	136-140	1	
	Bell	206B	71	71	134,500	City	128	104.00	5	1745	299	136-140	1	
	Bell	206A	74	74	181,600	City	128	104.00	5	1705	390	128-150	7	14
Newport Beach Police	Hughes	300C	70	70	49,600	City	220	33.75	3	860	202	81-105	2	2
Oakland Police	Hughes	300C	72	72	56,000	City	300	55.00	3	860	202	81-105	1	
	Hughes	300C	74	74	67,000	City	300	55.00	3	860	202	81-105	1	2
Pasadena Police	Enstrom	28-A	69	69	42,000	City	263	62.00	3	720	235	98-112	2	
	Enstrom	28-A	72	72	54,000	City	263	62.00	3	720	235	98-112	1	3
Pomona Police	Bell	47G5	68	69	57,000	City	208	. . .	3	1260	340	84-105	1	
	Bell	47G3B	64	75	20,000[c] Surplus	City	208	. . .	3	1057	214	73-105	1	2

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Riverside Police	Bell	47G5	70	70	$ 62,000	60% City 40% LEAA	113	$ 45.00	3	1260	340	84-105	2	2
Colorado														
Adams County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Jefferson County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Pueblo County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Aurora Police	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Denver Police	Bell	47G3B	71	71	68,000	City	75	40.00	3	1057	214	73-105	1	
	Bell	47G3B	73	73	76,000	50% LEAA 50% City	75	40.00	3	1057	214	73-105	1	2
Delaware														
State Police	Bell	206B	75	75	187,000	Insurance Plus 50% State	100	96.00	5	1745	299	136-140	1	
	Bell[d]	206A	71	71	150,000	. . .	. . .	. . .	5	1705	390	128-150		1
District of Columbia														
Washington Police	Bell	47G4A	71	71	58,000	50% LEAA 50% City	207	56.00	3	1127	295	84-105	1	
	Bell	47G2	60	72	Surplus	No Cost	207	31.00	3	886	238	70-100	1	
	Bell	47G3B	68	74	Surplus	No Cost	207	59.00	3	1057	214	73-105	1	3
Florida														
Brevard County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Broward County Sheriff	Bell	47G5A	73	73	62,500	50% LEAA 50% County	80	38.00	3	1118	222	85-105	1	1
Collier County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Dade County Police	Bell	47G3B	72	72	59,000	County	250	25.00	3	1057	214	73-105	2	
	Bell	47G3B	69	74	Surplus	No Cost	250	24.00	3	1057	214	73-105	1	3

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
DeKalb County Police	Hughes	300C	73	73	$ 46,000	90% LEAA 10% County	150	$ 38.00	3	860	202	81-105	2	2
Atlanta Police	Hughes	269B	71	71	45,000	90% LEAA 10% City	300	34.00	2	683	150	85-90	1	
	Hughes	269C	73	73	55,000	90% LEAA 10% City	300	34.00	3	860	202	81-105	3	4
Columbus Police	Hughes	269C	72	72	58,000	City	70	. . .	3	860	202	81-105	1	1
Hawaii														
Maui County Police	Hiller	OH323G	. .	. .	. . .	. . .	. . .	. . .	3	927	197	82-95	2	2
Honolulu Police	Hughes	300C	70	71	57,000	City	259	40.00	3	860	202	81-105	1	
	Hughes	300C	71	73	67,500	City	259	40.00	3	860	202	81-105	1	2
Illinois														
Chicago Police	Bell	47G4A	68	68	54,000	City	95	. . .	3	1127	295	84-105	2	2
Indiana														
State Police	Bell	206A	69	69	105,000	State	150	35.00	5	1705	390	128-150	1	
	Bell	206A	70	70	105,000	State	150	35.00	5	1705	390	128-150	4	
Allen County Sheriff	Bell	TH-13	. .	. .	. . .	. . .	. . .	. . .	2-4	849	259	49-120	1	1
Decatur County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Howard County Sheriff	Hiller	OH23G	63	72	Surplus	No Cost	7	35.00	3	927	197	82-95	1	
	Hiller	OH23G	64	72	Surplus	No Cost	7	35.00	3	927	197	82-95	1	2
Marion County Police	Bell	206A	68	68	95,000	County	98	50.00	5	1705	390	128-150	1	
	Bell	47G5	66	71	35,000	County	98	26.00	3	1260	340	84-105	1	2
Porter County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Gary Police	Hughes	269A	62	71	Lease	City	125	30.00	2	560	150	75-90	1	
	Hughes	269B	71	73	20,000	City	125	30.00	2	683	150	85-90	1	2

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Hillsborough County Sheriff	Hughes	500	. .	. .	. . .	. . .	. . .	. . .	5	1462	327	135-152	1	1
Lee County Sheriff	Hiller	UH12D	. .	. .	. . .	. . .	. . .	. . .	3	541	224	83-94	1	1
Leon County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Marion County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Orange County Sheriff	Sikorsky	S55B	54	72	$ 28,000	County	166	$ 95.00	12	2250	370	85-101	1	
	Bell	47G2	65	73	10,000[c] Surplus	County	166	60.00	3	886	238	70-100	2	3
Palm Beach County Sheriff	Bell	206A	70	70	98,000	County	150	67.00	5	1705	390	128-150	1	1
Pasco County Sheriff	Hiller	12E	. .	73	Surplus	No Cost	20	35.00	3	608	224	83-94	1	1
Pinellas County Sheriff	Bell	47G3B	68	73	24,000[c] Surplus	County	107	27.00	3	1057	214	73-105	2	
	Bell	47G5A	73	73	53,000	75% LEAA 25% County	107	27.00	3	1118	222	85-105	1	
	Bell	47G	54	70	12,000[c] Surplus	County	107	27.00	3	915	212	70-86	1	4
St. Lucie County Sheriff	Hughes	TH55	67	74	7,000[c] Surplus	County	40	20.00	3	662	177	66-86	1	1
Jacksonville Sheriff	Bell	47G	56	72	12,000[c] Surplus	County	300	32.00	3	915	212	70-86	4	
	Bell	47G	66	75	20,000[c] Surplus	County	300	32.00	3	915	212	70-86	2	6
Tampa Police	Hughes	269B	70	70	46,000	City	150	30.00	2	683	150	85-90	1	
	Hughes	300C	74	74	62,000	City	150	35.00	3	860	202	81-105	2	3
Georgia														
State Police	Bell	47G3B	64	74	Loan Surplus	No Cost	100	30.00	3	1057	214	73-105	10	10

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Indianapolis Police	Hughes	269C	73	73	$ 56,000	LEAA	250	. . .	3	860	202	81-105	2	
	Bell	47G3B	57	73	9,000[c] Surplus	City	250	. . .	3	1057	214	73-105	1	3
Iowa														
Cedar Rapids Police	Hiller	12-C	55	72	Surplus	No Cost	75	$ 32.00	3	608	224	83-94	2	
	Hiller	12-C	56	72	Surplus	No Cost	75	32.00	3	608	224	83-94	2	4
Kansas														
Rush County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Stanton County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Kansas City Police	Hughes	300C	71	71	43,000	LEAA	100	. . .	3	860	202	81-105	1	
	Hughes	300C	75	75	65,000	City	100	. . .	3	860	202	81-105	1	2
Topeka Police	Hughes	300C	72	72	47,500	70% LEAA 30% City	130	33.00	3	860	202	81-105	1	
	Hughes	300C	74	75	50,000	90% LEAA 10% City	130	33.00	3	860	202	81-105	1	2
Wichita Police	Hughes	269C	72	72	59,000	City	230	44.00	3	860	202	81-105	1	
	Hughes	269C	73	73	63,000	60% LEAA 40% City	230	44.00	3	860	202	81-105	1	2
Kentucky														
Jefferson County Police	Hughes	300C	71	72	60,000	LEAA	150	32.00	3	860	202	81-105	1	
	Hughes	300C	74	74	67,000	LEAA	150	32.00	3	860	202	81-105	1	
	Hughes	269A	66	75	Surplus	No Cost	150	32.00	2	560	150	85-90	1	3
Louisiana														
State Police	Fairchild	FH1100	69	69	100,000	NHTSA	240	85.00	5	1354	302	122-127	2	
	Bell	206IIB	74	74	142,000	State	240	100.00	5	1745	299	136-140	1	
	Bell	206IIB	75	75	158,000	State	240	100.00	5	1745	299	136-140	1	4
Jefferson Parish Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	2	2

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi)	Speed MPH	No.	Total
St. Charles Parish Sheriff	Bell	TH13M	. .	. .	. . .	. . .	. . .	. . .	2	1127	295	84-105	1	1
St. Bernard Parish Sheriff	Bell	47G	. .	. .	. . .	. . .	. . .	. . .	3	915	212	70-86	1	1
St. Tammany Parish Sheriff	Bell	H13E	. .	. .	. . .	. . .	. . .	. . .	3	915	212	70-86	1	1
Terrebonne Parish Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Maryland														
State Police	Bell	206B	73	73	$157,900	State	53	$ 57.00	5	1745	299	136-140	2	
	Bell	206B	74	74	157,900	State	53	57.00	5	1745	299	136-140	1	
	Bell	206B	75	75	189,600	State	53	57.00	5	1745	299	136-140	1	
	Sikorsky	HH34J	. .	74	Surplus	No Cost	53	184.00	18	4725	247	97-122	2	6
Baltimore Police	Fairchild	FH1100	70	70	132,000	50% LEAA 50% City	333	36.00	5	1354	302	122-127	1	
	Hughes	300C	71	71	50,000	LEAA	333	28.00	3	865	202	81-105	2	
	Hughes	300C	73	73	52,900	LEAA	333	28.00	3	865	202	81-105	2	
Massachusetts														
State Police	Bell	206B	69	69	138,000	State	100	68.00	5	1745	299	136-140	1	1
Michigan														
State Police	Bell	206A	70	74	105,000	State	100	60.00	5	1705	390	128-150	1	
	Hiller	UH23D	59	71	Loan Surplus	No Cost	100	48.00	3	927	197	82-95	2	
	Hiller	UH23D	61	71	Loan Surplus	No Cost	100	48.00	3	927	197	82-95	2	5
Genesee County Sheriff	Bell	47G3B	64	74	20,000[c] Surplus	County	100	29.00	3	1057	214	73-105	3	3
Oakland County Sheriff	Enstrom	F28A	69	69	47,500	County	150	55.00	3	720	235	98-112	1	
	Bell	47G2	57	72	HEW Surplus	No Cost	150	75.00	3	886	238	70-100	2	3

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Wayne County Sheriff	Hughes	300C	73	73	Lease $ 21,000 yr. each	LEAA	125	$ 37.00	3	860	202	81-105	2	2
Detroit Police	Bell	47G5	71	72	22,000	City	76	27.00	3	1260	340	84-105	2	
	Bell	47G5A	. .	73	106,000	LEAA	76	27.00	3	1118	222	85-105	4	6
Flint Police	Flint Uses and Shares Cost of Genesee County Helicopter Service													
Lansing Police	Hughes	269A	68	74	CD Loan	No Cost	150	38.00	2	560	150	75-90	2	
	Hughes	269B	74	74	55,000	90% LEAA 5% City 5% State	150	42.00	2	683	150	85-90	1	3
Warren Police	Hiller	OH23D	58	73	CD Surplus	No Cost	240	50.00	3	608	224	83-94	1	
	Hiller	OH23D	63	73	CD Surplus	No Cost	240	50.00	3	608	224	83-94	1	
	Hiller	OH23D	64	73	CD Surplus	No Cost	240	50.00	3	608	224	83-94	1	3
Minnesota														
State Patrol	Bell	47G2	64	74	Surplus	No Cost	160	20.00	3	886	238	70-100	2	
	Bell	47G2	66	74	Surplus	No Cost	160	20.00	3	886	238	70-100	1	
	Bell	47G4A	69	69	69,000	State	160	30.00	3	1127	295	84-105	1	4
Mississippi														
Highway Patrol	Bell	47G2	57	72	Loan Surplus	No Cost	35	35.00	3	886	238	70-100	1	
	Bell	47G3B	65	65-73	Loan Surplus	No Cost	35	35.00	3	1057	214	73-105	4	
	Bell	206	62	73	Loan Surplus	No Cost	35	50.00	5	1705	390	128-150	1	6
Harrison County Sheriff	Bell	H13H	. .	. .	. . .	. . .	. . .	. . .	3	1144	238	87-105	1	1
Jackson Police	Bell	47G5A	72	72	47,800	LEAA	100	. . .	3	1118	222	85-105	1	1
Natchez Police	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Missouri														
State Hwy Patrol	Bell	47G2	59	59	42,500	50% CD 50% State	50	28.00	3	886	238	70-100	1	1

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
St. Charles County Sheriff	Bell	47G3B	68	74	Loan Surplus	No Cost	108	. . .	3	1057	214	73-105	1	1
St. Louis County Police	Bell	47G5	69	72	$ 65,000	County	250	$ 31.00	3	1260	340	84-105	1	
	Bell	47G5	70	73	65,000	County	250	31.00	3	1260	340	84-105	1	
	Bell	TH13T	. .	75	Surplus	No Cost	. . .	. . .	2-4	1127	295	84-105	2	4
Kansas City Police	Hughes	300B	68	68	39,000	City	300	30.00	2	683	150	85-90	3	
	Hughes	300C	70	70	47,000	60% LEAA 40% City	300	30.00	3	860	202	81-105	3	6
Sikeston Police	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Nebraska														
State Police	Bell	206B	68	70	88,000	Fed. Hwy Funds	35	120.00	5	1745	299	136-140	1	1
Lancaster County Sheriff	Bell	47G3B	64	73	Loan Surplus	No Cost	30	13.00	3	1057	214	73-105	1	1
Lincoln Police	Bell	47G3B	68	71	41,000	15% LEAA 85% City	90	19.00	3	1057	214	73-105	1	1
Nevada														
Las Vegas Police	Hughes	300C	70	70	37,000	City	225	38.00	3	860	202	81-105	1	
	Hughes	300C	71	72	47,000	LEAA	225	38.00	3	860	202	81-105	1	2
New Jersey														
State Police	Fairchild	FH1100	69	69	108,200	State	200	167.00	5	1354	302	122-127	1	
	Bell	206B	71	71	144,000	State	200	137.00	5	1745	299	136-140	1	
	Bell	206B	72	72	153,000	State	200	137.00	5	1745	299	136-140	1	
	Bell	206B	73	73	153,000	State	200	137.00	5	1745	299	136-140	1	
	Bell	206B	75	75	173,500	State	200	137.00	5	1745	299	136-140	1	5
New York														
State Police	Bell	206A	69	69	150,000	90% NHTSA 10% State	60	75.00	5	1705	390	128-150	3	
	Bell	47G4A	68	68	54,500	State	60	35.00	3	1127	295	84-105	1	4

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Chatauqua County Sheriff	Hiller	OH23G	63	73	Surplus	No Cost	20	$ 50.00	3	927	197	82-95	1	
	Hiller	OH23G	63	74	Surplus	No Cost	20	50.00	3	927	197	82-95	1	2
Nassau County Police	Fairchild	FH1100	69	72	$ 65,000	County	159	40.00	5	1354	302	122-127	1	
	Bell	47G3B	64	73	$500 Surplus	County	159	45.00	3	1057	214	73-105	1	
	Bell	47G3B	65	73	$500 Surplus	County	159	45.00	3	1057	214	73-105	1	3
Onondaga County Sheriff	Hiller	OH23D	59	73	Surplus	No Cost	130	42.00	3	608	224	83-94	2	
	Hiller	OH23D	62	73	Surplus	No Cost	130	42.00	3	608	224	83-94	1	3
Rockland County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Suffolk County Police	Bell	206A	70	70	138,000	County	60	175.00	5	1705	390	128-150	1	
	Bell	206B	72	72	148,500	County	60	175.00	5	1745	299	136-140	1	2
Metro Transit Police	Bell	47G4	. .	. .	. . .	. . .	. . .	. . .	3	1127	295	84-105	1	1
New York City Police	Bell	206A	68	68	150,000	City	300	102.00	5	1705	390	128-150	1	
	Bell	206A	69	69	150,000	City	300	102.00	5	1705	390	128-150	1	
	Bell	206A	72	72	150,000	City	300	102.00	5	1705	390	128-150	1	
	Bell	206B	73	73	158,000	City	300	102.00	5	1745	299	136-140	1	
	Bell	47J2A	65	65	45,000	City	300	110.00	4	1210	275	87-105	1	
	Bell	47G4	70	70	35,000	City	300	110.00	3	1127	295	84-105	1	
	Bell	47G4	71	71	35,000	City	300	110.00	3	1127	295	84-105	1	7
North Carolina														
Highway Patrol	Bell	206A	71	71	132,000	State	52	100.00	5	1705	390	128-150	2	2
Dare County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Charlotte Police	Bell	47G5	71	71	64,200	LEAA	127	27.00	3	1260	340	84-105	1	1

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Ohio														
Highway Patrol	Bell	206A	70	70	$147,300	NHTSA	80	$ 65.00	5	1705	390	128-150	2	2
Allen County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Wayne County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Columbus Police	Hughes	269C	71	71	42,300	75% LEAA 25% City	116	63.00	3	860	202	81-105	2	
	Hughes	269C	72	72	45,600	City	116	63.00	3	860	202	81-105	1	
	Hughes	269C	75	75	50,400	City	116	63.00	3	860	202	81-105	1	4
Kettering Police	Hughes	300C	69	69	48,000	75% LEAA 25% City	168	. . .	3	860	202	81-105	2	2
Oklahoma														
Oklahoma City Police	Hughes	300C	74	74	61,500	LEAA	100	15.00	3	860	202	81-105	1	1
Pennsylvania														
State Police	Bell	206B	71	71	135,000	40% LEAA 60% State	83	75.00	5	1745	299	136-140	2	
	Bell	206B	70	72	135,000	40% LEAA 60% State	83	75.00	5	1745	299	136-140	1	
	Bell	206B	72	73	135,000	40% LEAA 60% State	83	75.00	5	1745	299	136-140	1	
	Bell	206B	71	72	135,000	40% LEAA 60% State	83	75.00	5	1745	299	136-140	2	6
Horsham Township Police	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Newton Township Police	Aero-Spatiale	Gazell	71	72	. . .	. . .	40	80.00	5	1748	195	144-192	1	1
Rhode Island														
State Police	Bell	47D1	50	60	6,000[c] Surplus	State	30	35.00	. .	. .	. .	. . .	1	
	Bell	47K	54	68	6,000[c] Surplus	State	30	35.00	. .	. .	. .	. . .	1	2

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
South Carolina														
Highway Patrol	Bell	47G	. .	. .	. . .	. . .	. . .	. . .	3	915	212	70-86	2	
	Bell	206	. .	. .	. . .	. . .	. . .	. . .	5	1705	390	128-150	1	3
Darlington County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	849	259	49-120	1	1
South Dakota														
Sioux Falls Police	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Tennessee														
Dept. of Safety	Bell	47G2	57	57	$ 40,000	State	25	$ 17.00	3	886	238	70-100	1	
	Bell	47G2	58	58	40,000	State	25	17.00	3	886	238	70-100	1	
	Bell	47G3B	68	74	14,000[c] Surplus	State	25	17.00	3	1057	214	73-105	4	6
Knoxville Police	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	
	Bell	H13G	. .	. .	. . .	. . .	. . .	. . .	3	915	212	70-86	1	2
Lewisburg Police	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Memphis Police	Bell	47	67	73	CD Surplus	No Cost	50	55.00	3	915	212	70-86	4	
	Bell	47	69	69	63,000	City	50	55.00	3	915	212	70-86	1	
	Bell	206A	70	70	133,000	NHTSA	50	63.00	5	1705	390	128-150	1	6
Nashville Police	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	4	
	Bell	47G	. .	. .	. . .	. . .	. . .	. . .	3	915	212	70-86	1	5
Texas														
Department Public Safety	Bell	206A	69	69	112,700	State	284	100.00	5	1705	390	128-150	1	
	Bell	206A	70	70	138,800	State	284	100.00	5	1705	390	128-150	2	
	Bell	206B	69	69	112,700	State	284	100.00	5	1745	299	136-140	1	
	Bell	206B	72	72	151,500	State	284	100.00	5	1745	299	136-140	1	5
Bexar County Sheriff	Hughes	269C	70	75	. . .	. . .	34	32.00	3	860	202	81-105	1	1
Ector County Sheriff	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Harris County Sheriff	Hughes	269C	72	72	$ 68,500	County	400	$ 39.00	3	860	202	81-105	1	
	Hughes	269C	75	75	65,000	LEAA	400	39.00	3	860	202	81-105	2	3
McLennan County Sheriff	Bell	47G3B	68	75	23,000[c] Surplus	County	35	30.00	3	1057	214	73-105	1	1
Dallas Police	Bell	47G5	69	69	53,800	City	70	56.00	3	1260	340	84-105	1	
	Bell	47G5	71	71	53,800	City	70	56.00	3	1260	340	84-105	2	
	Bell	47G5A	72	72	52,000	LEAA	70	56.00	3	1118	222	85-105	3	
	Bell	47G3B	63	73	Surplus	No Cost	70	. . .	3	1057	214	73-105	1	
	Bell	47G3B	65	73	Surplus	No Cost	70	. . .	3	1057	214	73-105	1	
Fort Worth Police	Bell	47G4A	. .	. .	. . .	. . .	. . .	. . .	3	1127	295	84-105	2	2
Harlingen Police	Bell	47G2	. .	. .	. . .	. . .	. . .	. . .	3	886	238	70-100	1	1
Houston Police	Hughes	269C	72	72	62,000	City	68	50.00	3	860	202	81-105	3	
	Hughes	269C	74	74	62,000	City	68	50.00	3	860	202	81-105	4	
	Hughes	269C	75	75	62,000	City	68	50.00	3	860	202	81-105	4	11
Pasadena Police	Hughes	300C	72	72	58,000	75% LEAA 25% City	80	29.00	3	860	202	81-105	1	1
San Antonia Police	Hughes	269C	71	71	45,000	50% LEAA 50% City	120	34.00	3	860	202	81-105	1	
	Hughes	269C	74	75	50,000	City	120	34.00	3	860	202	81-105	1	2
Utah														
Salt Lake Police	Hiller	OH23D	59	73	$300 Surplus	LEAA	85	40.00	3	608	224	83-94	1	1
Virginia														
State Police	Fairchild	FH1100	. .	. .	. . .	. . .	. . .	. . .	5	1354	302	122-127	2	2
Danville Police	Bell	TH13T	. .	. .	. . .	. . .	. . .	. . .	2-4	1127	295	84-105	1	1
Norfolk Police	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	2	2
Portsmouth Police	Bell	47G3B	66	74	Loan Surplus	No Cost	40	50.00	3	1057	214	73-105	1	1
Richmond Police	Hughes	269C	72	72	124,000	60% LEAA 40% City	139	18.00	3	860	202	81-105	2	2

Table 5.--Continued.

State, Agency	MFR	Model	Year MFR	Year Obtained	Cost of Vehicle	Source of Payment	Flight Time Per Mo. (Hrs)	Total Cost Per Hr.	Places	Load (Lbs)	Range (Mi.)	Speed MPH	No.	Total
Virginia Beach Police	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	2	2
Washington														
Chelan City Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	1	1
Snohomish County Sheriff	Bell	47G3B	. .	. .	. . .	. . .	. . .	. . .	3	1057	214	73-105	3	3
Seattle Police	Hughes	269C	71	71	$ 56,000	City	200	$ 60.00	3	860	202	81-105	1	
	Hughes	269C	72	72	64,000	LEAA	200	60.00	3	860	202	81-105	1	2
West Virginia														
State Police	Bell	206	73	73	160,000	DOT	60	84.00	5	1705	390	128-150	1	
	Hiller	12E	63	74	24,000[c] Surplus	State	60	52.00	3	608	224	83-94	1	
	Hiller	12E	64	75	21,000[c] Surplus	State	60	52.00	3	608	224	83-94	1	3
Wisconsin														
Sauk City Sheriff	Hiller	OH23G	64	73	Surplus	No Cost	9	. . .	. .	. .	. .	. . .	1	1
Puerto Rico														
Puerto Rico Police	Fairchild	FH1100	64	73	Surplus	No Cost	9	. . .	5	1354	302	122-127	2	2
Canada														
Royal Canadian Mounted Police	Bell	212	64	73	Surplus	No Cost	9	. . .	10	. .	. .	. . .	1	
	Bell	206B	64	73	Surplus	No Cost	9	. . .	5	1745	299	136-140	3	4

NOTE: Abbreviations used above--(1) CD = Civil Defense; (2) LEAA = Law Enforcement Assistance Administration; (3) NHTSA = National Highway Traffic Safety Association; (4) DOT = Department of Transportation.

[a]Crashed 5-75

[b]Only 3 Sikorskys will operate in 1976

[c]Cost of Modification

[d]206A wrecked February 1975

Table 6 is a more concise inventory which demonstrates the number of helicopters in use by police agencies according to manufacturer and model. Coupled with the data in Table 5, the information should be of interest in evaluation of the program since it lends itself readily to capability comparisons.

Frequency of the Use of Helicopters in Patrol

Table 7 illustrates the amount of flying time the various kinds of police agencies are logging in the use of helicopters. Any attempt at evaluation of this patrol procedure must necessarily consider such data when trying to measure impact on crime.

This information will also relate to a later section of this chapter which discusses certain problems in helicopter programs which reflect directly on an agency's ability to keep helicopters in the air and weighs on the effectiveness of these vehicles as patrol tools in deterrence or prevention of crime.

Table 8 demonstrates the division of flying time between daytime and nighttime hours in state, county, and local agencies. These data illustrate that a majority of flight time in helicopter programs is carried on during daylight hours. This tendency is very heavy in state

Table 6.--Inventory of Helicopters Used by State, County, and Local Police Agencies by Manufacturer and Model.*

Manufacturer and Model		Total Number in Use
Bell	47 Series	166
	206 Series	60
	TH13 Series	26
	H and OH Series	6
Hiller	OH Series	14
	UH Series	14
Sikorsky	HH34J	2
	H34	3
	55B	1
Aerospatiale Gazell		1
Enstrom	F28A	4
Fairchild-Hiller	FH1100	8
Hughes	269 Series	54
	300 Series	41
	500 Series	4
	TH 55	2

*As of December 1975, information from respondents' replies to questionnaires in Chester Survey and this author's study.

Table 7.--Distribution of Flying Time in Sample Agencies by Average Hours Per Month.*

Agencies	Hours					
	0-75**	76-150**	151-225	225-300	301-500***	Over 500***
State	8	6	4	3	3	0
County	8	9	9	3	2	1
Local	3	21	10	10	2	4
Total	19	36	23	16	7	5

*As of December 1975, respondents' replies in data from Chester Survey and author study.

**Note that 51 percent of all sampled police agencies using helicopters are recording flight times of less than 150 hours per month.

*** All police agencies recording over 300 hours per month flight time are included in the sampling.

Table 8.--Temporal Distribution of Flying Time in Sample Agencies by Average Hours Per Month.*

Agency	Total Hrs Per Mo	Daytime Flight		Nighttime Flight	
		Hours	% of Total	Hours	% of Total
State	2100	1852	88	248	12
County	3400	2120	62	1280	38
Local	5000	2594	52	2406	48
All Agencies	10,500	6566	62.5	3934	37.5

*As of December 1975, data from respondents' replies in Chester Survey and author study.

agencies, heavy in the counties, and in the clear majority in local police agencies. Since crime statistics in urban areas show that crimes like rape, assault, robbery, and burglary occur more frequently during night hours, this portion of the data may bear directly on the effectiveness of helicopter patrol in crime deterrence and prevention.[7]

Another area of exploration for evaluation and testing lies in the information concerning the size and population of the area where a process such as helicopter patrol is being used. The assumed direct relationship between visibility and mobility and crime deterrence and prevention has been detailed throughout this study. The size and population density in any area patrolled by helicopters should prove to be important to use in research. The area size and density data of sample respondents in those places patrolled by helicopter is shown in Table 9.

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[7]Cf. Detroit Police Department Annual Report, 1974, p. 39.

Table 9.--Counties and Localities Using Helicopters in Law Enforcement Activities by Population, Area Size, and Density.

Population	Area Sq. Mi.	Density*
Below 100,000		
Counties		
Alabama		
1. Escambia County Sheriff	962	36
California		
2. Calaveras County Sheriff	1024	62
3. Imperial County Sheriff	4241	18
Florida		
4. Collier County Sheriff	2006	19
5. Marion County Sheriff	1600	43
6. Pasco County Sheriff's Department	742	102
7. St. Lucie County Sheriff's Office	584	87
Hawaii		
8. Maui County Police Department	1173	39
Indiana		
9. Decatur County Sheriff	370	61
10. Howard County Sheriff	293	284
11. Porter County Sheriff	425	205
Kansas		
12. Rush County Sheriff	724	7
13. Stanton County Sheriff	676	3
Louisiana		
14. St. Bernard Parish Sheriff Department	514	100
15. St. Charles Parish Sheriff	294	101
16. St. Tammany Parish Sheriff's Department	887	72
17. Terrebonne Sheriff Department	1368	56
Missouri		
18. St. Charles County Sheriff's Department	551	169

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
Montana		
19. Flathead County Sheriff	5137	8
North Carolina		
20. Dare County Sheriff	391	18
Ohio		
21. Wayne County Sheriff	561	155
South Carolina		
22. Darlington County Sheriff	543	98
South Dakota		
23. Minnehaha County Sheriff	813	117
Texas		
24. Ector County Sheriff	907	101
Washington		
25. Chelan County Sheriff	2918	14
Wisconsin		
26. Sauk County Sheriff's Department	841	46
Localities		
Alabama		
1. Tuscaloosa Police Department	27.4	2400
California		
2. Costa Mesa Police Department	15.2	4780
3. Newport Beach Police Department	12.0	4119
4. Pomona Police Department	22.6	3867
Colorado		
5. Aurora	27.2	2756
Mississippi		
6. Natchez Police Department	. .	. .
Missouri		
7. Sikeston Police Department	. .	. .
Ohio		
8. Kettering Police Department	18.3	3927

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
Pennsylvania		
9. Horsham Township Police	. .	. .
10. Newtown Township Police	. .	. .
Tennessee		
11. Lewisburg Police Department	. .	. .
Texas		
12. Harlingen Police Department	22.5	1489
13. Pasadena Police Department	35.4	2522
Virginia		
14. Danville Police Department	16.7	2778
100,000 to 200,000		
Counties		
Colorado		
1. Adams County Sheriff	1237	150
2. Pueblo County Sheriff	2405	49
Florida		
3. Lee County Sheriff	785	134
4. Leon County Sheriff	670	154
Mississippi		
5. Harrison County Sheriff	585	23
Nebraska		
6. Lancaster County Sheriff's Department	845	199
New York		
7. Chautauqua County Sheriff's Department	1081	136
Ohio		
8. Allen County Sheriff	410	271
Texas		
9. McLennan County Sheriff's Department	1000	148

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
Localities		
California		
1. Anaheim Police Department	33.3	5006
2. Glendale Police Department	29.4	4515
3. Huntington Beach Police Department	29.6	4359
4. Pasadena Police Department	22.7	4992
5. Riverside Police Department	71.5	1952
Georgia		
6. Columbus Police Department	69.5	2218
Indiana		
7. Gary Police Department	42.0	4177
Iowa		
8. Cedar Rapids Police Department	50.7	2182
Kansas		
9. Kansas City Police Department	56.8	2961
10. Topeka Police Helicopter Unit	47.5	2632
Michigan		
11. Flint Police Department	32.8	5894
12. Lansing Police Department	33.4	3939
13. Warren Police Department	34.2	5242
Mississippi		
14. Jackson Police Department	50.2	3076
Nebraska		
15. Lincoln Police Department	49.3	3033
Nevada		
16. Las Vegas Police Department	51.6	2438
Tennessee		
17. Knoxville Police Department	77.0	2267
Utah		
18. Salt Lake City Police Department	59.3	2966

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
Virginia		
19. Portsmouth Police Department	29.0	3826
20. Virginia Beach Police Department	220.0	782
200,000 to 500,000		
County		
California		
1. County of Kern Sheriff's Department	8152	40
2. Sonoma County Sheriff	1604	128
3. Ventura County Sheriff	1863	203
Colorado		
4. Jefferson County Sheriff	783	301
Florida		
5. Brevard County Sheriff	1011	228
6. Hillsborough County Sheriff	1038	472
7. Orange County Sheriff Department	910	378
8. Palm Beach County Sheriff's Department	2027	173
Georgia		
9. De Kalb County Police Department	264	1544
Indiana		
10. Allen County Sheriff	671	418
Louisiana		
11. Jefferson Parish Sheriff Department	369	917
Michigan		
12. Genesse County Sheriff	642	694
New York		
13. Onondaga County Sheriff's Department	694	596
14. Rockland County Sheriff	176	1306

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
Washington		
15. Snohomish County Sheriff	2098	126
Localities		
Arizona		
1. Tucson Police Department	80.0	3287
California		
2. Lakewood Community Safety Department	9.5	8739
3. Long Beach Police Department	48.7	7364
4. Oakland Police Department	53.4	6771
Florida		
5. Tampa Police Department	84.5	3287
Georgia		
6. Atlanta Police Department	131.5	3779
Hawaii		
7. Honolulu Police Department	83.9	3872
Kansas		
8. Wichita Police Department	86.5	3197
North Carolina		
9. Charlotte Police Department	76.0	3173
Oklahoma		
10. Oklahoma City Police Department	635.7	576
Tennessee		
11. Nashville Police Department	508.0	882
Texas		
12. Ft. Worth Police Department	205.0	1919
Virginia		
13. Norfolk Police Department	53.6	5745
14. Richmond Police Helicopter Patrol	60.3	4140

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
500,000 to 1,000,000		
County		
Alabama		
1. Jefferson County Sheriff's Department	1115	578
California		
2. San Bernardino County Sheriff	20,117	34
3. San Mateo Sheriff's Office	447	1245
Florida		
4. Broward County Sheriff	1219	509
5. Pinellas County Sheriff	265	1971
Indiana		
6. Marion County Sheriff's Department	392	2025
Kentucky		
7. Jefferson County Police	375	1853
Michigan		
8. Oakland County Sheriff's Department	867	1047
Missouri		
9. St. Louis County Police Department	499	1907
Texas		
10. Bexar County Sheriff	1246	667
Localities		
Arizona		
1. Phoenix Police Department	247.9	2346
Colorado		
2. Denver Police Department	95.4	5395
District of Columbia		
3. Metropolitan Washington Police Department	61.2	12,361

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
Florida		
4. Jacksonville Sheriff's Department	765.7	691
Indiana		
5. Indianapolis Police Department	383.9	1940
Maryland		
6. Baltimore City Police Department	78.3	11,568
Missouri		
7. Kansas City Police Department	316.3	1604
Ohio		
8. Columbus Police Department	134.6	4009
Tennessee		
9. Memphis Police Department	217.4	2868
Texas		
10. Dallas Police Department	265.6	3179
11. San Antonio Police Department	184.0	3555
Washington		
12. Seattle Police Department	83.6	6350
Over 1,000,000		
County		
California		
1. Los Angeles County Sheriff's Department	4069	1730
2. San Diego Sheriff's Aero Squadron	4261	319
Florida		
3. Dade County Public Safety Department	2042	621
Michigan		
4. Wayne County Sheriff's Department	605	4414
New York		
5. Nassau County Police	289	4944
6. Suffolk County Police Department	929	1213

Table 9.--Continued.

Population	Area Sq. Mi.	Density*
Texas		
7. Harris County Sheriff	1723	1011
Localities		
California		
1. Los Angeles Police Department	463.7	6069
Illinois		
2. Chicago Police Department	222.6	15,126
Michigan		
3. Detroit Police Department	138.0	10,953
New York		
4. Metro Transit	. .	. .
5. New York City Police Department		
New York City	299.7	26,343
Bronx	41.2	35,721
Brooklyn	70.3	37,013
Manhattan	22.7	67,808
Queens	108.0	18,393
Richmond	57.5	5,138
Texas		
6. Houston Police Department	433.9	2,841

*Population per square mile.

The Problems in Using Helicopters for Patrol

Sample agencies in the Chester survey were asked to list the major operating problems connected with their helicopter program. Although the survey asked that the problems be listed in order of priority it was discovered that many agencies tended to repeat the same problem in different priority locations such as:

1. Maintenance
2. Staff problems
3. Failure to obtain parts
4. Shortage of crews.[8]

It was decided, therefore, that the priority positions were largely being ignored and the users were listing complaints about the problems in general. Each complaint was categorized by general function, i.e., in the above example, "failure to obtain parts" was categorized as maintenance, while "not enough crews" was grouped under staff problems. The complaints are listed in order of frequency.

There were other complaints which were lightly scattered throughout the complaint sections of the survey which touched vaguely on failure of federal support, limited scope evaluations, and general disappointment in everyone's lack of understanding of the importance of the program. These were considered too general to categorize. It is

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[8]Chester, Preliminary Survey of Agencies Utilizing Airborne Vehicles, Vol. II, p. 20.

also notable that those who complain of too few vehicles were mostly representative of one helicopter agencies and claimed that one vehicle would not sustain a helicopter program. There are twenty-three agencies with only one helicopter, two at the state level, ten county, and eleven local. These complaint categories are detailed in Table 10.

Table 10.--Operational Problems Reported by Sample Agencies Listed by Frequency.

Problem Complaint	Frequency
Maintenance Problems	80
Cost of Operation	46
Cost of Parts	31
Radio Problems	21
Weather	15
Need More Helicopters	14
Staff Problems	12
Low Speed	9
Public Support Lacking	9
Political Support Lacking	8
Police Officer Support Lacking	8
Noise Complaints	8
Low Load Capacity	4
Air Regulations	4
Airport Location	4
Account Method for Cost-Effectiveness	3
Need Special Police Helicopters	2
Equipment	2
Not Enough Use	1

In the present study, the sample agencies were asked to reply to four questions which asked for very general evaluations based on opinions and perceptions:

22. Does your department believe that the use of the helicopter in anti-crime has reduced street crime?

23. Does your department believe that helicopter use has reduced any particular category of crime?

    Yes ☐ No ☐ Category_____

27. Has your program revealed instances in which helicopter patrol seems to shift the crime to areas outside the patrol perimeter?

31. Will you please state briefly the general view of your department toward the use of helicopters in police service?

The purpose in these questions was to probe the perceptions of the users of helicopters as to the value of the programs in relation to crime and seek methods of documentation for evaluation. Generally there was no documentation of claims that helicopters reduced crime. Those instances of documentation are detailed in a later section of this chapter. Interestingly, some of the agencies answered in the negative, that they did not believe helicopter patrol had reduced street crime.

Another purpose of the questions is to establish whether or not a trend in perceptions and beliefs exists among the users of helicopters in police patrol. Such a trend would be important to researchers in matters of validity. No specific agency identification is made in connection with any perceptions or opinions.

The compilation of the answers to questions 22, 23, 27, and 31 is on, respectively, Tables 11, 12, 13, and 14.

Table 11.--Answers to Question 22* by Sample Agencies According to Frequency.**

Answer	Frequency	% of Total
Yes	44	59
No	5	7
Unknown	10	13
No Answer	16	21

*Does your department believe that the use of the helicopter in anti-crime patrol has reduced street crime?

**Data from 75 respondent answers to author survey.

Table 12.--Answers to Question 23* by Sample Agencies According to Frequency.**

Answer	Frequency	% of Total
Yes	56	75
No	8	10
Unknown	2	3
No Answer	9	12
Category, If Yes***		
Burglary	28	
Robbery	7	
Auto Theft	4	
Traffic Offenses	2	
Malicious Destruction	2	
Farm Larceny	1	
Marine Larceny	1	
Mugging	1	
Purse Snatching	1	
Marijuana Growth	1	

*Does your department believe that helicopter use has reduced any particular category of crime?

**Data from 75 respondent answers to author survey.

***Some agencies answered yes but did not categorize which renders the categorization inadditive.

Table 13.--Answers to Question 27* by Sample Agencies According to Frequency.**

Answer	Frequency	% of Total
Yes	29	39
No	26	35
Unknown	8	10
No Answer	12	16

*Has your program revealed instances in which helicopter patrol seems to shift the crime to areas outside the patrol perimeter?

**Data from 75 respondent answers to author survey.

Question 31 was totally an opinion, or perception question and brought forth a variety of answers. In those instances where an agency provided an opinion or perception of more than one characteristic of helicopter use, all were included so that this total is not additive. It is notable that the answers contain only ten negative replies and only four negative categories.

Table 14.--Answers to Question 31* by Sample Agencies According to Frequency.**

Answer	Frequency
A Valuable Tool for Police	17
Generally Favorable View	11
Good for Traffic Patrol	7
Liked by Officers	5
Prevents Crime	5
Quick Response Time	4
Good Search Tool	4
Intend to Expand Program	3
Good Ambulance Vehicle	2
Good Observation Platform	2
Increases Officer Security	2
Increases Public Safety	2
Good for Air Photo Evidence	2
Cost-Effectiveness High	2
Good for Transport of Personnel	2
Liked by Public	2
Unmatched Capabilities	2
Chase of Suspects and Cars	2
Increases Omnipresence of Police	1
Rescue	1
Wide Patrol Range	1
Very Expensive Program	6
Slow Speed of Vehicles	2
Vehicles are Noisy	1
Require Excessive Maintenance	1

*Will you please state briefly the general view of your department toward the use of helicopters in police service?

**Data from 75 respondent answers to author survey.

The Chester Survey of Mission Evaluation

The Chester survey sought mission priority definition from agencies using helicopters in law enforcement by using a standard list of missions which respondents were permitted to expand. Each agency was asked to rate mission priority from high at 1 to low at 5. Respondents could assign any rating to any mission, which meant that there could be several missions in each agency with similar priority ratings. The agencies were also asked to rate the effectiveness of helicopters for each mission on the basis of H for high, M for medium, and L for low. Where no modal rating is given, it was assumed the mission was irrelevant.

The priority numbers for all responding agencies for a given priority mission within each population group were averaged. Summary helicopter effectiveness ratings were obtained by taking the modal rating for a relevant group of

respondents or a given mission. Where two different ratings were assigned by an equal number of respondents, both modal ratings were given, as, for example, HM. Where all three ratings were indicated by an equal number of respondents the designation was M for modal rating.

If 75 or more percent of the responding agencies rated a mission with a scalar number, this was considered a priority mission. Double X designations indicate that all, or nearly all, of the respondents in the population group rated the mission with a scalar number.[9]

This method of evaluation leans on the opinions and perceptions of the users of helicopters as a basis for assigning value to missions. Although it shows no statistical relationship to crime, the perceived importance of police missions are a factor that may be considered by researchers and teachers alike because of the fact that a good deal of evaluation of police missions arises from this source.[10]

The Chester mission scales for counties are in Table 15 and those for local groups are in Table 16.

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[9]Chester, Preliminary Survey of Agencies Utilizing Airborne Vehicles, Vol. 1, p. 8.

[10]See Table 1 supra p. 107.

Table 15.--Major Missions, Average Mission Priority, and Modal Helicopter Effectiveness Rating by Mission for County Agencies by Population Groups.

Population of Counties	Below 100,000			100,000 to 200,000			200,000 to 500,000			500,000 to 1,000,000			Over 1,000,000		
Number of Agencies in the Population Group	30			13			20			10			7		
Number of Agencies Represented Here	5			3			8			10			7		
Mission	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating
Command Post			H			H	X	4	H			H			H
High Speed Chase			L			M	X	3	M			H			H
Provide Intercept Data to Ground	X	3	H	XX	3	H	XX	3	H	X	2	H			H
Patrol Activities	XX	2	M/H			H	XX	1	H	X	1	H	XX	1	H
General Surveillance	X	2	H	XX	2	H	XX	2	M	XX	2	H			H
Covert Surveillance						L			L			M	X	2	H
Search Activities															
Fugitives	X	1	H	XX	2	H	XX	2	H	XX	3	M			H
Vehicles	X	1	H			H	X	3	H	X	3	H	X	2	H
Nighttime Patrol	X	4	H			H	XX	2	H	X	2	H	XX	2	H
Security (Special Visitors, etc.)			M			M			H			H			H
Emergency Rescues	X	2	H	XX	1	H	XX	2	H			H	X	1	H
Traffic Control			M			H			M/L			M/L	X	4	H
Transport															
Emergency			M/H	XX	3	H			H			H	XX	2	H
Priority Cargo			H	XX	4	H			M			H			H
Official Personnel			M			M			M			H			H
Personnel in Custody						L			L			L			L
Narcotics Detection	XX	2	M	XX	2	H	X	4	M			M/L			H
Riot Control			H			H	X	2	H			H			H
Traffic Survey			M												
Photo Platform			H						H			H			H
Training									H						
Search for Lost Persons												M			

Table 16.--Major Missions, Average Mission Priority, and Modal Helicopter Effectiveness Ratings by Mission for Local Agencies by Population Groups.

Population of Localities	Below 100,000			100,000 to 200,000			200,000 to 500,000			500,000 to 1,000,000			Over 1,000,000		
Number of Agencies in the Population Group	16			21			15			12			7		
Number of Agencies Represented Here	6			18			11			12			6		
Mission	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating	Priority Missions	Average Priority	Modal Rating
Command Post			M			H			H			H			H
High Speed Chase			M	XX	2	H	X	2	H	X	2	H	X	1	H
Provide Intercept Data to Ground	XX	2	H	XX	1	H	X	1	H	X	2	H			H
Patrol Activities	XX	2	H	X	2	H	XX	2	H	XX	1	H	XX	2	H
General Surveillance	X	3	H	X	2	H	XX	3	H	XX	2	H	XX	2	M/H
Covert Surveillance	X	4	M			H			H			H	X	2	H
Search Activities															
Fugitives			H	XX	2	H	X	2	H	X	2	H	X	3	H
Vehicles	X	2	H	X	3	H	X	2	M	X	2	H	X	3	H
Nighttime Patrol	X	1	H	X	1	H	X	2	M	X	1	H	X	2	H
Security (Special Visitors, etc.)			H			M/H			H			M	X	4	H
Emergency Rescues			H			H			L			M			M
Traffic Control			H			H			H			H	XX	2	H
Transport															
Emergency			H			H			L			M			M
Priority Cargo			H			H			H			L			M
Official Personnel			H			H			M/L			M			H
Personnel in Custody			L			L			M/L						L
Narcotics Detection			M			L			L			M/L			M
Riot Control			H			H			H			H			H
Public Relations			H			H			H						
Assistance to Other Agencies			H						L						
Search for Lost Persons						H									
Photo Platform						H			H			H			
Felonies in Progress									H						
School Checks												M			
Distant Violations												M			
Emergency Communication Relay															M

Examples of Evaluation Formulae

In the author's questionnaire, those police agencies contacted were also asked to provide documentation for any claims of effectiveness in helicopter patrol insofar as crime deterrence and prevention were concerned. A small number included test and/or evaluation data. This data provides an interesting view of police efforts on testing and evaluation which may be affected by the pressure of the necessity for justification of the program.

Nevertheless, it is considered that this data, although it suffers in each instance from some form of lack of validity, will provide useful information to future researchers in that it includes some formulae which might be useful in future research.

These reports are presented in no particular order except as received. In fact, except for alpha order or size and population groupings, no order was evident and it was considered unimportant to this study to use any of these forms of categorization since the import lies in a description of the methodology or experience of each respondent.

Tucson, Arizona

The Tucson, Arizona police (1973) provide a report which cites that Tucson is undermanned with 1.9 police employees per 1000 population as compared to the national average of 3.3 police employees per 1000 population for comparable size cities. The report further notes that from 1962 through 1971 the population increased 23.5 percent, the area size enlarged by 17 percent, and crime rose 75 percent. The report cites these figures as pointing to a need for innovation in crime prevention.

In initiating the helicopter project, Tucson's goals were listed as:

1. Improve police response time
2. Demonstrate successful daytime surveillance methods
3. Initiate effective nighttime surveillance
4. Increase patrol observation
5. Increase officers' security
6. Reduce crime in the project area[11]

These goals, which may be standard for police departments which are initiating helicopter programs, are exactly the same as those of Project Sky Knight (PSK) which began in June of 1966 in California.[12]

The Tucson report continues by reiterating the theory of visibility and speed in mobility as a deterrent to crime, citing the potential criminal's fear of

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[11] Tucson Police Evaluation Report: Tucson Air Mobility Program, May-September, 1972.

[12] See Whisenand, Use of Helicopters, supra p. 65 at Note 68.

apprehension. Because of this combination of speed and fear the report continues, crime will be reduced.[13]

The report further cites that a helicopter is ten times more visible than a ground unit and will provide for greater visibility since helicopter units spent 74 percent of flight time on patrol as compared to a meager 20 percent for a ground unit.[14] No mention is made of how this figure is determined or of whether it compares one helicopter to one ground unit. Tucson has 250 plus cars which would seem to provide considerably more patrol, even at a ratio of 20 to 74, than a few helicopters. Incidentally, later in the report, it states that the helicopter has 35 times the observation capability of a ground unit but fails to say why this is so.[15]

Tucson reports that scout car response averages 16 minutes for all calls compared to 1 1/2 minutes, while airborne, for the helicopter as an example of meeting objective number one.[16]

This report observes that major crimes decreased 9.7 percent in the helicopter test area and increased in the total city by 11.2 percent during the test period of May-September 1972. The test area was comprised of 20

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[13]Tucson Report, p. 21.

[14]Ibid. (emphasis mine).

[15]Ibid., p. 19.

[16]Ibid., p. 37 (emphasis mine).

square miles of the total Tucson area of 91.5 miles. The report cites, in particular, decreases in the incidence of rape, robbery, burglary, and auto theft.[17]

By way of evaluation of cost-effectiveness, an alphabetical value A, B, C, or D was assigned to both ground and air units in accordance to how they performed functions. The basis of decision to rate was given a numeric value A-8, B-6, C-4, or D-2 depending on credibility of source, such as hard data, personal knowledge, or intuitive judgement. Added to this was the importance attached to police functions, which were given a numerical value of 20 for most important, 10 for very important, 8 for average importance, and 5 for minor importance. These final function gradings were subject to one further evaluation which consisted of an intuitive judgement of the reasonableness of the result.

As the costs were computed, the conclusion was reached that the helicopter program would cost $203,000 per year, which was the cost of three patrol units per year.[18]

Finally, this report notes improvement in perceived security by citizens and police alike as the result of the helicopter program according to questionnaire results.

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[17] Ibid., pp. 25-26.

[18] Ibid., pp. 61-62.

Another benefit, of course, was suppression of crime in the test area as shown by the crime statistics.[19]

The Tucson project evaluation is subject to considerable question because it seems to suffer defects in both internal and external validity. A view of the cost benefit findings on the table seem geared to make the helicopter look good in relation to the patrol car. For instance, to place an A rating on providing officer safety for the helicopter, as opposed to a D rating for a surface unit is virtually indefensible, even as an "intuitive" source rating.

Further, in regard to response time, it is not correct to average the times of surface unit response to calls for service and include non-priority service while comparing these to helicopter response times <u>when airborne on patrol</u>.[20]

There are other problems in this report which have to do with the failure to make contiguous area crime comparisons before and after the test, failure to adequately prepare comparison statistics plus the provision of biased statistics apparently geared to provide justification for the helicopter program.

But it is one of the evaluation efforts connected with a helicopter program which does more than present

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[19] Ibid., p. 81.

[20] Ibid., pp. 77-78.

incomplete crime statistics and glowing press releases. This report does try to establish a system of identifying some use and performance values which are aimed at relating the theories of visibility and mobility to crime deterrence and prevention. The Tucson data are in Tables 17 and 18.

Table 17.--Tucson Police Evaluation Factors.*

1.0 Most Important

- 1.1 Crime Deterrence
- 1.2 Apprehension
- 1.3 Officers' Safety (Actual)

2.0 Very Important

- 2.1 Response Time
- 2.2 Community Safety from Operations

3.0 Important

- 3.1 Officers' Safety (Perceived)
- 3.2 Provision of Public Services

4.0 Average Importance

- 4.1 Community's Perception of Security
- 4.2 Ecological Concern

5.0 Minor Importance

- 5.1 Person-to-Person Contact

*As seen by Mayor, Council, City Manager, and Police Chief, see Tucson Report, p. 63.

Table 18.--Tucson Police Cost-Benefit Analysis Findings.

Evaluation Factors	Helicopter			Patrol Cars		
	Rating		Confidence	Rating		Confidence
	Grade	Value	Level	Grade	Value	Level
1. Most Important (20 points)						
1.1. Crime Deterrence	A	160	VC	C	80	C
1.2. Apprehensions	C	80	LC	B	120	LC
1.3. Officers' Safety (Actual)	A	160	C	D	40	C
		400			240	
2. Very Important (15 points)						
2.1. Response Time	A	120	VC	D	30	C
2.2. Community Safety from Operations	A	120	VC	B	90	C
		240			120	
3. Important (10 points)						
3.1. Officers' Safety (Perceived)	A	80	C	C	40	C
3.2. Provision of Services	B	60	LC	B	60	LC
		140			100	
4. Average Importance (8 points)						
4.1. Community Perception of Security	A	64	VC	C	32	VC
4.2. Ecological Concern	D	16	C	C	32	C
		80			64	
5. Minor Importance (5 points)						
5.1. Person-to-Person Contact	C	20	C	B	30	C
TOTAL		880			554	

Detroit, Michigan

The Detroit police, 1974, provide a cost comparison which equates the cost of patrol units with arrests. This report indicates that the cost is based on number and cost of patrol hours. The surface units patrol 1 million hours per year at a cost of $22.00 per hour, while the helicopter patrols 1,930 hours at a cost of $50.00 per hour. There were 494 felony arrest assists for the helicopter at 3.90 hours per arrest, and 50,791 for the surface unit at 19.1 hours per arrest. This results in a cost per felony arrest of $195.00 for the helicopter and $420.00 per arrest for the surface unit.[21]

Additionally, the Detroit report provides statistics which show that the crimes of robbery, breaking and entering, larceny, and unlawfully driving away automobile were repressed substantially in the helicopter test area. There are, however, no supporting statistics with this report and no validation of the cost figures.[22] Detroit data are in Tables 19, 20, and 21.

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[21]Detroit Police, Aviation Operations Section Twelve Month Report, furnished by Sgt. D. Campbell, p. 10.

[22]Ibid., p. 7.

Table 19.--Detroit Police Evaluation of the Effect of Helicopter Patrol on Crime.*

	City of Detroit Crime Decrease 1971 vs 1972		
	Test Down %	Control Down %	Other Down %
Robbery	22.6	15.2	15.1
Breaking & Entering	24.6	9.6	16.6
Larceny	28.8	19.9	23.8
Unlawfully Driving Away Automobile	21.8	3.5	5.8

*Data from Detroit Police, Aviation Operations Section Twelve Month Report, 1973. p. 6.

Table 20.--Detroit Police Helicopter Program Cost-Effectiveness Evaluation.*

	1973 Operation Cost Comparison	
	Helicopter	Scout Car
Patrol Hours	1,930	1,000,000
Felony Arrest Assists	494	50,791
Hours Per Arrest	3.9	19.1
Cost Per Hour 2 Man Crew	$20.00	$20.00
Cost Per Hour Equipment	$30.00	$ 2.00
Total Cost Per Hour	$50.00	$22.00
Cost Per Felony Arrest	$195.00	$420.00
Cost Difference		$225.00

*Data from Detroit Police, Aviation Operations Section Twelve Month Report, 1973, p. 10.

Table 21.--Detroit Police Statement of Accomplishments of Helicopter Program.*

	1973	1972
Crime Patrol		
Response Time	1 Min. 30 Sec.	1 Min. 15 Sec.
In Progress Runs	3,858	2,881
Felony Arrest Assists	494	428
Traffic Patrol		
Traffic Cars Cancelled	214	195
Traffic Tieups (All Causes)	677	582

*Data from Detroit Police, Aviation Operations Section Twelve Month Report, 1973, p. 10.

Columbus, Ohio

Simonsen (1974) reports on Project Phase (Police Helicopters For Area Selective Enforcement) in Columbus, Ohio, for the year 1973 by revealing the six stated goals of the project:

1. Improve response time
2. Demonstrate successful daytime surveillance methods
3. Initiate effective nighttime surveillance
4. Increase patrol observation
5. Increase officer security
6. Reduce crime through area selective enforcement by use of helicopter patrols[23]

Again, it is notable that the stated goals of the program are carbons of earlier programs in other cities. It might be useful to determine whether these are provided as standards by some central authority after testing and proof, or are becoming accepted as standards for new police helicopter programs by being repeated over and over and passed from one organization to another.[24]

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[23] Clifford E. Simonsen, An Evaluation of Helicopter Patrol Activities in Columbus (Columbus, Ohio: Program for Study of Crime and Delinquency, 1974), p. 18.

[24] See Tucson Report supra at p. 160 and Whisenand, "The Use of Helicopters," supra at p. 64.

Simonsen's formula for a productivity ratio (PR) is derived from this formula:

$$\frac{\text{Total Number of Demands for Police Service}}{\text{Total Police Patrol Vehicle Hours Available}}$$

By using this formula, Simonsen shows that Columbus, Ohio helicopters have a higher PR than surface units, with helicopters at PR 2.94 and cruisers at 1.02. He also demonstrates, in cost effectiveness evaluation, that because of this higher PR the productivity/effectiveness cost of a helicopter is $10.13 per contact versus $11.45 per contact for a surface patrol cruiser.[25]

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[25] Simonsen, Patrol Activities in Columbus, pp. 21-32. It is notable that in this section of the report, Simonsen cites that use of PR as a comparative statistic provides more importance and validity than the use of arrest rates, offense rates, or similar narrow criteria since the helicopter bureau runs are made to all cruiser districts and are primarily back-up runs. One wonders what effect this has on the PR formula, i.e.:

$$\frac{\text{Total Number of Demands for Police Service}}{\text{Total Police Patrol Vehicle Hours Available}} \begin{array}{l} \text{1. Primary} \\ \text{2. Back-up} \end{array}$$

Simonsen used a questionnaire to probe for business men, community, and officer acceptance of the program and for feelings of security. He reports an overwhelming acceptance by all concerned, along with a belief that there is a greater security with helicopter patrol.[26]

This report further observes a lessening of reported crime in eight of the fifteen cruiser districts in the zone patrolled by helicopter and an overall decrease of 2.5 percent in the entire zone despite an increase of demands for service of 7.8 percent. Simonsen notes that while this does not firmly establish cause and effect, there is little evidence of any other factor contributing to this unusual pattern.[27]

Simonsen feels that his report supports the theory that helicopter patrol suppresses crime but footnotes the possibility that some of the zone II crime may have "spilled over" into Zone I. He suggests that more intensive patrol of Zone I may have prevented this "spill over" but does not suggest, as is possible, that it might have "spilled over" to some other area.[28]

Simonsen's formula for measuring the "productivity ratio" may lack validity when used to compare cars and helicopters because of the bias in differential selection

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[26] Ibid., pp. 33-49.

[27] Ibid., p. 52.

[28] Ibid., p. 58.

of respondents for comparison. Other researchers have repeated this same error, which assumes a sameness of availability for service which is simply nonexistent between cruisers and helicopters.

Again, it is important to notice that this is a scientific attempt to study the problem. It does not rely on short statistics and press releases but tries to relate patrol practices to crime deterrence and prevention and serves as a guide to further efforts to seek such relationships. Simonsen data are in Tables 22, 23, 24, and 25.

Table 22.--Columbus, Ohio Police Comparison of Cost Effectiveness of Helicopters to Cruisers.*

	Helicopter Patrol	Cruiser Patrol
A. Total Cost	$402,412.95	$2,888,301.25
B. Patrol Hours	4,589	254,040 (29x24x365)
Cost per hour ($\frac{A}{B}$)	$87.69	$11.37
C. Contacts	13,503	274,554
Cost per contact ($\frac{A}{C}$)	$29.80	$11.68
D. Productivity Ratio (PR)	2.94	1.02
Productivity/Effectiveness Cost (PER) ($\frac{C}{D}$)	$10.13	$11.45

*Data from Simonsen, Patrol Activities in Columbus, p. 32.

Table 23.--Columbus, Ohio Comparison of Change in Crimes Reported After Use of Helicopter Patrols in Zone 1.*

Precinct	Cruiser	Offenses		
		1972	1973	Change
1	10	549	571	+ 4 %
	11	943	1022	+ 8 %
	12	986	979	- 0.9%
	13	601	612	+ 1.8%
4	40	1496	1468	- 1.8%
	41	2032	2002	- 1.4%
	42	733	782	+ 6.6%
	43	1343	1252	- 6.7%
5	50	1573	1522	- 3.2%
	51	1440	1486	+ 3.1%
6	60	464	475	+ 2.3%
	61	369	388	+ 5.1%
	62	440	523	+18.8%
	63	326	341	+ 4.6%
	64	231	259	+12.1%
	65	474	520	+ 9.7%
Total		14,000	14,202	+ 1.4%

*Data from Simonsen, Patrol Activities in Columbus, p. 50.

Table 24.--Columbus, Ohio Comparison of Change in Crimes Reported After Use of Helicopter Patrols in Zone 2.*

Precinct	Cruiser	Offenses		
		1972	1973	Change
8	80	741	815	+ 9.9%
	81	1015	855	-15.7%
	82	399	400	. . .
11	110	1026	891	-13.1%
	111	470	588	+ 8 %
	112	714	764	+ 7 %
	113	630	628	. . .
	114	499	540	+ 8.2%
12	120	1666	1549	- 7 %
	121	804	847	+ 5.3%
	122	423	436	+ 3 %
	123	1020	901	-11.6%
	124	361	382	+ 5.8%
13	130	1055	1031	- 2.2%
	131	629	629	- 3 %
Total		11,471	11,176	- 2.5%

*Data from Simonsen, Patrol Activities in Columbus, p. 50.

Table 25.--Columbus, Ohio Comparison of Changes in Serious Crime After Use of Helicopter Patrols in Zones 1 and 2.*

	1972	1973	Percentage Change
Zone 2	9,005	8,413	-6.5%
Zone 1	11,202	11,410	+1.8%
Total Part I Crime Columbus	32,734	33,225	+1.4%

*Data from Simonsen, Patrol Activities in Columbus, p. 52.

Lansing, Michigan

Cochran (1975) reports that the Lansing Police had four goals in initiating helicopter patrol from January 1, 1974, through April 15, 1975:

1. Demonstrate increased effectiveness of helicopter and ground unit teams over ground unit teams alone in the apprehension of persons committing Part I (major) crimes. To include faster response times, more arrests, and more convictions.

2. Increase citizens' feelings of security, and personal safety both at home and on streets.

3. Demonstrate improved patrol observation abilities day and night.

4. Reduce the number of Part I (major) crimes by 5 percent from past levels through the use of the deterrent capabilities of helicopter patrol.[29]

[29] William Cochran, "Police Helicopter Unit," Subgrant Evaluation Report to Office of Criminal Justice Programs, 1975, p. 2.

Cochran specifies that stratified random samples of pre-test car response data was obtained for comparison to test responses. This comparison demonstrated an increase in response time and arrest rates for the helicopter ground teams with the conviction rate remaining the same.[30]

The security goal was tested by pre-helicopter patrol and post-helicopter patrol question surveys made through random phone interviewing. The questions asked were:

> Pre-test--"Do you think the Lansing Police Helicopter patrols will make you feel more secure and protected?"
>
> Post-test--"Do you think the Lansing Police Helicopter patrols make you feel more secure and protected?"

Pre-test Results:		%	N
	Yes	46.7	164
	No	21.1	74
	Uncertain	32.2	113

Post-test Results:		%	N
	Yes	62.3	226
	No	20.1	73
	Uncertain	17.6	64

Cochran believes that the increase in believers was occasioned by publicity, speeches and other public relations efforts[31] and a pre-test, post-test of citizen awareness of the program using the same interview methods.

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[30] Ibid., p. 3.

[31] Ibid., pp. 9-10.

Cochran reports that helicopters on patrol generally observe more significant events than cars.[32] However, the methods used to demonstrate this claim are subject to charges of lack of validity caused by bias in comparing car service to helicopter service.

Cochran notes that the goal of reducing Part I crime by 5 percent was not attained but notes that the local rate of +1.6 percent was lower than the national average of +17 percent. He feels that the upward trend of crime has demonstrably been broken by the addition of helicopters to the Lansing crime fighting team.[33]

Cochran's report addresses the important facet of community acceptance which has been touched on in some earlier reports. It seems to be a first step in starting such a program to sell it to government administrators as well as to the public. This fact may account for much of the chase and catch press releases in some programs. Lansing data are in Table 26.

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[32] Ibid., pp. 15-24.

[33] Ibid., p. 25.

Table 26.--Lansing, Michigan Police Five Year History of Part I Crimes for Third, Fourth, and First Quarters.*

	1970-71	1971-72	1972-73	1973-74	1974-75
3rd Quarter	2,273	2,364	1,659	1.915	2.098
4th Quarter	3,477	3,666	3,281	2,931	3.098
1st Quarter	3,266	3,078	2,341	2,442	2,210
Total	9,016	9,108	7,281	7,288	7,406
Change	. . .	+92	-1,827	+7	+118
% Change	. . .	+1.0%	-20%	+0.1%	+1.6%

*Data from Cochran, "Police Helicopter Unit," p. 28. This comparison arises because of an evaluation period covering parts of two different years.

Los Angeles, California

The Los Angeles Police department (1974 summary) reports that the department was expanding helicopter patrol in March of 1975 to 75 percent of the city. The report notes that in 1974 the department deviated from previously proven patrol methodology, in order to compensate for the planned 1975 patrol vehicles to respond to calls for service outside of their assigned area. The expanded coverage reduced available patrol time, with less attention being given to identified crime problems in assigned areas. As a result of this, the report states, repressible crime in helicopter areas was not reduced for the first time in six years.[34]

The report goes on to state that responses to officer requests, and radio and station calls in the new areas increased 103 percent and arrest participation in those areas increased by 147 percent while total arrest

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[34]Los Angeles Police--Air Support Division, 1974 Summary, p. 14.

participation in regular helicopter areas was reduced slightly. And, the report adds, helicopter effectiveness was demonstrated, in spite of expansion problems, by helicopter crews being involved in one arrest for every 6.3 radio calls answered. The report predicts that 1975 results will show an improvement over 1974 as the newly trained expansion personnel gain in effectiveness and ground personnel continue to develop their ability to utilize the patrol air team, and the year 1976 will, more than ever before, demonstrate the true value of airborne police patrol.[35]

The report from Los Angeles also details that the helicopters contributed about the same percentage of regular patrol to the flight program in 1974 as in 1973. Total activity increased over 1973 by a slight margin but it is noted that radio calls were down by about 15 percent but total activity was statistically increased by the addition of 3799 officer calls, a category which came into use in 1973. It would be interesting to discover why this category sprang into being and increased so rapidly.[36]

This report also details the arrest and recovered missing vehicle statistics which reveal the loss, explained earlier, due to expansion. Los Angeles defines repressible crimes as burglary, robbery, auto theft, and BTFMV (Burglary

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[35]Ibid., p. 14.

[36]Ibid., p. 8.

Theft From Motor Vehicle) and reveals statistics which indicate a higher number of those crimes in helicopter areas than in non-helicopter areas. Finally, the report details total cost of the helicopter program at $2,746,391, which is an increase of 59 percent over 1974, caused by including employee benefits in the cost of 1974 program as well as facing increased salaries, more personnel, and higher maintenance costs.[37]

All in all, the Los Angeles report for 1974 predicts a bright future for the helicopter in law enforcement in the Los Angeles area including an increased ability to deter and prevent crime. Los Angeles data are in Tables 27 and 28.

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[37]Ibid., pp. 9-15.

Table 27.--Los Angeles Police Comparison of Repressible Crime in Helicopter and Non-Helicopter Patrol Areas Between 1973 and 1974.*

Area	Burglary	Robbery	Auto Theft	BTFMV**
Southwest	+5.3%	+ 1.6%	+ 8.4%	+15.8%
Newton	-2.9%	- 1.9%	- 1.0%	- 8.2%
Northeast	-1.4%	+16.0%	- .2%	+ 3.2%
Hollenbeck	+4.9%	+18.8%	+ 4.9%	+ 7.3%
West Valley	-8.8%	- 7.5%	+12.6%	+ 2.1%
Astro Patrolled Areas	- .4%	+ 2.0%	+ 5.3%	+ 4.6%
Non-Astro Patrolled Areas	-2.5%	- 1.3%	+ 1.3%	+ 4.6%
All 17 Patrol Areas Including the Astro Areas	-2.0%	- .3%	+ 2.5%	+ 4.6%

Note: The percentage of change in reported crimes between 1973 and 1974, in those areas patrolled by helicopter, is shown in this table. This percentage is listed by crime type for each area patrolled. It is also listed by the total of all helicopter patrolled areas combined for comparison with non-patrolled areas and the City as a whole.

*Data from Los Angeles Police--Air Support Division, 1974 Summary, p. 12.

**Burglary Theft From Motor Vehicle.

Table 28.--Los Angeles Police Report of Special Helicopter Investigative Flights as to Productivity.*

		Value	Arrests
ASTRO			
227 Vehicles Recovered ($1,095/Car FBI "Uniform Crime Report," 1973)		$ 248,565	321
Administrative Narcotics Division			
Narcotics Confiscated:			
Marijuana--551,171 gms.	$ 794,798		
Cocaine--4,645 gms.	1,123,587		
Heroin--17,335 gms.	11,302,425		
Angel Dust (PCP)--83 lbs.	3,600,000		
LSD--6,036 units	10,000		
Amphetamines--2,497,100 units	450,000		
Barbituates--80,000 units	40,000		
Cash	2,163		
		$17,323,883	149
Burglary-Auto Theft Division			
Property Recovered		11,800	19
Robbery-Homicide Division		23,325	9
Special Investigation Section		Ø	1
Administrative Vice Division		Ø	11
Hollenbeck Investigative Division		200	2
Wilshire Area-Vice		700	6
		$17,608,473	197

Note: This information was obtained directly from the various investigative units using the helicopter. As with all statistics which relate to the effectiveness of helicopters in law enforcement, it is the team effort between air and ground units that is being evaluated. Included with the investigative recapitulation are totals of ASTRO recovered vehicles.

*Data from Los Angeles Police--Air Support Division, 1974 Summary, p. 13.

Warren, Michigan

The Warren, Michigan police (Mooneyham, 1975) report that the helicopter unit was flown city wide but experienced a loss of flying time due to mechanical problems and an accident. The report goes on to state that, as flying time was increased the crimes of breaking and entering, as well as robbery, decreased. During the period of increase in flying time the incidence of arrests also increased.[38] However, because of the unevenness of application causing

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[38]Dan Mooneyham, Warren, Michigan Police Helicopter Use Report, 1975, p. 2. Additionally, it might be here noted that Warren, Michigan adjoins part of Detroit and is among a group of suburbs in that area which suffer from the "crime shift" problem. Cities in this category everywhere will find it difficult to stabilize some of the police processes because of a lack of coordination in communications and record keeping, along with a multitude of police problems which need, and under the present multi-city segmentation, cannot get, a thorough research for standardization of process and centralization of certain facilities.

an imbalance in statistics, the Warren report statistics can only hint at the effect of helicopter patrol.

Mooneyham makes the interesting observation that helicopter use as a police tool has unlimited potential for those areas of 36 square miles or more and a population in excess of 100,000. Mooneyham does not say why these parameters of use are selected. He further reports that a successful helicopter program requires that ground units be trained how to use helicopters and that the civilian population be educated as to the helicopter services available to them.[39]

San Bernardino County

San Bernardino County (Jagerson, 1975) reports that the helicopter patrol program provides coverage to nine communities within the county as well as to the county area. Cost is predicated on the size of the community and the Part I crimes in the community. Jagerson reports that a public survey indicates 95.2 percent of all area citizens want the helicopter patrol and 97 percent of the police officers of all participating cities want the patrol continued.

Jagerson reports that the patrol has logged over 44,000 activities and 1048 arrests and costs each citizen

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[39] Ibid., p. 6.

58¢ per year. Jagerson makes no claim in this report that helicopter patrol prevents crime.[40]

Pasadena, California

The Pasadena, California police (1975) provide in their report some interesting definitions of terms:

1.	Team:	Police pilot, observer, and helicopter assigned to patrol operations during any regular helicopter watch.
2.	Patrol:	Flight hours by the "team" during patrol functions. (5 hour optimum average per 8-hour watch.)
3.	Watch:	8 duty hours = 5 patrol hours.
4.	Down Time:	Team patrol time lost due to mechanical, radio, weather, or insufficient personnel factors.
5.	Radio Call:	Those calls for service, broadcast to ground units, to which the helicopter responds.
6.	Valid Detail:	Those radio calls and/or observations to which the helicopter responds where, in fact, a crime has been committed and a suspect is either outstanding or taken into custody at the scene.
7.	Non-Valid Detail:	An unfounded incident, false alarm, reclass to non-criminal incident, etc., can be originated as a radio call or observation.
8.	Observations:	An activity for ground units initiated by the helicopter team based solely upon observation of

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[40] Terry D. Jagerson, San Bernardino County Helicopter Program, January 9, 1976, Letter to author.

ground activity which appears suspicious. This need not result in an arrest. The act of requesting a ground unit to investigate and directing it to the location is an "observation" activity.

9. Arrests: Credit for an arrest can be claimed:

a. When the activity is observed and the arrest initiated by the helicopter team (observation arrests).
b. When the helicopter arrives at the scene prior to ground units and either contains the suspect(s) or maintains surveillance of the suspect(s) and directs ground units to him.

NOTE: Merely being in the area does not qualify. Contact with the ground units and an active part in the handling of the activity are necessary to claim participation in an arrest.

Beyond these definitions, the Pasadena police present statistics of activities which are largely founded on these definitions. The report makes no claim to deterring or preventing crime through the use of helicopter patrol other than noting it is a useful and active patrol tool.[41]

Maryland

The Maryland State police (1976) report that the helicopter is highly valued in traffic patrol. The use of

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[41]Pasadena Police Department, Helicopter Section Monthly Reports, July 1974 through November 1975.

helicopters for criminal work is in providing support whenever it is needed to pursue escaping prisoners or persons escaping from a crime scene. Area searches for stolen property or other contraband as well as surveillance of suspected persons or vehicles are other uses for which the Maryland State police helicopter may be summoned. The report further mentions that the vehicle is useful as an aerial photo platform, but makes no statement that the use of helicopters has deterred or prevented crime in the area.[42]

Washington, D.C.

Washington, D.C. (1973) reports a reduction in crime in areas patrolled by helicopters as compared to projected predictions of the amount of crime to be expected. In other words, the crime reduction is computed by comparison with the expected amount of crime without the helicopter.

The prediction formula resulted in some cases where the prevented crime was higher than the expected crime, which is puzzling, to say the least.

Additionally, the report shows that total operating cost of a helicopter for one year is $132,460 and for a scout car $90,7774 for one year. Thus the cost for

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[42]Gary E. Moore, letter to author and report of Maryland State Police Aviation Unit, January 7, 1976.

operating three helicopters is the same as for 4.7 scout cars. This is justification arithmetic.

Since this study embraces only segments of months, or fragmented time periods, and that only from September 1971 through March 1972, the report will not be dealt with any further in this study.[43]

The Young Evaluations of Four Helicopter Programs

The Arthur Young Co. (1974) reported evaluation of four California helicopter projects for the Office of Criminal Justice Planning (OCJP) of the Law Enforcement Administration. The four projects were funded by O.C.J.P.[44]

The evaluation concerned the following projects:

Title	Agency
ASTREA (Aerial Support to Regional Enforcement Agencies)	San Diego County Sheriff
Ventura County Helicopter Program	Ventura County Sheriff
Helicopter	San Bernardino County
Project Co-op (Crime Oriented-Optimum Patrol)	Kern County

Eleven major objectives were identified:

1. Increase the effectiveness of search and rescue operations in remote areas

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[43] Metropolitan Police Department, Washington, D.C., Crime Reduction Through Aerial Patrol (Washington, D.C.: National Technical Information Service, 1973).

[44] Arthur Young and Co., Final Report: Evaluation of OCJP Funded Helicopter Patrol Projects (Sacramento, California: OCJP, 1974).

2. Reduce or slow the rate of growth in the crime rate
3. Enhance officer safety
4. Improve response time to crimes in progress calls
5. Increase apprehension of criminal suspects
6. Provide medical aid and evacuation services
7. Assist other law enforcement agencies
8. Reduce seriousness of civil disorders
9. Increase surveillance effectiveness in specified areas for specific offenses.
10. Provide aid during natural disasters
11. Provide the public with a greater sense of security

The evaluation of enhanced officer safety and increased public sense of security were done by means of questionnaire. This method is at least slightly suspect because of the type of question asked. For instance,

> Do you, as a field officer, feel more secure while performing certain hazardous field functions if the helicopter is present?[45]

It seems reasonable to suppose that the respondent to such a question meant he felt more secure while other officers were present and if they were present in any vehicle or without one, the officer would more than likely be visited by feelings of increased security.

Generally, it is observed that the question, in this study, of community security follows questions pertaining to awareness of the program and personal observation

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[45] Ibid., Exhibits I, A-IV, BII, CII-EII.

of the program. Then the respondent is asked if he or she feels more secure as a result and does he or she favor continuing the program. It would be interesting, if the first two questions dealt with the cost of the program, to measure the public feeling of security in question number three.

The Young report suggests a method of measuring cost-effectiveness based on how well the helicopter "operating in its regular mode" accomplished program objectives compared to how well these would be accomplished by adding patrol units. By the term "operating in its regular mode" means with a patrol unit, or surface car.

Activity importance ratings (A_1) were based on three factors:

1. Activities questionnaire to certain personnel in each department including the sheriff, department planning bureau, patrol bureau chief, project director, and helicopter pilots
2. Original project goals
3. Qualitative judgement of the consultant

From a list of activities formed around the eleven major objectives, eight were selected as most important by questionnaire rating. A total of forty points was distributed over the activities with weights determined by:

1. Scored rankings in survey
2. Project objectives
3. Qualitative judgement

Costs were based on both fixed and variable costs to arrive at both monthly and annual operation cost levels for both helicopter and patrol car use.

The final numeric index was the weighted relative (helicopter with patrol car vs added patrol units) effectiveness rating. For each activity, the helicopter with car vs the additional patrol cars received a relative effectiveness rating:

1. Very effective (4 points)
2. Effective (3 points)
3. Moderately effective (2 points)
4. Slightly effective (1 point)
5. Not effective (0 points)

The determination of the effectiveness was built around the activities weights formula shown above and as $W_{H1} - W_{HN}$.

Thus, the cost-effectiveness formulas where:

$A_1 - A_N$ = Activity importance rating, i.e., crime incidence, response time, community attitudes, etc.

$W_{H1} - W_{HN}$ = Weighted relative effectiveness of helicopter patrol activities ($A_1 - A_N$)

then the final formula was:

$$A_1 . W_{H1} + A_2 . W_{H2} . \; . \; . A_N W_{HN} = \text{Helicopter Operating Effectiveness}$$ [46]

But the most telling part of the Young report is in the evaluation of the effect of helicopter patrol on crime.

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[46] Ibid., p. 22.

The report states simply that there exists no statistical base for comparison. A general lack of current, as well as historical, data for patrol areas precludes any evaluation of the use of helicopters in those four projects as a means of deterring or preventing crime.[47]

Here, again, is an example of a search for data base which finally resorts to the use of judgemental factors to reach summations. While the formula here points the way to eventual evaluation, the mixing of components portends an incorrect or inconclusive result.

Three final notations of city programs are entered here because they indicate the continuing problem of the lack of evaluation of helicopter use to prove it as a means of deterring or preventing crime in relation to its cost to the community.

Fairfax County, Virginia

Fairfax County, Virginia (1976), provides an interesting view of one area's helicopter experience. An evaluation of the program by the Chief of Police in December of 1974 showed that the helicopter in use, an Enstrom F28A, had no carrying capacity beyond its two member crew and thus was not capable of conducting rescue or mercy missions. In addition, this vehicle was stated in

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[47]Ibid., pp. 5 and 34.

the report to be unsuited for regular patrol and only useful on short term surveillance or vehicle chases.

The report continued to detail repair and maintenance problems from the free receipt of the helicopter in May of 1972 until the time of evaluation. The report further notes that other police agencies which use helicopters were surveyed and the literature was reviewed. Several points became apparent:

> None of the departments contacted was operating with one helicopter and one crew. All had at least two helicopters and three crews to assure the availability of the support the air units may give to ground units. Most had more.
>
> All departments using helicopters devoted substantial mission time to commuter traffic watches, a task performed by private or other public agencies in Metropolitan Washington.
>
> No department said it had been able to reduce the number, or limit the expansion of ground units on patrol, as a result of helicopter patrol.
>
> None could provide hard data analysis to demonstrate the impact of helicopter patrol on the incidence of crime or the agency's ability to apprehend law breakers. Several cited specific cases. But no pattern could be established.

This report went on to note that the helicopter program had not been given a fair test as an element of patrol due to lack of availability. Additionally, it was given that this craft cost $48 per hour to use. The report recommends retaining the helicopter for special uses but advised against expanding the program.[48]

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[48] William L. Durrer, in letter to County Executive Robert W. Wilson, December 10, 1974.

The report became moot because the helicopter crashed before the report reached the Board of Supervisors. Fiscal restraints caused rejection of replacement, although the Director of Planning and Research for the county still considers the helicopter as effective in crime deterrence.[49]

Richmond, California

The Richmond report (1975) notifies the study that the helicopter program, which was funded by L.E.A.A. and used two Hughes 300-C helicopters for anti-crime patrol, was discontinued after the grant was terminated. One helicopter has been sold and the other is for sale.

The report goes on to state that the program was ineffective as to prevention of crime and too costly to maintain.[50]

San Francisco, California

The San Francisco police department received LEAA grant #71A06R021 in the amount of $18,934 on June 29, 1971, for a helicopter program to run from July 1, 1971, through June 30, 1972. This grant was for the purpose of reinforcing the San Francisco's law enforcement program by

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[49] Letter from Jared D. Stout, Director of Planning and Research, Fairfax County to author, January 7, 1976.

[50] Richmond Report, Letter from John Neely, Acting Captain, Patrol Bureau to author, December 22, 1975.

replacement of one of two helicopters. The vehicle being replaced had crashed.

In response to the questionnaire from the author of this study in December 1975, the Chief of Police of San Francisco reported that the San Francisco police department does not operate helicopters.[51]

The author learned, in a subsequent interview with a San Francisco officer who is an aide to Chief George Gain, as well as a former member of the helicopter unit, that the San Francisco police own two helicopters but do not use them. The helicopters have been adjudged as being too expensive to operate and maintain in relation to results obtained in crime deterrence and prevention.[52]

Summary

Chapter IV has presented a description of the data obtained in this study from the four sources:

1. Review of the literature
2. Mitre Corporation survey
3. Author survey
4. Departmental evaluations

The literature has served to describe the philosophy of the theory of visibility and mobility in patrol as well to trace the history of the theory to the present day.

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[51]Letter from Charles R. Gain, Chief of Police, San Francisco, California, to author, February 11, 1976.

[52]Telephone interview of Patrolman Louis Sylvestri, by author, March 31, 1976.

The Mitre Corporation data, also known as the Chester survey, has furnished data concerning the use and capabilities of airborne vehicles as well as providing cost data about acquisition and maintenance.

The author's survey data has been combined in some instances with the Chester survey data to provide a complete inventory of all helicopters in use in police agencies in the United States. These data also inventory cost comparison material which should prove extremely useful to future researchers.

Additionally, Chapter IV includes area and population information that can be valuable to tests and evaluations on any police helicopter patrol program.

Finally, Chapter IV provides a look at some methods of program evaluation as devised and perceived by the users of helicopters in police patrol. Some of the cities included in the author's survey responded with reports which try to evaluate the program of using helicopters in police patrol. While none of these evaluation conclusions are generalizable, because in the author's view they lack validity, they do present a view of formulated efforts to test and evaluate such programs.

Chapter V will summarize the study, discuss the findings and their implications for the future, and try to devise usable hypotheses generated by the study with recommendations for the future planning of police programs in training and education.

CHAPTER V

SUMMARY AND CONCLUSIONS

In the opening chapter the purpose and scope of the study were defined. It was aimed at providing a description of those methods and theories that rely on the belief that visibility and mobility have a direct effect on crime by deterring or preventing criminal actions. The intention was to furnish some useful data for researchers who may wish to test and evaluate these methods and theories.

The study also proposed to provide some information as to the influence of these methods and theories on those who manage police agencies as well as those who train and educate policemen.

Since the theory of visibility and mobility as a deterrent to and prevention of, crime is related to speed of movement it was noted that the study would focus on the fastest of all police patrol vehicles, the helicopter.

The study was motivated by consideration of two underlying assumptions:

1. That certain methods and theories of crime deterrence and prevention which are in use throughout the

field of Criminal Justice, and which form a basis for a good deal of the training and education in that field, are founded on tradition and "common sense" value judgements and are as yet untested.

2. That it is vitally important, especially in view of the nation's rising crime totals, that research be directed toward these certain methods and theories in order that police administrators, trainers, and educators may have the benefit of proven practices to use in their professions.

Following these assumptions the author set out to answer the following questions:

1. Considering the historical basis of the theory that relates visibility and mobility in police patrol to crime deterrence and prevention, what is the present status of the theory?

The historical background of the theory that relates visibility and mobility in police patrol to crime deterrence and prevention and its beginning is important. Any consideration of the theory in its present state relates to the origin of the theory and the philosophy connnected with it.

2. Is this theory based on untested assumptions, has it received credibility through traditional use while being carried on by the medium of training and educational programs in Criminal Justice?

The literature of the profession of policing provides a source which will indicate whether or not this theory has ever been subjected to scientific testing and evaluation or whether it has been granted "common sense" value acceptance and passed on traditionally.

3. In police programs which use and promote the theory of visibility and mobility in crime deterrence and prevention, does a data base exist which can provide a starting point for future research aimed at testing and evaluation of this theory?

It will be useful to provide a thorough examination of some of the data, views, and methods of test and evaluation in use by police departments to determine if there exists a data base which might be used in future scientific test and evaluation of police programs relating to crime deterrence and prevention.

It was also considered vitally important that all questions be studied and answered because the theory that relates visibility and mobility in police patrol to crime deterrence and prevention is an important part of the curriculum of police training and education programs. The theory must be placed in proper perspective so that, if it is continued in use, it will be as a theory which has been scientifically tested and evaluated in use. The study questions lead to the answers to problems posed at the outset of the study.

Chapter I looks at the setting of the study and discusses the philosophy of police patrol as a means of deterring and preventing crime. This chapter has provided the basis in history for police methods and theories in regard to the belief that visibility and mobility can, and do, deter and prevent crime. This included a discussion of the beginning of the traditional passage of police beliefs from one generation of administrator, trainer, and educator to another. Because of the continually occurring passage of these beliefs, they grew larger in credibility without evaluation or testing.

Chapter II offers a review of the literature which traces the solidifying of the credibility of those police methods and theories. The literature review demonstrates that the belief in visibility and mobility became more acceptable with the advent of mechanical contrivances such as bicycles and then automobiles to increase the speed quotient of the police.

The chapter details instances were pioneer police administrators, trainers, and educators virtually became ecstatic at the prospect of completely eradicating crime from society with the newly discovered speed capability.

Well known, even revered, police trainers and educators like August Vollmer and William Rutledge spread the gospel of visibility and mobility to all areas of the police world in America. O. W. Wilson, a famous police administrator as Superintendent of the Chicago Police

Department and an educator at the University of California, as well as the author of several volumes concerning police training and education, was one of the foremost disciples of the theory.

Some of the pioneer administrators, trainers, and educators even supposed that fewer policemen would be needed because of innovations like cars and radios which increased visibility and mobility.

Chapter III displays the sources and methods used to gain data for description. The chapter notes that these data were gathered primarily from a review of pertinent literature and from the material in two extensive questionnaire surveys. One of these surveys was conducted by a national evaluation organization, the Mitre Corporation, and the author was granted permission to use the unpublished data. This is called the Chester Survey. The other survey was conducted by the author. These questionnaire surveys are the prime source of data for this study, since there is scant published information concerning the use of helicopters in police crime prevention patrol.

This chapter notes that the literature of the profession would reveal the philosophy of the theory of visibility and mobility in police patrol as well as furnish information as to its growth and development. The widely read books about police systems, including the most popular text books on police training and education were examined, described, and excerpted.

Chapter IV describes how the Chester survey and the author survey have been used in some instances to provide a combined inventory of police helicopters which include both operational capability specification and cost data. This is a unique inventory which details data not found in one place in any other publication.

This chapter is involved in a description of the data obtained from all sources. Additionally, this chapter also provides compilations and categorization of data by the author for more facile access by future researchers and other students. This chapter provides the kind of data that are so necessary to a description of the patrol process of crime deterrence and prevention which makes use of helicopters.

Chapter IV also looks at the attempts made by several police organizations to evaluate the results of using helicopters in crime preventive patrol. These evaluation efforts bear directly on the problem studied here and will provide a source of evaluation methodology for researchers. Some of the methodology will be discussed in the conclusions at the end of this study.

The questions which were posed at the beginning of the study have been answered throughout the study.

Question one asked:

1. Considering the historical basis of the theory that relates visibility and mobility in police patrol

to crime deterrence and prevention, what is the present status of the theory?

This historical basis was demonstrated in Chapter I with a recounting of the earliest known history of police patrol in England. From the "Watch and Ward" system of Edward I (1272-1307), through the Bow Street Runners or "Thief Takers" of Henry Fielding in 1748 through the forerunner of modern policing, the Bobbies of Sir Robert Peel's Metropolitan police in 1829, the theory of visibility and mobility became an accepted fact in police departments.

Those same methods and theories were brought to this country and carried on in the same fashion as in the mother country, including the virtually useless "Watch and Ward" system which relied heavily on the belief that if the "presence" of a watcher was made evident enough by some form of noise, criminals would not ply their trade.

The review of the literature in Chapter II also amply illuminates the basis in history in this country when it is noted that leading police administrators, trainers, and educators such as Orlando W. Wilson, August Vollmer and William P. Rutledge carry on this theory in the early part of the twentieth century.[1]

Leading writers in the police field also carry on the transfer of the theory to the present day. It is

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[1]See Wilson, supra p. 32; Vollmer, supra p. 31; and Rutledge, supra p. 30.

notable that authors like Vern Folley, Samuel G. Chapman, Raymond Clift, and Harry Caldwell, writing in the 1960s and 1970s, are still espousing the theory of visibility and mobility as effective in deterring and preventing crime.[2]

Question two asked:

2. Is this theory (of visibility and mobility in patrol as deterring or preventing crime) based on untested assumptions and has it received credibility through traditional use while being carried on by the medium of training and educational programs in Criminal Justice?

This question was answered in both Chapters I and II. A recounting of police history reveals no testing procedures that were ever devised or attempted. A review of the literature illustrates many instances of police administrators, trainers, and educators promoting these theories repeatedly, and often using the exact language of another in the profession. The literature reveals this passing of the theory from hand to hand and area to area.

Both Chapters I and II provide information which indicates that there is no known test of these theories. Many leading research sources state repeatedly that testing and evaluation of these theories is non-existent. The

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[2]See Chapman, supra p. 36; Folley, supra p. 40; Clift, supra p. 39; and Caldwell, supra p. 41.

President's Commission on Law Enforcement and the Administration of Criminal Justice decries the total lack of scientific research for test and evaluation of police methods and theories.[3]

While the literature is relatively silent on the subject of higher education in regard to the theory of visibility and mobility, it is important to note that many of the pioneer police administrators, in this country, like Vollmer and O. W. Wilson, were also educators and authors of police text books.

Tenney, in remarking on the curriculum of higher education programs in Criminal Justice, reports that textbooks which promote this theory constitute a large segment of the literature of those programs.[4]

3. Does a data base exist in police programs which promote the theory of visibility and mobility as effective in deterring or preventing crime, which can provide a starting point for future research in evaluation and testing of the theory?

Chapter IV provides a unique and complete inventory of helicopters in use in police patrol including performance specifications and cost data.

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[3]President's Commission, supra p. 46; see also James Q. Wilson, supra p. 42; American Bar Association, supra p. 45; Larson, supra p. 45; National Institute, supra p. 46.

[4]See Tenney, supra p. 75.

The chapter also furnishes data concerning the areas where helicopters are in use such as size and population density. Information of this nature is valuable to any future test and evaluation efforts.

Additionally, Chapter IV provides some data received from users which indicates their perceptions in regard to problem areas and also in regard to perceived evaluations.

Chapter IV also includes some test and evaluation data which was provided by certain of the respondents in answer to a request of the researcher.

Thus Chapter IV does provide an answer to question number three. The description of the data leads to a conclusion that information is available which will provide a foothold for future researchers, when it is considered that all of the data described in Chapter IV is available plus all of the information in every police department's regular crime and performance reports to use in any future scientific test and evaluation.

Findings

An overall view of this study reveals the emergence of the following series of findings:

1. Some police departments tend to lean toward production statistics which are generally unrelated to proof of effectiveness in deterring and preventing crime.

One of the most common objectives cited in some of these justification type evaluations involves officers' security. It must be alarming to citizens when a police department, citing the major objectives of a very expensive anti-crime program, declares that the first objective is officer security.

In addition to this evaluation dilemma, the evaluators create another by using a questionnaire approach to prove officer security which asks, in a typical example:

> do you, as a field officer, feel more secure while performing certain hazardous field functions if the helicopter is present?

and

> As a supervisor/administrator, have you observed that field officers display an increased sense of security if the helicopter is present in certain field functions?[5]

The percentage of affirmative answers to this kind of question is highly predictable but the questions leave a plethora of related unanswered questions which might ask if the officer also felt more secure if a scout car were present. Or how does a supervisor detect an increased sense of security in a subordinate?

Evaluations which sample citizen feelings of increased security because of helicopter patrol or that ask citizen opinion of whether the program should be

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[5]Both reports appear in all four evaluations in the Young Report, supra p. 191. See also Simonsen, "An Evaluation of Columbus, Ohio Helicopter Patrol," supra p. 172.

continued are of suspect value in defining the impact of the program in deterring or preventing crime.

2. Some police departments resist change vigorously and continue to rely on "common sense" values in programs to deter and prevent crime.

One effort to test and evaluate police patrol in regard to its effect on crime, the Kansas City Preventive Patrol Experiment, met with this resistance. This test was conducted in a scientific manner and is indicative of what can be done by the police community to test and evaluate the theory of visibility and mobility in police patrol. Kansas City used fifteen police beats in the experiment. In five of these beats there was double, and even triple police patrol and "presence," in five there was no patrol, only request response, and in the third group of five beats there was normal patrol and service.

Among the findings in the Kansas City study, one most pertinent here was that, at the end of a one year experiment, the crime incidence in all three sectors of five beats each remained virtually the same as before. While this test is neither final nor generalizable and was subject to almost immediate critical reaction, it does point the way to scientific testing of police methods and theories.[6]

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[6]Kelling, supra p. 52. See also the criticism in Davis, supra p. 54.

3. Some police evaluators have a tendency to grossly exaggerate the benefits of new police programs. The introduction of the helicopter provides an example. The ability of a helicopter in such categories as recovery of stolen property and location of contraband seems to be frequently overstated. The Los Angeles report credits enormous capability in these categories to their helicopter patrol.[7]

4. A perusal of the evaluation system used in some police departments reveals that this justification effort leads to unusual cost comparisons between helicopters and scout cars. The final tabulation often indicates that it costs more per arrest by scout cars than those by helicopter.

Detroit equated the cost of patrol units with arrests and arrived at a formula which put the cost of arrest at $195.00 each for the helicopter as against $420.00 each for a scout car. This amazing figure was arrived at by showing that surface units patrol one million hours at $22.00 per hour while a helicopter patrols only 1930 hours at $50.00 per hour.[8] Nowhere does Detroit explain that a helicopter crew cannot make an arrest without the aid of a scout car. This report is probably typical of evaluation reports which are made with a view of justification of a program and not proof of its value.

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[7]See Los Angeles, supra p. 184.

[8]See Detroit, supra p. 167.

5. Statistics which border on the incredible are brought to light, such as those which use a complicated amortization scale to show that the total purchase and operating cost of a helicopter is very close to that of a scout car. It usually goes unmentioned that the long use of helicopters is caused by the high cost of purchase and maintenance.

The Washington, D.C. police report is typical of the report which attempts to show that helicopters and scout cars are almost equal in total cost. The statistics used are invalid because they are incomplete and cover only segments of time periods.[9]

6. Some of the helicopter program evaluations revert to the theory that, because of its speed, the helicopter can do as much as two, three, four, five, or more scout cars. This recalls the days when pioneer police administrators predicted that a car with two men and a radio could do the same amount of police work as five men on foot. A continuation of the use of this formula should have reduced the ratio of police personnel to population, but it has not. The Santa Monica program failed to fulfill the promise of added patrol capability.[10]

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[9]See Washington, D.C., supra p. 189.

[10]See Earl Reinhold, "Helicopter Patrol," supra p. 67.

7. And finally, it is notable that in some evaluations of police helicopter programs there is a tendency to devise complicated effectiveness and evaluation programs. These programs use such invalid components as judgemental factors or opinions of division personnel, to arrive at their conclusions. In addition, some of these evaluations make direct comparisons between scout car and helicopter delivery of service when it should be evident that the mixing of incomparable respondents gives almost total invalidity to the comparison.

The Young evaluations, which cover four separate helicopter patrol programs present an interesting picture in regard to the measurement of effectiveness against crime. These evaluations use a combination of factors which range from real (crime statistics) to imaginary (activity importance ratings which depend on "qualitative" judgement). In the final summation, however, the Young evaluations say that there is insufficient data provided to the evaluators to detect any effect on crime by helicopter patrol.[11]

The Tucson police also evaluated the cost effectiveness of the program by using four evaluation factors of which three were "opinions" or "judgements" of persons connected with the program.[12]

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[11]See Young, supra p. 190

[12]See Tucson report, supra p. 160.

Additional Findings

In Chapters II and IV there are continual documentations of instances wherein police departments seem to lean toward justification of unique patrol systems like the helicopter. These justification efforts carry over into the reports and tell of outcomes that have no bearing on the use of patrol helicopters in deterring or preventing crime.

For instance, while it is undoubtedly important to measure miles flown and reports turned in, these cannot be the sole measurement when the purpose for the process was cited as crime deterrence and prevention, especially since statistics show a continual rise in crime. This method of measurement has been compared by the author to the system of determining the amounts of brick and mortar used to measure the final comfort and utility of a house.

Another of the faults regularly associated with police evaluations of helicopter patrols is the tendency to conduct one-shot tests that fail to take into account the conditions surrounding the test area before and after. Frequently, the evaluators finish reports by admitting the possibility that the helicopter program has merely shifted the crime problem to another area, as in the Columbus, Ohio test of the helicopter patrol in that city.[13]

Helicopter evaluation reports also tend to make invalid comparison of response time by comparing the

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[13]See Simonsen, supra p. 172.

response time of a scout car to that of a helicopter while airborne as in the Tucson report. Flight preparation takes a considerable length of time.[14]

Conclusions

These findings lead to two inescapable conclusions:

1. That police departments must begin to scrutinize the entire spectrum of law enforcement in relation to the police mission of deterring and preventing crime.

2. That police departments must discontinue the practice of "justification" evaluation of programs by testing and evaluating them scientifically.

Those programs which are retained because of invalid testing and evaluation procedure actually constitute a disservice to the citizens of the community.

This does not mean that programs are not worth retaining because of certain cosmetic value. An example is the mounted division, or horse bureau, of many police departments. These divisions have long ago ceased claiming any real police function, even crowd control, but are retained because the citizenry appreciate the cosmetic value of the bureau as a civic asset and are willing to pay for it.

The previously cited Kansas City Preventive Patrol Experiment is highly indicative of the ability of police

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[14] See Tucson, supra p. 161.

departments to conduct scientific research. Certainly the ongoing life in a city provides the police departments and educational institutions of America with a laboratory situation. Those incidents which happen in a police-citizen-crime setting are part of the life of the area. The resources are present as part of all of the situation.

It is no longer acceptable to guess at what results might be or to attribute the results to certain causes just because it seems right to do so. Police experts can no longer sell the untested system to a community by using high sounding, traditional police jargon about depriving criminals of opportunity through police "presence."

The most obvious values to be credited to helicopter performance are their abilities to respond to a location rapidly and their use as an observation platform. Both of these values are also limited by the fact that the helicopter cannot usually do more than observe a condition of crime, even after rapid arrival at a location, and report to surface units who are able to take action. Nevertheless, these values are important and can be the real reasons for providing helicopter service. The use of helicopters as an ambulance vehicle more properly belongs to organizations using helicopters built for such service and not police vehicles.

Finally, the author has concluded, as a result of this study that James Q. Wilson was correct when he stated that a lack of proven methodology for testing law enforcement proposals was putting the nation in danger of turning a practical problem into an ideological one. Wilson noted that, in responding to the emotions aroused by crime, we dangerously oversell our ability to lower the crime rate. In order to get Congress to supply funds that may help produce a 5 percent reduction in auto thefts, we may have to promise a 20 percent reduction in murders.[15]

Certainly it is at least discouraging to police administrators when an urbanologist as highly respected as Jane Jacobs says:

> The first thing to understand is that the public peace--the sidewalk and street peace--of cities is not kept primarily by the police, necessary as police are. It is kept primarily by an intricate, almost unconscious, network of voluntary controls and standards among the people themselves and enforced by the people themselves. . . . No amount of police can enforce civilization where the normal, casual enforcement of it has broken down.
>
> In some city areas--older public housing projects and streets with very high population turnover are often conspicuous examples--the keeping of public sidewalk law is left almost entirely to the police and special guards. Such places are jungles.[16]

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[15] James Wilson, Crime and Law Enforcement, supra at p. 45.

[16] Jane Jacobs, The Death and Life of Great American Cities (New York: Random House, 1961), pp. 31-32.

Implications for Trainers and Educators

It does not necessarily follow that because a particular method or theory of crime deterrence or prevention fails to achieve positive results that no method or theory of crime deterrence will work. Nor does it follow that because a particular method or theory is untested that it should be abandoned. But it is logical to suppose that such a method or theory should be researched for evaluation and testing.

Without research, without evaluation and testing the police administrators, trainers, and educators are using and teaching the theory that visibility and mobility are deterring or preventing crime while this theory is based only on tradition and "common sense" values and may or may not be the crux of police patrol.

Yet, as Jacob reminds, police are necessary. Certainly as an alternative to chaos and anarchy but also in deterring and preventing crime. How great an impact police have on crime will be determined by the willigness of police administrators to join hands with institutions of higher education and begin to research, test, and evaluate programs which claim to deter or prevent crime.

Emerging from the research in this investigation, three implications appear which may have merit in the educational process of criminal justice. These are:

1. These programs must be tested by the use of principles subject to all of the rules of scientific experiment and testing. Generalization must spring from validity and not from tradition or "common sense."

2. Police administrators, trainers, and educators must realize that change is inevitable and can be a healthy experience of experiment and test. These administrators, trainers, and educators will have to articulate this belief to the communities of citizens and students that they serve.

3. Further, institutions of higher education must become an integral part of the search for police programs which truly deter and prevent crime. These institutions ought to establish and maintain an on-going umbilical cord relationship with police agencies to provide a continuous program of education and re-education of police personnel, administrators, trainers, and educators and also to provide research facilities and resources as part of the relationship.

Recommendations for Further Study

All police agencies should be involved with some form of self-examination with objective outside aid. This procedure should become a regular part of the police regimen. Statistics such as those generated in this study should be put to use in further study as part of the necessary cycle of test and evaluation.

This study has generated the following hypotheses:

1. Areas where police have enlarged their visibility and increased their speed in mobility to create an impression of omnipresence will have proportionately less incidence of crime than areas where police patrols have remained static.

2. Persons of criminal inclination in areas where police have enlarged their visibility and increased their speed in mobility to create an impression of omnipresence will tend to abandon their criminal plans more often than criminally inclined persons in areas with less police visibility and mobility.

3. Crime problems which are subjected to continuous cooperative research between police and academicians have more likelihood of solution than those which are left to police alone to solve.

Police practitioners must now seek the help of the academic research community to combine the resources of both in providing programs to test and evaluate police methods and theories.

The educators of the Criminal Justice programs can no longer afford to provide a curriculum which is based on untested theory. The test and evaluation programs must take precedents over traditional "nuts and bolts" curriculum until a proven body of material is ready for presentation to future practitioners.

This will involve some changes in the traditional stance of educators and policemen alike and cause them to approach the administrators and citizens of their communities with a unified determination which will assure that the police, who need the help, will ask for and accept it, and that the educators, who have the help to give, will proceed to give it.

APPENDICES

APPENDIX A

AUTHOR SURVEY INSTRUMENT

APPENDIX A

AUTHOR SURVEY INSTRUMENT

Questionnaire

Helicopter Use Report for the:

_____ Department

_____ _____
Street Zip Code

_____ _____
City State

Phone: _____ Area Code: _____

County: _____ Township: _____

1. The governmental unit providing salaries for your department is:

☐ 1. Village ☐ 4. County

☐ 2. City ☐ 5. State

☐ 3. Township ☐ 6. Other _____
(please specify)

2. What is the "general description" of your jurisdiction? Name the two most prominent features:

Residential . . . . . _____
Agricultural. . . . . _____
Educational . . . . . _____
Military. . . . . _____
Governmental. . . . . _____
Industrial. . . . . _____
Natural Resources (mining, forestry, etc.). . _____
Recreation-Tourism. . . . . _____

3. What is the official population estimate of your jurisdiction?

_____

4. What is the total number of miles of public roads and streets (paved and unpaved) and the square miles of land in your entire jurisdiction?

Miles of public roads _____

Square miles of land _____

5. What is the TOTAL budget for your department for the latest fiscal year?

Total budget for the latest year is $_____

6. What is the TOTAL budget of your entire city, village, township, or county for the latest fiscal year?

Total budget for the latest year is $_____

7. What is the actual number of all officers and civilians in your agency today?

_____ (officers) _____ (civilians)

8. How many items of the following mobile patrol equipment does your department own?

Cars	_____
Cycles	_____
Scooters	_____
Planes	_____
Helicopters	_____

9. Were any of these mobile items purchased by L.E.A.A. grants?

	Yes (number)	No
Cars	_____	☐
Cycles	_____	☐
Scooters	_____	☐
Planes	_____	☐
Helicopters	_____	☐

10. If any helicopters were purchased through L.E.A.A. grants, did or will your department continue the program after expiration of the grant?

    Yes ☐ No ☐

11. If your department has begun and discontinued a helicopter program under L.E.A.A. grant, was it because the program was:

    ☐ a. ineffective?
    ☐ b. too costly for results gained?
    ☐ c. both a and b?
    ☐ d. other reasons?

12. What type and capacity helicopters are in use in your department?

    1. _____ 5. _____
    2. _____ 6. _____
    3. _____ 7. _____
    4. _____ 8. _____

13. How are your department's helicopters utilized? (Please state amount of use in hours per month per unit in average 730 hour month.)

    ☐ Patrol, general, including searches
    ☐ Traffic, regular
    ☐ Traffic, emergency
    ☐ Medical, mercy, transport, rescue
    ☐ Personnel transport
    ☐ Other (please describe briefly)

    _____

14. How are your helicopter pilots chosen for duty?

    ☐ Selected from department, then trained.
    ☐ Selected pre-trained from department.
    ☐ Selected pre-trained from outside department.

15. What are the rank and salaries of your helicopter pilots?

No.	Rank	Salary
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

16. What is the total cost of housing your helicopters per year?

_____

17. In which of the following reporting programs does your department participate?

Yes	No	
☐	☐	F.B.I. Uniform Crime Report Program
☐	☐	National Safety Council Annual Traffic Inventory
☐	☐	L.E.I.N. (Law Enforcement Intelligence Network)

18. Has your department prepared a separate report of helicopter activity?

Monthly		Annually	
Yes	No	Yes	No
☐	☐	☐	☐

19. Does your department use helicopters on general patrol during all time shifts?

Yes ☐ No ☐

20. Do you provide helicopter assistance to other police agencies or other units of government? (Total hours per month per unit.)

No. Units	Other Police (hours)	Other Government (hours)
_____	_____	_____

21. When using a helicopter in anti-crime patrol, do you use additional surface units to assist, or respond to, the helicopter?

    Number of additional surface units per helicopter_____

22. Does your department believe that the use of the helicopter in anti-crime patrol has reduced street crime?

    Yes ☐ No ☐

23. Does your department believe that helicopter use has reduced any <u>particular</u> category of crime?

    Yes ☐ No ☐ Category_____

24. If your department believes either 22 or 23 above, is there documentation to demonstrate?

    Yes ☐ No ☐

25. Does your department consider the helicopter <u>most</u> valuable for:

    ☐ Patrol, including search
    ☐ Traffic
    ☐ Medical, mercy, treatment, rescue
    ☐ Personnel transport
    ☐ Other (specify briefly) _____

26. Has your helicopter program been specifically evaluated as to its relationship to crime?

    Yes ☐ No ☐

27. Has your program revealed instances in which helicopter patrol seems to shift the crime to areas outside the patrol perimeter?

    Yes ☐ No ☐

28. Has your helicopter program been evaluated as to cost per mission?

    Yes ☐ No ☐

29. Has your scout car program been evaluated as to cost per mission?

    Yes ☐ No ☐

30. Will you please forward the information sought in questions 18, 24, 26, 27, 28, and 29, as well as this questionnaire (when completed) to the researcher in the enclosed, self-addressed, stamped envelope?

31. Will you please state briefly the general view of your department toward the use of helicopters in police service?

APPENDIX B

CHESTER SURVEY INSTRUMENT

APPENDIX B

CHESTER SURVEY INSTRUMENT

Law Enforcement Assistance Administration
L.E. Airborne Vehicle Survey

General Instructions for Completing This Form

1. Please respond to each question.
2. Where data are not available, enter NA.
3. Annual budget figures for your agency's airborne operations may be approximate.
4. Where your fiscal year is different from the Federal Government's fiscal year, simply provide your current airborne operations budget--the one you are working under in August 1975.

Agency/Interviewer Identification

1. Agency Name: _____

   _____

2. Address: _____

   _____

3. Person Responsible for Response: _____

   _____ Position: _____

   _____ Date of Response: _____

4. (If data obtained via telephone) name of MITRE interviewer: _____

   Date of call: _____, 1975.

   Call Back Necessary? Yes__ No__ If Yes, Explain_____

   _____

5. Callback Results: _____

_____

6. Date of Callback: _____, 1975. Interviewer (if different from 4): _____

Airborne Vehicle Inventory

7. Aircraft in Use by Agency:

Helicopters

Manufacturer	Model	Year Mf'd	Year Acquired	Quantity	Military Surplus?

Fixed Wing

Short Take-Off and Landing (STOL)

Other (Specify)

Type	Mfr.	Model	Year Acquired	Quantity

Usage Characteristics

8. Average Flying Hours:

	Hours per month
Helicopters	
Fixed Wing	
STOL	
Other	

9. Percentage of Flight Time:

	Day	Night
Helicopters	___	___
Fixed Wing	___	___
STOL	___	___
Other	___	___

10. Aircraft Availability Ratio By Type:

Indicate the percent of time, on the average, that the type is available (e.g., ready to fly the mission) when scheduled or when required.

	Availability in percent
Helicopters	_____
Fixed Wing	_____
STOL	_____
Other	_____

Mission Priority and Effectiveness by Type of Airborne Vehicle

11. Rate each applicable aircraft type on (1) its mission priority and (2) its mission effectiveness in Table A-1 on the following page.

Rate mission priority for each relevant aircraft type on the basis of "1" for highest priority, "2" for the next highest, and so on. Two or more missions may be given equal priority ratings. List only top 5 priorities.

Indicate "H" (for High), "M" (for Medium), or "L" (for Low) effectiveness. Absence of an effectiveness rating will be interpreted to mean that the vehicle is not used for the mission. Please add other missions, as applicable, in the space provided. (See illustrative example in Table A-1).

Mission rating table
on following page.

Table A-1.--Ratings of Mission Priority and Helicopter Effectiveness, Question 11.***

Mission	Helicopter		Helicopter	
	Priority Rating	Effective-ness Rating	Priority Rating	Effective-ness Rating
Command Post		H		
High Speed Chase		M		
Provide Intercept Data to Ground	1*	H		
Patrol Activities		H		
General Surveillance	1*	H		
Covert Surveillance		L		
Search Activities				
Fugitives	2	H		
Vehicles	3	M		
Nighttime Patrol		M		
Security (Special Visitors, etc.)		H		
Emergency Rescues	4*	H		
Traffic Control		H		
Transport				
Emergency	4*	H		
Priority Cargo	5	H		
Official Personnel		H		
Personnel in Custody		M		
Narcotics Detection		**		
Pollution Control		**		
Riot Control		H		
Fish/Game Law Control		**		
Other (Describe)				
_____	EXAMPLE			

*Missions of Equal Priority
**Missions for Which Vehicle Not Used
***Only Helicopter Section Is Included Here.

Major Operating Problems

12. List, in order of priority (most-severe first), 3 or 4 most significant problems encountered in your experience with airborne vehicles. (To include problems such as excessive down time, unavailability of spares, high cost, etc., in addition to purely mission-operation problems.)

Helicopters

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

Fixed Wing

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

STOL

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

Major Operating Problems (cont'd.)

Other

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

13. Please provide any further problem information or comments you feel would be helpful to the survey:

_____

_____

_____

_____

Costs

14. Provide the procurement means, the costs, and the source of funds for each aircraft:

Helicopters

Make and Model	Lease or Buy	Date Acquired	Cost of basic vehicle* (per year if leased, total cost if bought)	Percent of funds from LEAA	Percent of funds from Other
Fixed Wing					
STOL					

*Not including special L.E. gear such as special communication equipment, searchlights, P.A. systems.

Costs (cont'd)

Other

Make and Model	Lease or Buy	Date Acquired	Cost of basic vehicle* (per year if leased, total cost if bought)	Percent of funds from LEAA	Percent of funds from Other

15. Provide the costs of special L.E. gear such as communications equipment, searchlights, P.A. systems.

Helicopters

Make and Model	Cost	Percent of funds from LEAA	Percent of funds from Other

Fixed Wing

STOL

Other

16. Check the items that indicate the manner in which your agency performs its aircraft maintenance:

How Performed	Routine Maintenance	Engine Overhaul
In-house	_____	_____
Contracted . . .	_____	_____

17. Operating and maintenance costs* per flying hour:

Helicopter Make and Model	Operating Cost Per Hour	Maintenance Cost Per Hour
_____	_____	_____
_____	_____	_____
Fixed Wing		
_____	_____	_____
_____	_____	_____
STOL		
_____	_____	_____
_____	_____	_____
Other		
_____	_____	_____
_____	_____	_____

*If your agency does not separate operating costs from maintenance costs, please note the composite figure in operating cost column and write NA in maintenance cost column.

18. Check the cost elements comprising your agency's operating and maintenance costs:

Cost elements included in cost/flying hour figures	Operating Costs	Maintenance Costs
Gasoline and oil.	_____	_____
Salaries (air crew, ground crew mechanics	_____	_____
Insurance	_____	
Amortization of Purchase Price .	_____	
Amortization of Lease Cost . .	_____	
Pro-rata cost of operational & maintenance facilities . .	_____	_____
Construction/mod. of operational & maintenance facilities	_____	_____
Rent of facilities	_____	_____
Utilities	_____	_____

18. (cont'd.)

Cost elements included in cost/flying hour figures	Operating Costs	Maintenance Costs
Aircraft Replacement Reserve. .	_____	_____
Engine Overhaul Reserve		_____
Spare Parts		_____
Other (List)		
_____ . . .	_____	_____
_____ . . .	_____	_____

19. Your agency's approximate annual budget for the airborne unit for Fiscal Year 1976, by source of funds:

Total Budget	Percentage Source of Funds	
	LEAA	Other
_____	_____	_____

Not including salaries or Helicopters.

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