

**The Bill Blackwood
Law Enforcement Management Institute of Texas**

Motorcycles in the Police Fleet

**An Administrative Research Paper
Submitted in Partial Fulfillment
Required for Graduation from the
Leadership Command College**

**By
Daniel J. Kiley**

**The University Of Texas At San Antonio Police Department
San Antonio, Texas
June 2007**

ABSTRACT

The purpose of this research is to prove that adding police motorcycles to a police department's fleet will be a cost-effective program that will enhance the capabilities of the patrol division. With the current trend of increasing traffic congestion and the increasing cost of fuel, it is important to consider whether or not police motorcycles can play a cost-effective role in today's police fleet. In order to quickly respond in the traffic conditions we face today, law enforcement administrators must rethink the options that their patrol divisions have available. Each year most departments face an increase of calls-for-service, yet their fuel budget remains the same. Traffic congestion makes it close to impossible to traverse roadways especially during peak traffic periods. A motorcycle can shorten the response time and do so in a more cost-effective manner.

The information in this research was acquired from written, personal and telephone surveys. However, additional material was obtained from a combination of resources such as: periodicals, books, Internet sites, professional journals, and articles. The data collected revealed what was expected. However, there were a few surprises. For instance, police motorcycles can respond more quickly than a patrol car and in many cases, can access locations not accessible to patrol vehicles. The end result is a quicker response time (which is good for the community) at a lower fuel cost (which is good for the department). Law enforcement administrators must keep an open mind and consider every option available in order to reduce costs, combat crime, enforce traffic and expand their department's capabilities. Negative personal beliefs regarding

motorcycles should be placed aside for the good of the department and the community it serves.

TABLE OF CONTENTS

	Page
Abstract	
Introduction.	1
Review of Literature	3
Methodology	8
Findings	9
Discussions/Conclusions	16
References	20

INTRODUCTION

Each year it is not surprising to note that highways and city roads experience a marked increase in vehicle traffic. Roads once used solely by local residents have become popular shortcuts for non-residential traffic, turning once quiet neighborhoods into busy thoroughfares. Vehicle operators desperate to shave a couple of minutes off their daily commute seek alternative routes to the moving parking lots, better known as interstate highways, that were designed to expedite traffic from one point to another.

Major or even minor accident's on a busy highway at peak traffic periods can create hundreds, even thousands of individual emergencies consisting primarily of aggravated drivers, all with specific destinations and time schedules to keep. Areas with high concentrations of vehicle traffic increase the risk of traffic accidents, which, in turn, require an increased demand for police services. Police departments are not immune to traffic congestion and the hazards they produce. Response times are increased and in some cases, it is impossible to respond in a timely manner. Due to the ever-increasing problems related to traffic congestion and rising fuel costs, motorcycles in the police fleet could very well be the solution to many law enforcement administrators' problems. Motorcycle patrols, like bicycle patrols, have the capability to maneuver where patrols vehicles cannot. However, bicycle patrols have a limited range and cannot respond as quickly as a motor officer. Depending on the distance traveled, motor officers won't be tired when they arrive at the scene as compared to bicycle officers.

The purpose of this research is to demonstrate that adding police motorcycles to a police department's fleet will expand the capabilities of the patrol division and be cost

effective. In addition, the design of the motorcycle provides many advantages to that of a police automobile patrol, especially when it comes to speed and maneuverability. Motorcycles cost half the price of patrol vehicles and get over twice the fuel mileage thus providing a huge cost savings.

The method of inquiry will include material obtained from a combination of resources such as: periodicals, books, Internet sites, professional journals, articles, personal interviews and surveys. Information will be obtained from law enforcement agencies that do and do not have motorcycles in their police fleet. It is important to evaluate why some agencies do while others do not employ motorcycles in their fleet.

It is anticipated that this in-depth research will prove that the vast majority of law enforcement agencies could justify adding motorcycles to their vehicle fleet. The versatility of the motorcycle will reduce response times, transport officers where automobiles can't go, provide greater visibility and reduce costs associated with maintaining a patrol fleet such as the initial purchase price of motorcycles and the fuel savings they offer. It is also understood that some smaller law enforcement agencies may not benefit from motorcycle patrols if there are only one or two patrols on the street at a time. The motorcycles inability to carry large amounts of equipment or to transport prisoners is one of its disadvantages.

It is the author's intention to show that motorcycles can be a valuable resource for police administrators. At one time virtually all police agencies incorporated motorcycles in their police fleet. Each year there are new advancements in technology increasing the efficiency of the police automobile while motorcycle patrols slowly vanished from the police fleet. However, there has been a shift in favor of the

motorcycle in the past couple of years as police administrators develop ways to increase productivity while at the same time work with the same operating budget year after year.

Adding police motorcycles to the fleet is a win-win situation for the police and the community. Some of the benefits associated with police motorcycles include but are not limited to: reduced response times, increased morale and retention, reduced vehicle purchase price, increased resale value, reduced fuel costs, increased public awareness, increased traffic enforcement and associated revenue, and increased approachability with the community.

Of all of the benefits listed, quicker response times are the greatest benefit since it could ultimately be the deciding factor in life and death situations. The second greatest benefit is the cost savings, which allows administrators the option to transfer resources towards other neglected projects with the money previously dedicated to the police fleet.

REVIEW OF LITERATURE

Previous research and this paper have some similarities however, what was true many years ago is not necessarily the case today. A study conducted by Stang (1989) examines the question of how motorcycles will be used in mid-sized California police agencies by the year 2000. The study identified five key trends for analysis, which included traffic congestion affecting the response of emergency vehicles, population growth, demand for safe transportation, police departments' inability to recruit qualified candidates, and the cost of law enforcement.

In 1984, M. Waffle conducted a survey to determine the risk factors associated with the use of the motorcycle as an enforcement vehicle. The author also conducted a

survey in order to obtain a more realistic picture than what existed 22 years ago. The author's assumptions were correct in that there were some differences however; the author was also somewhat surprised to discover how much the two surveys paralleled each other in many areas.

Both surveys revealed that police motorcycles are relatively low mileage vehicles. The surveys also showed that police motorcycles provided a cost savings and provided tremendous mobility not available to patrol cars. Depending on the geographical location of the police agency, some departments can use their motorcycles year round while others are limited to the summer months only. It was also noted that geographical limits were primarily limited by the officers desire to ride in certain weather conditions.

The author was surprised to discover that the 1984 survey did not target questions specific to training issues. Today's police agencies can ill afford to establish policies and procedures without regards to training. It would be a liability nightmare for a law enforcement agency to utilize police motorcycles without providing some form of training. But believe it or not, there are agencies out there that do just that.

There are a number of surveys and/or studies that were conducted in the past but none were as detailed as the Hurt Study (1981). This study conducted by the Traffic Safety Center of the University of Southern California studied thousands of civilian motorcycle accidents that occurred in Los Angeles. There were 53 special observations, which relate to accident and injury causation and characteristics of the motorcycle accidents studied. Some of the special observations noted were: that approximately three-fourths of these motorcycle accidents involved collision with

another vehicle, which was most usually a passenger automobile. Approximately one-fourth of these motorcycle accidents were single vehicle accidents involving the motorcycle colliding with the roadway or some fixed object in the environment. In the multiple vehicle accidents, the driver of the other vehicle violated the motorcycle right-of-way and caused the accident in two-thirds of those accidents.

The failure of motorists to detect and recognize motorcycles in traffic is the predominating cause of motorcycle accidents. The driver of the other vehicle involved in collision with the motorcycle did not see the motorcycle before the collision, or did not see the motorcycle until too late to avoid the collision. The motorcycle riders involved in accidents are essentially without training; 92% were self-taught or learned from family or friends. Motorcycle rider training experience reduces accident involvement and is related to reduced injuries in the event of accidents. Motorcycle riders in these accidents showed significant collision avoidance problems. Most riders would over brake and skid the rear wheel, and under brake the front wheel, greatly reducing collision avoidance deceleration. The ability to counter steer and swerve was essentially absent.

This study clearly showed that public awareness and training were the principle causes for the vast majority of motorcycle accidents in Los Angeles. The Motorcycle Safety Foundation (MSF) offers a 2-day Basic Rider Course and a one-half day Experienced Rider Course, which, upon completion, qualified the student for insurance premium, discounts.

For over the past 16 years, the Northwestern University Center for Public Safety has worked jointly with the Harley Davidson Police and Fleet Sales Division to become

the premier training entity for police motorcycle training in the United States. There are two courses offered; a two-week “operator” course designed to teach the motorcycle operator very slow-speed maneuvers as well as traffic negotiation at medium to high-speed. The second course is an intense three-week “instructor” course. Completion of the instructor course will allow graduates to teach the operators course and certify members of their own department.

Refresher or recertification training varied from department to department. Depending on the department’s geographical location, refresher/recertification training was conducted quarterly, semi-annually or annually. Agencies located in the southern states that have the capability to ride year-round conducted training much more frequently than agencies located in the northern states that could only ride approximately six months out of the year.

An on-going police motorcycle survey (Kopang, 2006) published on the Motorcops.com web page is similar to this author’s survey. However, the results of this survey have not been compiled and will be available for a small fee once they are compiled. Many of the questions in the Kopang survey are similar to those asked in the Stang (1989) and Wafle (1984) survey. However, the Kopang survey appears to be much more in-depth, asking questions across a broad spectrum of subjects and it is anticipated to provide a wealth of information on current issues involving motorcyclists.

Motorcycles were first introduced to police operations in 1908 when the Harley Davidson Motor Company delivered its first police motorcycle to the Milwaukee Police Department (Bristow & Gourley, 1966). This was just 5 years after they began producing motorcycles. This particular motorcycle had a top speed of 35 miles per

hour, which, by today's standards is no match for the sub-200 miles per hour top speeds of many motorcycles on the street today. In 1908, the 35-mile per hour top speed of the police motorcycle was in excess of most passenger vehicles and thus was very effective in traffic management.

One must also remember that most roads at that time were little more than cow paths or dirt roads. This would challenge even today's highly sophisticated and well designed motorcycles as it would not be possible for them to reach the top speeds they currently enjoy today. In any case, the design of today's motorcycles would far out perform motorcycles of the past. Advancements in technology involving suspension and braking systems on today's motorcycles provides a much safer motorcycle which greatly contributes to lower rates of injuries and fatalities.

As the popularity of the motorcycle grew, so did its appeal to police agencies across the nation. By 1940 the Harley Davidson Company was delivering 1,300 motorcycles per year to police departments, and by 1950 this rate had increased to 1,800 per year. Many of today's top motorcycle manufacturers would consider a motorcycle that sold close to 2,000 units per year a success story. Today, Harley Davidson remains the top seller of police motorcycles in the United States, which is due largely to short term leases (Woodbury, 2002).

As police motorcycles became more popular, mounted patrols (horses) became less popular. This was the era marked by the replacement of the horse in the American culture. With the advent of technology came the practical elimination of the horse in police patrol. Mounted police were used in all of the major American cities; but with the development of the motorcycle and the radio patrol car, horse patrols has almost

disappeared except in some of the major cities such as New York, New Orleans and Los Angeles. The expense of keeping horses and training men to ride them other than for specialized patrols and ceremonies was too great considering their limited uses. It has been found that a motorcycle in the hands of a skilled rider can accomplish as much as a horse on crowd-control situations (Bristow & Gourley, 1966).

Motorcycle patrol has many of the same advantages as automobile patrol, especially in speed and maneuverability. Motorcycles have greater access than automobiles to some areas and are better suited to heavy traffic, narrow alleys and rugged terrain (Hess & Wroblewski, 1997). As much as the author likes motorcycles, he would be the first to admit that there are certain risks associated with police motorcycles.

METHODOLOGY

This purpose of this paper is to assist law enforcement administrators in determining if it is feasible to add police motorcycles to their department's fleet in order to enhance the capabilities of the patrol division as well as proving to be cost effective. In addition, the design of the motorcycle provides many advantages to that of a police automobile patrol, especially when it comes to speed and maneuverability. It will also show that police motorcycles may not be practical in smaller police departments where there may be only one or two patrol officer's working the streets.

It is hypothesized that the research will demonstrate a definite advantage to having motorcycles in the police fleet as they will expand the department's capabilities, reduce costs associated with vehicles and fuel, as well as increase morale and retention. The primary method of inquiry was written, personal and telephone surveys.

However, additional material was obtained from a combination of resources such as: periodicals, books, Internet sites, professional journals, and articles. Information was obtained from law enforcement agencies that do and do not have motorcycles in their police fleet. The author believed it was just as important to evaluate why some agencies do while others do not employ motorcycles in their fleet.

Surveys were designed to determine if the law enforcement agency did or did not utilize motorcycles in their police fleet. On the one hand, the author had a greater interest in the departments that had motorcycles in their fleet in order to determine what brand/model of motorcycle they had as well as answer specific questions concerning training and for what purpose the motorcycles were used. On the other hand, the author was also interested in the main reason why police agencies did not include motorcycles in their vehicle fleet. Most of the reasons why motorcycles were not used was anticipated and there were no real surprises noted.

FINDINGS

The information obtained from the survey results provided the author with specifics such as: what type of motorcycle was the most popular, how many the department had, what type of training motor officers received, the average age of the motor officer, and the number of minor and major accidents per year. The survey also gathered information such as what the principle reason was for the law enforcement agency not having motorcycles and whether the idea to purchase them was discussed recently.

The survey consisted of 18 questions. Questions 2-15 were applicable to law enforcement agencies that have motorcycles in their fleet. The final three questions

pertained to law enforcement agencies that did not utilize motorcycles. The author achieved 100 percent participation because all surveys were either hand delivered and completed on the spot or the author completed the survey through telephone interviews with multiple agencies nationwide. The first question of the survey determined whether or not the department utilized motorcycles in their department. Of the 41 departments surveyed, 46% had motorcycles while the remaining 54% did not or were currently researching the possibility.

Question #2 determined which brand of motorcycle the department used. A number of departments had more than one model so the numbers reflected combine multiple departments for each model. Harley Davidson was by far the most popular motorcycle. Seventy-five percent of the departments surveyed reported having them in their fleet. BMW and Kawasaki were tied for second place with 22%, and Honda came in third with 6%.

Question #3 determined how many motorcycles were in the fleet with numbers ranging from one to over twenty-five. Fifty-five percent of the departments reported having 15 motorcycles or less while forty-five percent had sixteen or more. The total number of motorcycles in a department's fleet were based on the size of the patrol division and the resources available. Another factor was the geographical location as the larger police motorcycle fleets were found to be in the Southern regions where the climate is more motorcycle friendly on a rear-round basis.

Question #4 determined what the average age of the operators was with answers split into 5-year increments. The results indicated that forty-five percent of the operators were 31 – 35 years of age twenty percent were 26 – 30 years of age. This clearly

indicates that motorcycle operators either have many years of riding experience prior to their assignment to police motors or, in some cases, officers have to wait a number of years for an opening on the motorcycle squad.

Question #5 determined how long officers are assigned to the motorcycle squad and seventy-five percent are assigned indefinitely while twenty percent were assigned for a minimum of two years.

Question #6 determined what the primary use of the motorcycle was for and one hundred percent stated it was used for patrol purposes. Police departments with 25 or more motorcycles stated that they require their motor officers to participate in non-traffic related activities such as VIP escorts, funeral escorts, and parades.

Question #7 determined if special training was required and ninety-five percent stated yes and one department indicating that they did not receive special training. Question #8 determined how many training hours motorcycle operators received and eighty percent reported that they receive more than 40 hours per year and twenty percent reported 40 hours or less. Training varied from department to department however, all departments concurred that training was critical for the motor officer's safety and to reduce liability for the department. The amount of annual training varied from a minimum of 40 hours up to 120 hours. Some department's purchased motorcycles and allowed "experienced" officers to ride police motorcycles before completing a police motorcycle training course. Smaller departments or departments that do not have their own certified motorcycle instructor must wait for a course to become available. These departments understood the risks involved and placed a

great amount of faith in their officer's motorcycle riding abilities by allowing them to perform police motorcycle operations until a course became available.

Question #9 determined if officers were assigned or volunteered for the motorcycle squad and ninety percent stated they were volunteers while ten percent stated they were assigned.

Question #10 determined if motorcycles were used year round or only during specific months and ninety-five percent stated that they were used year round.

Question #11 applied to departments that didn't use motorcycles year round however, there were no responses to this question.

Question #12 determined what the average number of miles driven monthly and/or annually. The average number of miles driven a month was 1,100 with annual totals of 13,200 miles.

Question #13 determined the average number of accidents each year. Five departments reported no accidents, four reported one accident, three reported two accidents, one reported three accidents and seven reported four accidents.

Question #14 determined how many accidents were considered minor (no personal injury) and how many were considered major. There were a total of twenty minor accidents reported and nine major accidents reported. Since the totals don't match the totals reflected in question #13, it would be safe to assume that some survey participants failed to answer this question.

Question #15 determined if officers were authorized to use their personal motorcycles while on duty and eighty-five percent reported that it was not authorized.

Question #16 determined that for departments without motorcycles, was it believed that the patrol officers would like to have motorcycles in their department. Sixty percent reported yes, fifteen percent reported no and the remaining reporting they were unknown.

Question #17 determined if the use of motorcycle patrols was ever discussed with their Chief or Sheriff and sixty-five percent reported yes, twenty percent reporting no, and the remaining unknown.

Question #18 determined what the main reason a department did not have motorcycles and thirty-five percent reported that motorcycles were considered too dangerous; twenty-nine percent reported the Chief/Sheriff was totally against having them in the fleet, and fifteen percent reported that motorcycles would not be useful in their department.

Any motorcycle can be turned into a police motorcycle in order to meet the needs of your department and community. From the largest of the cruisers to the smallest of scooters, all can play a role in the department's mission based on the creativity of the law enforcement agencies needs. However, no basic street motorcycle can fill the role of a police motorcycle without installing the basic equipment such as emergency lights, sirens, and radio's (unless a hand-held unit is used). Some departments use dirt bikes for off-road patrols that are not intended for traffic stops and thus only require a couple of police decals slapped on the bike and you have one form of a police motorcycle.

There have been a number of police motorcycle brands on the market over the past twenty years but none of the manufacturer's offered more motorcycle for less

money than Kawasaki's K1000P. Rumor has it that Kawasaki will no longer build this motorcycle because it lacked the technology to compete with other police motorcycles on the market today. Although it had a proven performance record in the field, it lacked many of the capabilities its competitors currently offer.

With the demise of the Kawasaki police motorcycle the results of the survey revealed that the most popular brand of motorcycle in use today is the Harley Davidson. Two of the most popular Harley Davidson models are the Road King and the Electra Glide. Both are similar to each other and offer many of the same features such as great wind protection, saddlebags and the capability to handle additional electrical loads to support emergency lights, siren, and police radio. It should be noted that Harley Davidson does not offer police motorcycles fully equipped from the factory. All police associated equipment such as lights and siren is optional and can be installed at an additional cost.

According to the author's survey, the second most popular police motorcycle is the BMW R1150 RT-P and R1100 RT-P. BMW offers quality that is unsurpassed. Since 1923, BMW has designed motorcycles for a variety of purposes. The BMW R1150/1100 RT-P is engineered with cutting-edge technology for outstanding performance and is maintenance friendly and supremely reliable. BMW is the leading worldwide supplier of authority motorcycles. There are 80,000 BMW motorcycles currently in use in 150 countries as well as in 300 markets in the United States. BMW has enhanced the safety and quality of its motorcycles by making improvements such as a state-of-the-art LED lighting technology, a Code 3 siren system, and an ABS braking system that is second to none. However, quality comes with a price. Average

service costs associated with BMW motorcycles are higher than those of Harley Davidson and other police motorcycle dealerships.

BMW is the only manufacturer that offers police motorcycles fully equipped from the factory. The department's graphics and radio system are the only additional options not supplied by the manufacturer. It should be noted that the basic police graphics are supplied with the motorcycle but most agencies have their own specific graphics.

Various models made by the Honda motorcycle company came in third place and appeared to be closing in on BMW. Honda had three models that were popular. The 1800 Goldwing, the ST1100 and ST1300 models. The Goldwing is the largest of the three models and is a model favored by the San Antonio Police Department. The ST1100 and ST1300 models are smaller, lighter and have a higher top end but lack the carrying capability of the Goldwing.

A couple of facts that I found interesting are that police agencies are not only purchasing motorcycles to save on fuel costs; they are also being selective on the motorcycles they purchase for even greater fuel efficiency. For example, The University of Texas at San Antonio Police Department purchased a BMW F650 GS-P, which, according to its manual, can get 75 mpg at 55 mph. The popular Chevrolet Impala police package is rated at 22 mpg. Using the formula below with the current price of \$3.00 per gallon of fuel it's easy to see just the fuel savings when comparing this motorcycle to the popular police automobiles on the market.

BMW: $1,100 \text{ miles} \div 75 \text{ mpg} = 14.6 \text{ gallons} \times \$3.00 = \$43.99 \text{ per month or } \527.88 annually.

CHEVROLET: $1,100 \text{ miles} \div 22 \text{ mpg} = 50 \text{ gallons} \times \$3.00 = \$150.00$ monthly or \$1,800 annually.

The Schertz Police Department, located just Northwest of San Antonio purchased four Kawasaki 650's, that also have high mpg ratings. This shows that not all police departments that desire motorcycles are looking for the biggest and fastest motorcycle, they are also being more practical about which model they choose based on their needs for even greater savings.

Another interesting fact is that some agencies that did not have police motorcycles eventually purchased them after they observed the benefits they provided from a department that bordered their jurisdiction. The research revealed that once one agency added motorcycles to their fleet, it wasn't uncommon for an adjoining agency to follow.

The popularity of the type of motorcycle was based on the rider. Age was a big factor in the type of bike chosen due to the riding position it offered. Younger riders liked the speed and forward riding position offered by the BMW and Honda brands while older officers preferred the laid back style of the Harley Davidson. Older officers sacrificed speed and greater agility for a more comfortable seat claiming that it was easier to sit in the Harley's saddle for an 8-hour shift.

DISCUSSION/CONCLUSIONS

The purpose of this research is to prove that adding police motorcycles to a police department's fleet will enhance the capabilities of the patrol division as well as prove to be cost effective. In addition, the design of the motorcycle provides many

advantages to that of a police patrol automobile, especially when it comes to speed and maneuverability. Having the ability to decrease response times, while providing a cost savings, is a win-win situation for the police agency and the community they serve. Protecting life and property will always be one of the main missions of any police agency and administrators must take advantage of any technology that is at their disposal.

There are two things that are certain in the world of patrol. First, traffic congestion will always be a problem. The number of licensed (and unlicensed) motor vehicle operators increases each and every year. Second, the construction of new and improved roadways will never catch up to the demand created by the ever-increasing numbers of vehicle operators on the roads today. Roads once used solely by local residents have become popular shortcuts for non-residential traffic turning once quiet neighborhoods into busy thoroughfares. Vehicle operators desperate to shave a couple of minutes off their daily commute seek alternative routes to the moving parking lots, better known as Interstate highways, that were designed to expedite traffic from one point to another.

The author hypothesizes that motorcycles can be a valuable asset to most any law enforcement agency. Use of the motorcycle will reduce response times, transport officers to places automobiles can't go, provide greater visibility and reduce costs normally associated with non-motorcycle vehicle fleets. The author also hypothesizes that motorcycles are inherently more dangerous than patrol cars however, with proper training, risks can be greatly reduced. Police administrators need to recognize these

risks and take the appropriate measures to reduce these risks and the liability associated for failing to do so.

Can police motorcycles become an integral part of a law enforcement agencies fleet as well as expand their patrol options and department's capabilities? You bet they can. A vehicle that was once considered less and less practical is now becoming more and more attractive to police administrators. Results obtained from the surveys as well as higher sales numbers across the board from the three major police motorcycle companies showed a marked increase in interest from law enforcement agencies throughout the United States.

There is no doubt that the findings of the research do, in fact, support the author's hypothesis that motorcycles are making a come back and taking their rightful place in the world of policing. Even though only forty-seven percent of the departments surveyed had motorcycles, sixty-five percent of the departments surveyed that didn't have motorcycles were in the process of or have already discussed the possibility of adding them to their vehicle fleet.

The only limitations that hindered the study were the failure of some agencies to respond to my emailed surveys. The loss of this potential information is not believed to be detrimental to the overall results of this research. The data already collected provided more than enough information to show a growing trend in the purchasing of police motorcycles. The statistical data from the manufacturing companies alone also prove the increased popularity and interest in their products.

The use of motorcycles in the police fleet is a win-win endeavor. The increased flexibility that they afford law enforcement agencies can't be matched by any other tool

available to law enforcement administrators today. The addition of a single motorcycle can expand department's capabilities like nothing else. Administrators need only to communicate with neighboring or distant law enforcement agencies with existing motorcycle fleets to learn what they are missing.

As more and more vehicles compete for the same roadways each year, the problem of traffic congestion and its related problems such as road rage and vehicle accidents will demand new tactics by the law enforcement agencies supporting these roadways. In addition, many departments are already working with limited budgets. Many departments are cutting back on services due to rising fuel costs that are being paid out of fuel budgets that have not increased for years.

This study is extremely relevant to law enforcement administrators as they will discover an immediate cost savings in the purchase of the motorcycle compared to the purchase price of an automobile. They will also see an immediate decrease in the cost of fuel as well as the additional capabilities that motorcycles offer such as decreased response times and increased traffic enforcement. Law enforcement administrators are not the only ones who will benefit by adding motorcycles to their police fleet; the community they serve will also see the positive aspects. Neighborhoods will be a safer place due to the increased compliance in traffic laws from specialized traffic units working designated problem areas. The quicker response times could mean the difference between life or death and that is one issue that would be difficult to argue.

REFERENCES

- Bristow, A., & Gourley, D. (1966). *Patrol administration*. Springfield: Thomas Books.
- Confehr, C. (2005, April). *Law enforcement agencies hit by gas prices*. Shelbyville Times-Gazette. Retrieved September 26, 2005, from <http://E:\Shelbyville Times-Gazette Story Law enforcement agencies hit by gas prices.htm>
- Folley, V. (1973). *Police patrol techniques and tactics*. Springfield: Thomas Books.
- Government Accountability Office. (2005, September). *Highway congestion*. Retrieved September 21, 2005, from <http://www.gao.gov/cgi-bin/getrpt?GAO-05-943>.
- Hess, K., & Wroblewski, H. (1997). *Police operations: Theory and practice*. St. Paul: West Publishing Company.
- Jahnke, C. (2004, Fall). *The two-wheel woodward dream cruise*. The Mounted Officer, 75(2).
- Kariya, M. (2004, February). Making patrol cars safer: working on two wheels. *Police*, 28, 24-30.
- Kopang, M. (2006, July). *Police motorcycle survey*. Retrieved July 3, 2006, from <http://www.motorcops.com/survey/index.asp>
- Peterson, C. (2002). Thunder works le1 on/off road motorcycle. *Law and Order*, 50(7), 38-40.
- Stang, J. (1989). Development of a law enforcement plan for mid-sized california police. Departments Deploying Motorcycles. National Institute of Justice. Rockville, MD.

- Syverson, J. (2004, Fall). Stopping power: Development of anti-lock brake system (abs) at harley davidson. *The Mounted Officer*, 75 (2).
- Van Dyke, P. (2004, August). Training: police motorcycle operator course. *Law and Order*, 78-80.
- Wafle, M. (19184). Survey: risk factors associated with the use of the motorcycle as an enforcement vehicle. National Institute of Justice. Rockville, MD.
- Woodbury, N. (2002). Bmw's r1100 rt-p motorcycle. *Law and Order*, 50(7), 56-60.