THE USE OF HELICOPTERS IN POLICING: NECESSITY OR WASTE?

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Throughout history, police departments have utilized various technological advancements in an effort to improve their ability to fight crime and maintain public safety (Uchida, 1997). These technological advancements have enhanced a variety of areas in policing, including communication and transportation. For example, the advent of the two-way radio, cellular phone and computer inside police cars have all increased the availability and transfer of information. More recently, other vehicles such as boats and wave runners have changed law enforcement activities on water, while the use of fixed-wing aircraft and helicopters have assisted police activities by providing law enforcement presence in the air. All of these vehicles have served important roles to modify and potentially improve police operations.

Regarding these new forms of vehicle technology, questions remain about their priority in law enforcement. Police departments under fiscal constraints must make tough
choices about whether a particular technology is worth the expense. This is particularly true regarding the use of the helicopter because they are expensive to operate. It is the purpose of this paper to present arguments for and against the purchase and use of helicopters in law enforcement.

There are many factors that a department should consider when deciding whether or not helicopters are worth the expense. The paper is divided into five sections. First, section I is a brief description of the history of the use of helicopters in policing. This section provides the reader with background information. Next, section II examines various uses of the helicopter in policing as measures of its potential benefit. Specific attention and detail is paid to the use of helicopters in high speed pursuits due to the fact that this is an issue of financial concern to most police departments. The third section (III) assesses the costs of using helicopters. The fourth section (IV) attempts to provide a cost-benefit analysis of the potential tradeoffs police departments should consider when implementing helicopter technology. The list of costs and benefits is not meant to be exhaustive but to provide a basic framework for the discussion. Finally, section V is an overview of the approach departments should take when considering this issue. This policy question is directed at police departments with a population base of 250,000 or more residents, since (with a few exceptions) municipalities of lesser size typically cannot afford a helicopter.

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1Approximately 16% of police agencies nationally in 1993 were involved in litigation resulting from pursuits (Kenney and Alpert, 1997).
I. Historical Background of Helicopters

New York and Los Angeles were the first police departments to create aviation units. These units used fixed wing aircraft to serve rescue tasks with minimal involvement in daily patrol activities. The first uses of these aircraft’s occurred in New York City during the 1940s. Their uses included rescuing civilians trapped in ice, spotting fires, following cars being pursued, and finding cars "buried in the swamps of Brooklyn and Queens" (Hoffman, 1996: 26). The helicopter was used in lieu of a fixed-wing plane because of its ability to maneuver in the sky.

The utility and success of the helicopter became known and its use spread from New York to other agencies. In 1956, Los Angeles County bought its first helicopter and mainly used it to assist in traffic enforcement on the city's freeways (Hoffman, 1996). Its use was expanded when helicopters were brought into service during the L.A. riots in 1965. The helicopter was used during these civil disturbances to spot problems and to direct officers and troops to troubled areas. Early assessments of the helicopter noted its effectiveness as an efficient tool in "unusual occurrences and discreet surveillance," but it was thought to be overly expensive for patrol work (Hoffman, 1996: 26). Officer Jim Beall, of the Los Angeles Police Department was assigned to evaluate the Los Angeles Police Department (LAPD) helicopter patrol in 1965. Although he was concerned with the inefficiency of using a helicopter for general patrol work, he praised their use in civil disturbances and other types of work which required surveillance. He also noted that the helicopter's panoramic view was helpful to law enforcement officers on the ground. Officer Beall's early observations have been credited with the justification of police
aviation units throughout the country (Hoffman, 1996).

From modest beginnings, aviation in general and specifically helicopters have grown to play some role in more than 600 American police departments (Morrison, 1994). Traditionally, and for obvious financial considerations, helicopters have been mostly used by large agencies. For example, departments serving populations of one million or more have a 75% or more likelihood that they will have at least one helicopter at their disposal (Local Police Department, 1993). Seventy-one percent of those serving populations of 500,000 or more have access to a helicopter (Local Police Departments, 1993). In those agencies serving 250,000 to 499,999, helicopters are available in 42% of the departments (Local Police Departments, 1993). Only a small proportion of agencies serving populations with less than 250,000 operate helicopters (Local Police Departments, 1993). Overall, it is apparent through the historical development of helicopters in policing that many departments view them as a necessary addition to their law enforcement mission.

II. Potential Benefits of Helicopters

There are a variety of law enforcement activities that helicopters can perform. These functions can be examined to determine the potential benefits of police use of helicopters. The various activities include: (1) emergency response; (2) patrol duties; (3) back-up to a ground unit; and (4) high-speed pursuits. For instance, in the case of emergency response, many high-profile cases have included such activities as search and rescue as well as assisting stranded persons who could not be easily reached from the
ground (Craig, 1975; Hoffman, 1996; McGowan, 1978c; Morris, 1995; Pauley, 1979). Helicopters have also been used to assist disaster relief in earthquakes, flooding, fires and other emergencies (McGowan, 1978c; Pauley, 1979). In some police departments the police helicopter is specifically used for such functions) However, the use of helicopters for an emergency response unit or search and rescue depends on the size of the helicopter. Departments with small helicopters, such as Baltimore City's two seat Schweizer 300-C (limited to 600 pounds), cannot function in this capacity. In contrast, state police departments, such as in Maryland and Delaware, typically use large Jet Ranger helicopters for the purpose of emergency response for car accidents.

Beyond disaster relief, helicopters can also be used in patrol activities to aid in the detection, investigation, and reduction of crime (Hoffman, 1996; DeFoor, 1981; McGowan, 1978a; Simonsen, 1975). Regarding the reduction of crime, a study funded by the National Institute of Justice tested the effectiveness of using a police helicopter to prevent burglaries in a high crime area of Nashville, Tennessee (Schnell and Kirchner, 1981). The study indicated through an interrupted time-series evaluation (before and after) that burglaries decreased during the twelve day period the helicopter was flown with no evidence that this type of crime was displaced to other areas. The study was replicated a subsequent time period and the same findings resulted. Additionally, research conducted in Columbus, OH found intense airborne patrol reduced crime in targeted areas (Simonsen, 1975). This evidence suggests that helicopters can play a role

2 In the author's interview with the Metro-Dade Police Helicopter Unit it was discovered this was one of their major functions.
in deterring crime. However, there are only a few evaluations and therefore the results are not inequivocable. In addition to their potential deterrent impact, helicopters from their aerial platform can view activities at greater distance than ground units? As a result they can provide patrol coverage over a larger area than ground units.

Regarding detection, perhaps the most important function is the support the helicopter can furnish ground units (Morris, 1995). For example, helicopters have supplied back-up to patrol units in monitoring drug operations, tracking suspects, and directing perimeter searches (McLean, 1990). They can provide coordination of stakeouts or pursuit activities from "a vantage point no ground unit could command all in direct, second-to-second support of the forces on the ground" (McLean, 1990: 34). Helicopter support can also assist a call involving an officer in trouble by providing directions and, if necessary, a show of force (Hoffman, 1996). Personal observation of the Metro-Dade Police Helicopter unit indicated that the helicopter was able to provide aerial support through the use of the spotlight as well as instruct the K-9 units on the ground in their search for suspects. In other words, the most common advantage of the helicopter is the information the pilot or observer can provide to the officers on the ground. This information can include location or direction of a fleeing suspect, traffic or environmental conditions, and direction and coordination of the ground units. The helicopter can also assist officers to respond to calls more quickly and reduce the need for high speeds.

One example of where high speeds can be avoided is in the pursuit of a suspect.

3 From flight observations in two helicopter units, it was clear that vehicles and persons on the ground are identifiable by basic color of apparel and vehicle description.
These high-speed chases often result in two or more vehicles going at unreasonable speeds. These pursuits are of particular concern to police departments who face both potential issues of safety and liability. For instance, data from the National Highway Traffic Safety Administration indicates that there were 388 pursuit related deaths in 1994. Also, forty-nine percent of large-size police departments (501-2,500 officers) were involved in litigation resulting from pursuits (Kenney and Alpert, 1997). In pursuits, helicopters can safely observe a vehicle and provide pertinent information to officers on the ground so that they can stay close to the vehicle without being spotted and to take appropriate action when a suspect has stopped or exited a vehicle (Alpert and MacDonald, 1997). Departments, such as Baltimore City and Metro-Dade (Florida), have employed the use of a helicopter so they can discontinue their ground pursuit without eliminating their ability to apprehend fleeing suspects. A review of the data from Baltimore City (July 1995 - June 1996) and Metro-Dade (calendar year 1996) indicate that the helicopter provides an effective means of apprehending fleeing vehicles. The Metro-Dade helicopters were involved in 43 pursuits (see Table 1) with 91% resulting in an arrest. In comparison, Baltimore helicopters were involved in 89 pursuits with 83% resulting in an arrest. Although there were accidents resulting from the helicopter-involved pursuits, the available data indicate that none of the accidents resulted in a serious injury. These statistics suggest that in both departments the use of helicopters in apprehending a fleeing suspect is highly successful. There were also similarities in both departments in terms of the reason for pursuits.
In both helicopter units, a stolen car was the most common reason for pursuit. There were 21 (49%) pursuits involving a stolen car in Metro-Dade and 38 (51%) in Baltimore City (see Table 2). Armed robbery was also a common reason for pursuit in both units. There were 10 (23%) pursuits for armed robbery in Metro-Dade and 9 (12%) in Baltimore. In Baltimore 7 out of the 9 robbery pursuits involved a carjacking. Unfortunately, the data across the two sites do not provide a much more detailed comparison due to the fact that there were many miscellaneous felony and misdemeanor offenses that resulted in a pursuit. Regardless, it is evident from a review of the data from both departments that the pursuits often involved serious crimes that warranted a chase. Moreover, in many of these pursuits the ground units were able to keep a safe distance from the fleeing suspect until he exited his vehicle.

TABLE 2. REASONS FOR PURSUIT

<table>
<thead>
<tr>
<th>Reason</th>
<th>Metro-Dade</th>
<th>Baltimore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stolen Car</td>
<td>21</td>
<td>38</td>
</tr>
<tr>
<td>Robbery</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Traffic</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>22</td>
</tr>
</tbody>
</table>

* Other includes miscellaneous felony and misdemeanor offenses that were not the same offense categories across both units.

Source: Alpern and MacDonald (1997)
In sum, law enforcement agencies may be aided by the versatility, vision, and speed of helicopters (McGowan, 1978a; McGowan, 1978b). The versatility of helicopters is seen in its ability to track suspects, clock speeding automobiles, rescue endangered citizens, provide information, and support officers on the ground. Versatility can also be seen in the helicopters' ability to land on a variety of surfaces, including the ground, streets, roof tops, or water (Hoffman, 1996). The vantage point of an observer in a helicopter can be described as a 'bird's eye view' as compared to the 'worm's eye view' available to an officer in a patrol car. A helicopter has "30 times the visual range of a street-bound counterpart" (Yates, 1994: 65). Helicopters can travel slowly and at sharp angles to conduct circular observations and coordination of perimeters, or at very fast speeds to respond quickly to areas where support is needed. Additionally, helicopters may provide useful support in high speed pursuit situations.

III. Potential Costs of Helicopters

The evidence suggests helicopters can assist law enforcement efforts. There are, however, costs (both direct and indirect) associated with their use. Costs for helicopters include the initial purchase, maintenance, and fuel as well as the costs of pilots and other flight personnel. For example, a recent purchase of a Bell 407 by the Delaware State
Police cost an estimated $1.8 million (Delaware State Police, 1995). The purchase price for helicopters used in policing ranges from $500,000 to $2 million depending on the size and accessories. Also, the costs associated with maintaining an aircraft are numerous. A location must be created or modified to permit storage and landing space. One option is for agencies to utilize space in existing airports. This choice would include easy access to mechanics, fuel, and storage space. There is also the costs associated with training or recruiting helicopter pilots. The instruction costs for a sworn officer are approximately $30 per hour and departments typically require a minimum of 150 hours of flight time to be a pilot (Ellis, 1993). In other words, it costs approximately $4,500 (per officer) to train a sworn officer to become a helicopter pilot (unless you can recruit one already licensed). The cost of fuel is also substantial. For example, the Baltimore City Helicopter Unit spends approximately $75.00 per hour for fuel. Clearly, the operating costs associated with the labor, maintenance, fuel, and insurance are extensive. For example, Metro-Dade's Jet Long Ranger has an hourly operating cost of $260 per hour. Altogether, these data indicate it is expensive to purchase, maintain and fly helicopters.

Another disadvantage of helicopters is their noise (Riley, 1995). Helicopters are noisy instruments and their propellers create strong winds that can cause damage to persons and property from winds picking up and tossing objects around the area below the aircraft. As a result, agencies have had to deal with negative publicity and explain the problems and benefits to the public. Residents in Brooklyn, NY, for example, complained about the noise associated with increased use of helicopters in their

4 Estimates were obtained through personal interviews with several aviation units. 10
community (Riley, 1995). It is not difficult for one to imagine the intrusiveness that people feel when they hear the noise from a helicopter over their homes. A recent public opinion survey in Baltimore, however, found that a majority of the respondents (81%) were not bothered by either the noise, lights, or fear associated with helicopters in their community (Alpert and MacDonald, 1997). This suggests the costs associated with noise may not be substantial.

A final disadvantage of the use of helicopters in policing is the safety risk. The risk of a helicopter malfunctioning during flight is always present. A malfunction could cause the helicopter to crash to the ground and injure the pilot, the passengers, and others close to the aircraft. Also, any crash could result in extensive property damage. However, these events appear to be very infrequent. In the first eight years of the Pasadena helicopter program, for example, only once accident occurred (McGowan, 1978). Also, in the twenty-five years Baltimore City has had a helicopter unit there has been only one accident (Alpert and MacDonald, 1997). Therefore, the dangers associated with using a helicopter in policing may be overstated.

IV. Assessing the Tradeoffs

There are, however, tradeoffs that one must consider in assessing the potential costs and benefits of a police department using helicopters. As previously stated, the implementation and operation of helicopters is expensive, especially for departments under tight budgetary constraints. Some of these initial capital costs, however, can be reduced by purchasing the helicopter from the federal surplus property system (Morrison,
The Department of Defense Authorization Act of 1986 established a system for law enforcement agencies to take advantage of surplus equipment from the Department of Defense and the Department of Justice (Morrison, 1994: 61). For example, the 1986 Act allowed law enforcement agencies to purchase surplus equipment from federal law enforcement agencies (Morrison, 1994). Agencies can also coordinate efforts to purchase helicopters and share their costs (McGowan, 1978c). However, agencies are still faced with costs required to make the aircraft airworthy?

The costs also can be considered through a comparison of helicopter and ground units. Obviously, the cost of helicopters is far above that of car patrols, yet helicopters can outperform automobiles in many tasks. For example, helicopters have extremely fast response times because of their uninterrupted routes and ability to travel at high speeds. The use of a helicopter can increase the number of cases an agency can handle due to the flexibility and speed of the aircraft (Hoffman, 1996). Helicopters can handle up to three times as many service contacts than ground units (Simonsen, 1975). In other words, the costs of the helicopters may be discounted through the increased performance they provide over ground units. A study of the Columbus, Ohio helicopter patrol found that the "cost-per-unit-of-output-per-hour resulted in a more equitable comparison of effectiveness between helicopter patrol and cruiser patrol" (Simonsen, 1975: 30). In Pasadena, a study found that a police car in an hour could effectively patrol 1/5 of a square mile; whereas, a helicopter could cover 7.6 square miles with the same

5Conversations with aviation unit officials indicated that this was approximately $50,000.
effectiveness (McGowan, 1978a). It was also noted that a helicopters could observe subjects from 500 feet at 60 miles an hour for 10 times longer than a patrol car (McGowan, 1978a). Advocates of helicopter patrols claim a helicopter can do the work of 10 to 15 ground units and offer the same crime reduction effectiveness (Stone & DeLuca, 1985; Yates, 1994). In addition to the cost effectiveness comparisons, helicopters also offer aerial support that cannot be directly compared to ground units. This is particularly true in the area of drug enforcement, which comprise approximately 85% of helicopter flights (McLean, 1990). The various duties in the area of drug enforcement include the tracking of suspects and vehicles, support during raids, and location of possible marijuana fields (Gaines, Kappeler & Vaughn, 1994). It is also difficult to quantify how much a department values the potential increased feeling of safety that the helicopter can provide ground unit officers. For example, the increased feeling of safety a ground officer experiences when a helicopter's spotlight illuminates a dark alley in which a suspect has fled.

The costs of the noise associated with the use of the helicopter may also be resolved. Some agencies have anticipated the problems with noise and forewarned their citizens. For example, the Pasadena, California Police Department had representatives visit civic groups, homeowner's associations, town hall meetings, schools, business and social organizations to explain the functions and possible concerns which are attributed to the use of helicopters (McGowan, 1978a). These public-relations information sessions helped generate strong support for the helicopter unit from community groups and the media (McGowan, 1978a). The noise associated with helicopters, although problematic,
does not appear to be insurmountable.

Altogether, there are substantial financial costs associated with the use of helicopters but these may be off-set by the enhanced performance they provide and their ability to provide fast response to back up ground units. In addition, the information on the uses, costs and effectiveness of helicopters in police operations and specifically pursuits suggests that the helicopter can provide a crucial role in achieving law enforcement goals.

V. Conclusions and Policy Recommendations

After assessing the tradeoffs a department should consider how a helicopter relates to their particular needs. Municipalities that are dense in population may only want to consider the use of the helicopter for patrol purposes; whereas, areas that are spread out may need a unit only in cases of emergency response. In addition, departments should examine the level of violent crime in their communities and the number of high speed pursuits. Departments that rank high on both may see a helicopter as a necessity for both officer safety (violent crime) and civil liability issues (pursuit).

In making its decision about the purchase and maintenance of a helicopter unit a police department should also consider both implementation and evaluation issues. Regarding implementation, police departments should communicate to their citizenry the necessity for a helicopter unit. The residents can be informed about all of its potential uses and how its enhanced performance can offset some of the additional expense associated with its use. In the second phase involves evaluation. Once departments
decide to implement a helicopter unit they should consider conducting a short-term evaluation of the unit to decide if it should be a permanent operation. This short term evaluation should compare base line differences in crimes reported and pursuits conducted before and after the implementation of the unit. Departments could also reduce the number of ground units in operation during this time period and evaluate whether the helicopter costs can be offset without an increase in crime.

In sum, before departments decide whether to establish a helicopter unit they should assess their need for the following: aerial back up of ground units; emergency response; enhanced patrol; and high speed pursuits. If a department ranks high on these needs it will be able to justify the costs of implementation. Furthermore, if there are positive findings from an evaluation of the unit, the helicopter may be justified as a permanent asset in the law enforcement mission.
References


