
Cost-effectiveness and officer morale of a personally assigned patrol vehicle program

A personally assigned patrol vehicle program

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A comparative analysis

Sheldon X. Zhang and Theodore D. Benson

Department of Sociology, California State University, San Marcos, California, USA

Introduction

As crime becomes one of the most pressing social problems in contemporary America, more resources are required to support the increasing demands for police services. Significant changes have taken place in law enforcement agencies across the country. Community policing – “the first major reform in a half-century” (Tojanowicz and Bucqueroux, 1990, p. 67), has become the new orthodoxy for cops (Eck and Rosenbaum, 1994). Skolnick and Bayley (1986, pp. 214-20) summarized the primary elements of community policing as police-community reciprocity, area decentralization of police command, reorientation of police patrol, and “civilianization” of the police. These new policies have brought about significant changes in police resource allocations. Police agencies across the country are experimenting with innovative programs to put more officers on the street, including initiating or expanding senior patrols and reserve officers, and hiring civilians to replace sworn officers in positions such as crime labs, finger printing, clerical support and background investigations (Sundeen and Siegel, 1986). The primary motive behind most of these efforts is budgetary, and most changes take place in personnel.

There have been few reports on major changes in resource allocations for police equipment. Without a doubt, patrol vehicles are the most expensive “hardware” in any police operation. Although foot and bike patrols are becoming a common scene in urban law enforcement, the vast majority of police activities are still carried out by motorized patrol. The idea of assigning specific

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patrol vehicles to individual police officers is not new. As early as 1968, the Indianapolis Police Department initiated the Take-Home-Car program, in which sworn officers drove their assigned cars both on and off duty. The program was found to be cost-effective and increase police visibility (Jewell, 1972). In particular, take-home cars were found to have reduced accident-related damages significantly. The Take-Home-Car program was terminated in 1977 as a result of a labor dispute between the police officers and city management. The program was resumed in 1994, and an internal evaluation found it to save money in both repairs and maintenance as compared to traditional pool cars[1].

Many police departments across the nation have tried the individual assignment program and for various reasons abandoned it. The major obstacle often cited is the initial capital outlay required to double or triple the number of automobiles required, depending on the current fleet size. Besides the cost, many city planners are skeptical about benefits of assigning personal vehicles to police officers. A common argument is that in the long run the personally-assigned vehicles turn out to cost about the same to operate as pool cars. Thus, in economic terms, the change may not be worth the effort.

There have been very few published studies on Take-Home-Car programs. Findings from the few available internal evaluations are mixed. For instance, a study conducted by the National Bureau of Standards (NBS) indicated that the costs of the two management plans were about equal if personal patrol cars were used off-duty sparingly; but these personally-assigned vehicles could cost much more than the traditional multi-shift plan if off-duty driving was extensive (Reugg, 1974). Thus, the real cost effectiveness varied according to how much personal (off-duty) driving would occur. The NBS study also suggested that whatever benefits a personal car program was to realize would be offset by the initial capital outlays. The capital cost generally required a threefold increase in vehicles and related equipment as compared to a three-shift-per-car-per-day plan. Furthermore, the NBS study found little evidence to substantiate a large reduction in running costs (i.e., maintenance, repair, and gas) for personal cars, and even went on to suggest that these programs would probably cost substantially more than multi-shift plans. Therefore, a personally-assigned patrol vehicle program could be justified not by cost, but by the value of other benefits.

Another report from the Visalia Police Department (California), however, challenged the findings from the NBS study. The Personalized Patrol Vehicle (PPV) Program in Visalia was deemed a total success after nearly eight years in operation (Skadan, 1988). The PPV Program was found to have brought about a significant reduction in maintenance costs and an increase in vehicle duration. Over the eight-year period, the PPV Program cost 31.34 percent less than the conventional pool car program; factors included in the cost-effectiveness analysis were vehicle purchase, outfitting, maintenance and repairs. Other benefits of the program included increased officer morale, police visibility, flexibility in deployment, and decrease in response time.

In our study, we evaluated the Escondido (California) Police Department's PPV program, which was started in 1982 and has been in operation continuously since[2]. Under this program, patrol cars have been assigned to individual officers as personal equipment. Officers have been personally responsible for all mechanical services and maintenance when needed or scheduled. To prevent potential abuse, the Escondido Police instituted a set of regulations on how the PPV car should be operated. For instance, only officers residing within a ten-mile radius of the city limit could take their cars home. Otherwise the patrol car had to be parked at the police station. Officers had to be in uniform when operating these vehicles, thus reducing potential personal use on days-off. The rationale of the PPV Program was that officers would take better care of the PPV cars when they were personally held accountable for their own equipment, thus increasing the duration of the vehicle and its mechanical reliability.

Research design

We conducted a comparative analysis of the Escondido PPV program to a regular pool car program in the surrounding county. There were two components in this study:

- (1) the measurement of the PPV vehicle maintenance costs compared to that of the traditional pool car management, and
- (2) the comparison of officers' attitudes about their experiences with the two fleet management systems.

As a comparison agency, the San Diego County Sheriff's Department was selected for three main reasons: first, Escondido is surrounded by towns and unincorporated areas policed by the Sheriff's Department that are similar both geographically and demographically. This would ensure similar road and patrol conditions. Second, the Sheriff's Department had computerized vehicle maintenance records somewhat comparable to that of the Escondido Police Department. Third, the size of the Sheriff's fleet was large enough to make easy statistical comparison. Few other neighboring suburban police departments had a fleet comparable to that of the Escondido Police.

The factors affecting transportation costs in a police department are similar to that of any type of fleet activity in an organization (Wynne, 1965). They include:

- (1) capital outlays for the purchase of new vehicles,
- (2) maintenance expense (such as labor for repairs and servicing),
- (3) replacement parts cost, and
- (4) recovery value of the vehicle at the time of disposal or resale.

Our limited resources did not permit us to take all these aspects into a comprehensive evaluation; here we only examined the maintenance costs and officers' experience and attitudes of the two different fleet management systems.

Ideally, a prospective longitudinal experimental design would be needed to measure the maintenance costs of the PPV program with a control group of conventional pool cars. For practical reasons, a retrospective design was used in this study, in which agencies' records from both police agencies were retrieved. Police vehicles in this region are always auctioned off soon after they are retired from service. When this occurs, their identification numbers are recycled into the newly purchased fleet, and their mechanical records are subsequently erased. Because of this, we were unable to construct the entire history of a PPV car or a pool car.

Instead, we utilized a mileage-based cost comparison. All measures (e.g., cost of parts, labor hours, number of shop visits) were averaged against miles driven – such as “miles per labor hour or miles per engine repair.” Since pool cars, which are driven on multi-shifts, will register more miles and shop visits within a short period of time than personally assigned vehicles, a distance-based cost comparison can reduce the confounding factor of difference in the number of years a vehicle has been in service. In other words, we wanted to examine the maintenance costs of cars in both programs driven the same number of miles.

After extensive consultation with fleet management staff and experienced mechanics from both agencies, we decided to compare the following five maintenance cost indicators:

- (1) the average number of miles per mechanic hour spent on maintaining or repairing the vehicle (measured as the total number of miles divided by the total number of mechanic's hours logged for the car),
- (2) the cost of parts per mile (measured as the total number of miles divided by the total parts cost for the vehicle),
- (3) the frequency of preventive maintenance (pm) visits (measured as miles per pm),
- (4) the frequency of non-pm shop visits (measured as miles per non-pm visit),
- (5) the total cost per mile including both parts and labor (measured at the local industry standard of \$55 per mechanic hour).

Additionally, we retrieved records of repair histories of the two vehicle plans in the following major categories:

- (1) miles per body work,
- (2) miles per engine repair,
- (3) miles per chassis repair,
- (4) miles per drive train repair, and
- (5) miles per electrical repair.

Obviously, more breakdowns would lead to more frequent repairs, which might be indicative of a lack of care or abusive driving. This study assumed that mechanics working for both fleet management programs were equally competent.

The Escondido personal cars in our study were all individually assigned for their entire observation period; and by the same criteria, the Sheriff's pool cars had been shared since the day they entered service[3]. After the screening for all eligible vehicles, mechanical records were obtained, which was followed by a process of code matching for the repairs and maintenance work of the two shops.

In our effort to compare officers' experiences with the two patrol car management plans, we selected 40 patrol officers through a systematic random procedure from the two agencies (i.e. 20 from each) for in-depth interviews. The 20 officers from the San Diego Sheriff's Department were selected from a station in San Marcos, a city adjacent to Escondido[4]. The interviews were semi-structured, in which responses were sought on several broad issues regarding officers' experiences with patrol vehicles. Officers' opinions about various aspects of their patrol cars were gathered. These included:

- (1) appraisals of the mechanical conditions of their patrol cars (e.g., reliability and problems),
- (2) perceptions of the impact of patrol vehicles on job performance and effectiveness,
- (3) views on the relation of the vehicles to officers' professional images and morale,
- (4) attitudes toward the fleet management practices of their department.

The interview plan and procedures were approved by both police agencies; and verbal consent was obtained from the officers on the day of their interviews. All selected officers were informed of the purpose of the study. All interviews were taped and transcribed. To our surprise, all of the officers were cooperative and seemed eager to respond to our inquiries. The interviews were conducted while the officers were on duty in their patrol cars.

Analysis and findings

Quantitative findings

A total of 356 pool cars from the San Diego County Sheriff's Department and 96 PPV cars from the Escondido Police Department were found eligible. The pool cars in general were recent models, with a median of three years in service (mean = 3.59). The personally assigned vehicles were older with a median of six years in service (mean = 5.32). This age difference was also reflected in the types of vehicles operated by each agency. Among the personal cars, 46 percent were GM models (nearly all Chevrolets), compared to only 8 percent in the Sheriff's fleet. The rest of the cars in both agencies were Fords (all Crown Victorias). In terms of mileage, the Sheriff's pool cars had more miles on their odometers, averaging 70,096, compared to 60,414 for the Escondido personal vehicles.

As shown in Table I, on average, one mechanic hour served 1,058 miles for the personal cars, compared to 692 miles among the pool vehicles. Thus the

Escondido city mechanics spent significantly less time on the personal cars than their counterparts in the Sheriff's repair shop spent on the pool cars.

Both fleets had similar preventive maintenance; all received on average a visit within every 4,000 miles. Therefore, the differences in their repair histories would not likely result from inadequate preventive maintenance in either program. However, there appeared to be more irregularity in preventive maintenance among the pool cars than the personal vehicles. For example, the standard deviation of miles per preventive maintenance visit among PPV was 1,327.41, compared to 3,463.59 for the pool cars.

Pool cars in general needed far more repairs (non-pm shop visits) than the personal vehicles (one per 1,244 miles compared to one per 3,375 miles for the personally assigned cars). Those non-pm visits did not include any repair work

Indicators	N ^a	Mean	Standard deviation	2-tail significance (p <)
Miles per mechanic hour				
Pool cars	356	692.08	413.49	0.00
PPV cars	96	1,058.71	600.98	
Miles per pm ^b visit				
Pool cars	356	3,908.18	3,463.59	0.60
PPV cars	96	3,788.73	1,327.41	
Miles per non-pm visit				
Pool cars	356	1,244.65	1,327.41	0.00
PPV cars	96	3,375.29	1,867.26	
Parts cost per mile (US\$)				
Pool cars	356	0.07	0.04	0.0
PPV cars	96	0.03	0.02	
Cost per mile including parts and labor (at \$55/mechanic hour)				
Pool cars	356	0.17	0.10	0.00
PPV cars	96	0.10	0.08	
Miles per body work				
Pool cars	252	33,157.43	28,478.31	0.00
PPV cars	89	20,191.04	15,135.20	
Miles per engine repair				
Pool cars	146	56,148.33	35,138.66	0.15
PPV cars	24	64,564.30	24,000.05	
Miles per chassis repair				
Pool cars	236	36,376.56	25,937.49	0.36
PPV cars	65	33,386.48	22,621.66	
Miles per drive train repair				
Pool cars	351	15,048.82	12,503.15	0.00
PPV cars	64	39,466.96	20,887.45	
Miles per electrical repair				
Pool cars	337	7,004.17	5,769.33	0.00
PPV cars	93	14,703.57	10,092.14	

Table I. Comparison of selected indicators of vehicle maintenance history

Notes: ^a N = effective sample size; ^b pm = preventive maintenance

done on the same day when the regular scheduled preventive service took place. Pool cars also cost twice as much in parts (averaging \$0.07 per mile) as the personally assigned cars (averaging \$0.03 per mile). When we calculated the labor at the rate of \$55 per hour (relatively standard in Southern California) and the cost of parts, pool cars turned out to be about 70 percent more expensive to maintain than the personal cars – \$0.17 per mile compared to \$0.10. In short, these indicators revealed a clear pattern that pool cars required more mechanic care and cost for parts than the personally assigned vehicles.

When we examined the major categories of repairs, the findings were somewhat mixed. Pool cars far exceeded the PPV vehicles in the frequency of electrical and drive-train-related repairs. However, both fleets were similar in engine and chassis-related repairs. For body work, the personally assigned cars appeared to need much more frequent repair than the pool cars (one body work per 15,135 miles compared to 28,478). The frequent body work among personal cars was later substantiated through our interviews with the officers. We discovered that the lack of attention afforded to the pool cars' physical appearance may well have contributed to the differences. Conversely, officers with personally assigned cars were more concerned about the physical appearance and integrity of their vehicles.

For further clarification of the differences in repair histories, we conducted stepwise regression analyses to take into consideration the influence of such factors as years in service, vehicle model, and miles driven. Stepwise regression allows successive inclusion of only those independent variables that meet a preset significance criterion (in this case, $p < 0.05$). In other words, we are able to examine the changes in the amount of variance explained (R -squares) by independent variables that are all statistically significant.

PPV cars were again found to have contributed significantly to the number of body work repairs, together with high mileage, older models (i.e., Chevrolets), and long service years. As shown in the successive models in Table II, these four variables were all found to be significant in explaining the number of body work repairs (with a total adjusted R^2 of 0.36). However, only high mileage and long service years were found to have significantly increased the number of chassis repairs (with a total adjusted R^2 of 0.32), not the type of management plan and vehicle models. As for the other three categories of repairs (drive train, electrical system, and engine), a car's placement in a pool in comparison to a personal assignment significantly contributed to the frequency of their repairs. Pool cars, together with high mileage, long service years, and older models, significantly increased the number of engine repairs (with a total adjusted R^2 of 0.15). These four variables were also found to be significant contributors to the number of drive train repairs (with a total adjusted R^2 of 0.37). However, vehicle models did not appear to have a significant role in explaining the number of electrical repairs. Pool cars, mileage, and years in service were found to be significant factors (with a total adjusted R^2 of 0.50).

Model		R^2	Adjusted R^2	Beta	t	Significance ^a
<i>Dependent variable: total number of body work</i>						
1	(Constant)	0.51	0.26		12.61	0.00
	Year			-0.51	-12.58	0.00
2	(Constant)	0.55	0.30		7.89	0.00
	Year			-0.37	-7.90	0.00
	Model			0.25	5.31	0.00
3	(Constant)	0.59	0.35		3.47	0.00
	Year			-0.20	-3.48	0.00
	Model			0.29	6.28	0.00
	Odometer			0.26	5.50	0.00
4	(Constant)	0.60	0.36		2.44	0.02
	Year			-0.14	-2.45	0.02
	Model			0.26	5.38	0.00
	Odometer			0.31	6.10	0.00
	Agency			-0.12	-2.59	0.01
<i>Dependent variable: total number of engine repairs</i>						
1	(Constant)	0.31	0.10		-0.69	0.49
	Odometer			0.31	6.87	0.00
2	(Constant)	0.33	0.11		-2.26	0.02
	Odometer			0.30	6.58	0.00
	Agency			0.12	2.72	0.01
3	(Constant)	0.38	0.14		4.24	0.00
	Odometer			0.13	2.14	0.03
	Agency			0.23	4.51	0.00
	Year			-0.27	-4.25	0.00
4	(Constant)	0.39	0.15		3.06	0.01
	Odometer			0.13	2.23	0.03
	Agency			0.26	4.94	0.00
	Year			0.21	-3.07	0.01
	Model			0.12	2.14	0.02
<i>Dependent variable: total number of chassis repairs</i>						
1	(Constant)	0.53	0.28		-1.81	0.07
	Odometer			0.53	13.21	0.00
2	(Constant)	0.57	0.32		5.16	0.00
	Odometer			0.38	7.90	0.00
	Year			-0.25	-5.16	0.00
<i>Dependent variable: total number of drive train repairs</i>						
1	(Constant)	0.22	0.22		2.77	0.01
	Odometer			0.47	11.21	0.00
2	(Constant)	0.34	0.34		-3.48	0.01
	Odometer			0.43	11.13	0.00
	Agency			0.35	9.20	0.00
3	(Constant)	0.36	0.36		-5.13	0.00
	Odometer			0.38	9.67	0.00
	Agency			0.43	10.03	0.00
	Model			0.17	3.80	0.00

Table II.
Stepwise regression analysis of selected repair indicators

(Continued)

Model		R ²	Adjusted R ²	Beta	t	Significance ^a
4	(Constant)	0.37	0.37		2.46	0.01
	Odometer			0.31	5.99	0.00
	Agency			0.47	10.34	0.00
	Model			0.12	2.53	0.01
	Year			-0.15	-2.48	0.01
<i>Dependent variable: total number of electrical repairs</i>						
1	(Constant)	0.41	0.41		-1.86	0.06
	Odometer			0.64	17.70	0.00
2	(Constant)	0.48	0.47		-6.25	0.00
	Odometer			0.61	17.82	0.00
	Agency			0.26	7.47	0.00
3	(Constant)	0.51	0.50		5.24	0.00
	Odometer			0.46	10.11	0.00
	Agency			0.36	9.28	0.00
	Year			-0.25	-5.25	0.00

Notes: ^a significance for inclusion of independent variables was set at $p < 0.05$

Figures were rounded up

Variable names: Agency = fleet management type (PPV cars = 0, pool cars = 1); Odometer = odometer reading at the time of data collection; Model = vehicle model (Ford = 0, GM = 1); Year = vehicle production year

Table II.

Qualitative findings

We found that the responses from the officers of the two agencies echoed each other in terms of their opinions on personal vehicles versus pool cars. Without exception, all interviewed officers preferred individually assigned vehicles to pool cars. Few officers from either agency were able to find anything positive to say about pool cars, even when repeatedly probed. One Sheriff's deputy said that the only benefit he could think of was "you get to drive different cars." Although a few respondents recognized that an agency could start with fewer pool cars than personal cars, all of them believed that in the long run individually assigned cars will be more cost-effective.

Although the interviews were semi-structured, most officers talked in a consistently comparative manner (i.e., comparing their vehicles to those of the neighboring agency). This was partly because they had been informed of the nature of our study. More importantly, since these two agencies were adjacent to each other; officers of both agencies were familiar with each other agency's fleet management. It soon became clear to us that it was almost impossible for officers of one agency to talk about their vehicles without mentioning those of the other agency. Therefore, it was no surprise to find that even though the majority of the Sheriff's officers had not experienced a PPV program, they nevertheless preferred this type of vehicle assignment. Based on our content analysis, with the help of the Ethnograph[5], we constructed the major categories of patterned responses with respective percentages of officers who voiced the opinion, as shown in Tables III and IV.

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We provide the following narrative to illustrate in more details the officers' attitudes towards the two different fleet management plans. The preference for personally-assigned vehicles was clear and consistent among our respondents.

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Responses	Percentage cited (n = 20)
<i>Benefits of personalized patrol vehicles (PPVs)</i>	
PPVs last longer than pool cars due to better maintenance and care. They have fewer breakdowns, thus resulting in less down time	100
The PPV program clarifies officers' responsibility in maintaining their patrol cars and equipment. Officers frequently check tire pressure, fluids, oils and other equipment (i.e., light bars and sirens). Mechanical problems receive immediate attention	95
Officers are familiar with all their assigned vehicle equipment and are confident in the mechanical condition. Their readiness to patrol is high	85
Officers save a lot of time in each shift without having to check and move around personal equipment	85
PPVs improve police response time because of their high level of readiness and because officers are allowed to commute in them	75
PPVs save government money in the long run	85
There is an incentive to keep PPV cars clean and presentable	75
Individually assigned vehicles are an incentive to keep them clean and presentable	75
Individually assigned vehicles increase officers' morale and enhance their professional image	75
Take-home PPVs increase police visibility	65
The PPV program enhances police performance due to less down time and familiarity with the equipment and its conditions	60
Officers are able to carry extra job-related materials (e.g., code books) in their assigned vehicle	25
The PPV program is a major selling point in recruiting	15
Officers are less likely to abuse their cars, i.e., hot-rodding in pursuit or driving off a loading dock	10
<i>Drawbacks of a PPV program</i>	
The agency needs sufficient funding to start the program	20
The parking lot fills up fast	15
The agency needs a vigilant management to check, remind and even discipline officers who abuse or neglect their vehicles	10
<i>In contrast, drawbacks of pool cars</i>	
No one would be responsible for the maintenance of the vehicle	80
Pool cars will negatively impact job performance	65
Pool cars will look dirty and cause bad public image	45
It wastes time every shift to transfer personal items in pool cars	35
Pool are mostly junk (i.e. in poor mechanical condition)	35
Pool cars reduce readiness to do police work	30
Pool cars decrease morale	10

Table III.
Responses from the
Escondido Police Officers
(PPV)

Mechanical condition. The Escondido police officers clearly indicated greater confidence in their vehicles even though the majority of their vehicles were significantly older than the Sheriff's pool cars. Few Escondido officers complained about any persistent problems with their vehicles. Even when there were recurrent problems, the officers said that they would always see to it that they were fixed right away. Escondido officers relied on themselves to check such vital points as tire pressure, engine oils, and all fluids. They were also responsible for taking their vehicles to the shop for regular services during their days off. This accountability associated with personally-assigned equipment

Response	Percentage cited (n = 20)
<i>Drawbacks of pool cars</i>	
Few officers ever check under the hood (i.e. oil and fluids)	90
Pool cars look dirty and shoddy	90
Pool cars are in frequent need of repairs: they run down fast	80
Officers' job performance is often negatively affected by the poor mechanical conditions of pool cars	75
Pool cars are unreliable as a whole (including the newer models); one cannot predict which car will run well during the shift	70
It is a hassle to load/unload personal equipment and check vehicle emergency equipment to each shift	70
Pool cars have a short life span	55
Pool cars are often driven around the clock and abused	45
Pool cars look dirty and shoddy	45
Pool cars are awkward to use due to variation in vehicle configurations and placement of equipment	20
<i>If I had a personally assigned vehicle</i>	
I would be more responsible for the car's overall maintenance and mechanical condition	100
I would check all vital fluids/oils frequently and make sure that problems are corrected in a timely manner	100
It would last longer and save money	100
It would be cleaner and more presentable, thus improving my professional image and morale	100
It would save time at each shift, and I would respond to calls faster due to increased readiness, confidence in mechanical condition	85
It would improve police visibility and community relationships	75
It would improve my overall job performance since I know my own car better	50
I could carry more job-related materials	35
I would personalize the vehicle according to my needs	10
<i>Potential problems of a PPV program</i>	
It would increase liability for officers who commute in the car and park it at home	30
It would bring about undesirable publicity (i.e. neighbors will all know I am a cop)	25
It would lead to possible abuse by officers (i.e. personal use)	10

Table IV.
Responses from the Sheriff's Deputies (pool cars)

was among the most cited reason given for the better condition of their vehicles. Almost without exception, the Escondido officers said that they routinely checked oil, tire pressure, and fluids, just as they would for their own cars. The biggest advantage of the PPV program was the reliability of the vehicles, which meant there were “no surprises.” It was not uncommon to hear Escondido officers describe their patrol cars as their “second partners” for which they would do anything possible to make sure their “partners” were in good condition. One officer stated:

Since I am the only one responsible for my car, I check things much more often so that I don't have problems out in the field. I can attest to how the PPV program extends the life of a vehicle. I have over 100,000 miles on my car...and it still runs very well. I don't know of any other department with pool cars that can get them to last that long and still work well.

This confidence in the mechanical condition of the personally-assigned cars was even greater among officers who had had prior experience with pool cars. As one Escondido officer described:

I was a L.A. County Sheriff's deputy. It wasn't unusual to see guys hanging around the parking lot waiting for a car to use. It looked like a bunch of cadets waiting for class to start. If for no other reason, PPV is good because we know the car is in good condition and not broken. Nothing wastes time like taking a car out and discovering there is something wrong with it – that the guy before you didn't tell anyone... He didn't want to take the time to fill out the paper work.

Many Escondido officers said that they would feel differently about their cars if they had to share them with others. Some officers said that they would probably not feel obligated to check under the hood or make sure any mechanical problems would get fixed right away. Instead, they would just check the lights and siren (i.e., the emergency equipment), and then count on the shop to keep up the maintenance. Other Escondido officers believed that driving pool cars would significantly increase their stress level and require greater attention to their cars since they would have to check a pool car every shift, not knowing what they had been “stuck with”. This was almost the exact description that the pool car officers gave.

There was little confidence expressed in the mechanical condition of the pool cars based on our interviews with the Sheriff's deputies. Many officers claimed that they “crossed their fingers” and hoped that their cars would last through a shift. As one officer poignantly stated:

The mechanical condition of these (pool) cars is at best poor, and at worst pathetic. The brakes and so forth make the car less safe for pursuit driving. There are situations I will not put myself into – like high speed pursuits – because I can't trust the cars. With a PPV program, I'd keep on top of the car's problems, and I'd be very familiar with its deficiencies. I think many of our deputy-related accidents come from deputies who are pushing the cars beyond their limits because they don't really know the cars. These cars hinder my performance every day. The brakes squeak. It's hard for me to sneak around an industrial area “blacked-out” looking for burglars or graffiti artists if the brakes give me away.

Supporting our statistical findings, the Sheriff's deputies who were interviewed emphasized that pool cars were over-used and in constant need of repair. Minor

problems were often neglected until they became serious, as one officer described:

Shops can't fix what they don't know about. Right now, if the bearings are making noise, the car will probably be driven until the wheel falls off. If it was my car, I'd have it checked right away. If I am personally responsible for a car, I will take better care of it. That car wouldn't be "ridden hard and put away wet" like some old horse.

A common strategy some officers employed was to try to get the same pool car for each shift in order to increase their familiarity with the car's mechanical condition. We also found that there were times when so many pool cars were in the shop that officers had to double up on the remaining vehicles. Most officers realized that the poor mechanical conditions of the pool cars were a direct result not only of inadequate care but also of abusive driving (e.g., hot-rodding, sudden braking, or driving off a loading dock). At the same time, many deputies acknowledged that they were just as guilty of neglecting the pool cars as their partners. As one officer stated:

I get a different car everyday, so I have to rely on the other guy to check things. The problem is, that guy probably thinks that I'll take care of it. A PPV program behooves officers to take care of their own car – that's their "office," and they have to live in it.

Under the pool car management system, patrol vehicles in the San Diego Sheriff's Department were assigned to beats, not officers. All preventive maintenance and repairs were scheduled and coordinated through a central office following certain procedures. Unless a car's problems became quite serious, few officers would want to take the time and undergo the bureaucratic hassle of reporting minor problems. Furthermore, few would want to take the trouble to follow up on problems that were not fixed properly the first time. Therefore, the system appeared to be set up to dissuade well-intended officers from carrying out basic maintenance activities. One officer put it:

I check the emergency equipment each shift, but I usually don't have time to check fluids. Even if they were low, what could I do? It can't go in for service before its number is on the board, and I can't add oil or radiator fluid myself. If this was a PPV car, I'd probably do that at home, or make sure it got into the shop as soon as possible if anything was down.

Impact of patrol vehicles on job performance. We found that the Sheriff's deputies had to endure many more vehicle-related inconveniences than the Escondido officers. Besides frequent mechanical problems, pool car officers had to adjust themselves to the different body designs of the different vehicles. Many officers considered that pool cars hindered their job performance. One Escondido officer described his experience with pool cars in his prior agency:

Most departments have two or three different types of cars in service at the same time. And things like door handles are in different places, the engines perform differently, and so forth. One night I ran across a guy in an alley, and the place was dark and I wanted to bail out to chase him. I couldn't find the damned door handle! I was used to where it was on my old car. Imagine that happening on every shift you work. It's important to be familiar with your equipment, and by driving a PPV car, I have the same car each time and know it like the back of my hand.

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Pool car officers also had to bring their personal equipment and supplies with them to each car, load the car and check the emergency equipment. One pool officer pointed out:

I can't leave my own equipment in a pool car, so it takes me half an hour each shift at least to load my gear in, and again when I take it out. We have actually had deputies suffer back injuries while loading the unloading heavy amounts of gear over a period of time. They try to cram all their equipment in one box to save time. They get hurt.

Since pool cars had to be emptied at the end of each shift, officers thus tried to keep their equipment down to the minimum of one bag. Conversely, the PPV officers were able to carry extra items such as fingerprint kits, powder, print cards and legal code books. In fact PPV officers were able to use their vehicles as mobile offices. As one PPV officer described:

I like being able to whip the right form out of my trunk file, instead of having to call for someone to bring it, or telling a citizen they have to go to the station because I don't have what I need. I don't like having to call someone else for a fingerprint kit, and wait for half an hour with citizens standing there expecting me to do something right now. And that's what would happen if I were driving a pool car.

To accommodate the pool car shuffling during shift change, the San Diego Sheriff's Department had overlapping patrol schedules so that incoming and outgoing officers could get their equipment properly transferred, while the PPV officers were able to start their shift right after briefing. As one Escondido officer stated:

The PPV program improves my performance. First, you're already in your car with all your equipment even if you're just coming or going from work. If an emergency happens, you're already set to go. You don't have to search for your stuff, load your car, and then find out that the car doesn't work. It's less stressful when you come to work, 'cause you're not taking an extra half hour to get you gear into the car and getting the car ready. Unless I come to work early on my own time, it'd take me between 30-45 minutes after briefing to get my car ready. With a PPV car, you go to briefing, and then you're ready to go.

Although many Escondido officers admitted that they would try to do the same police work regardless of the car they drove, they believed that the time wasted in checking and transferring equipment would create additional job strains.

Professional image. Nearly all officers from both agencies considered their patrol cars an extension of their professional image, and believed that a well-maintained ("good looking") police car would present a positive image, imperative to gaining respect from the public. With vehicles assigned individually, the Escondido police officers were always conscious about keeping their cars clean and presentable. It was not solely a matter of maintaining a good appearance, it was more importantly a sign of an officer's pride and adherence to the police culture that emphasized the need for a proper public image. It was not uncommon to find PPV officers who would steam-clean their engines and wax the cars at home. As one officer stated:

If you look under the hood you'll see that this car's engine looks new. That's because I have it steam cleaned every six months. I know all that would be different if I used pool cars. I'd

probably not have much interest in cleaning it up. Why should I? If I take an hour clean it out, even if I do get the same pool car the next day, it'll be filthy again.

Another officer added:

No one likes to be seen in a junky car. I pull people over as suspects when I see them in demolition derby-type cars. I can only guess what the public would think about me if I was in a pool car like that. But I wash and wax this car every two or three weeks myself. Even the chrome sparkles. I think the public notices.

On occasions, when Escondido officers had to use pool cars for a short period of time, they complained that the pool cars often had oil or fluid leaks, smoked, and even smelled bad. Similarly, among the Sheriff's deputies, having a shoddy looking, dirt-covered car, with minor dents and scratches, and missing hub caps, was one of the major sources of complaints. As one officer described:

They'll ding a guy for showing up with dirt on his uniform, or un-shined shoes because it looks unprofessional. But look at these pool cars. They look even more unprofessional. (This car) had blood all over the hood the other day when I got it. I don't even know where it came from. They're not even repairing minor fender-benders. It makes me feel angry.

Most pool car officers were concerned that the public probably also viewed them poorly since their vehicles appeared to portray an image of unprofessionalism and neglect. Many agreed that these pool cars undermined their "command presence" (a police term referring to using a proper appearance to control a situation). Many officers openly acknowledged that they felt embarrassed driving the pool cars around. Some officers likened their vehicles to low-riders driven by "gang-bangers," as one officer described:

When you have pride in something, like a PPV car, that pride tends to improve your performance. You feel good about yourself, and you feel good about your equipment, and your job and morale improves. These pool cars are one of the most serious morale detractors. They are almost a continual source of discussion and complaints among deputies.

Fleet management issues. Most officers understood the expensive capital outlays required to implement a PPV program. Although all preferred personal cars, not all were sure about the cost-effectiveness of a PPV program. Some thought personal cars were bound to be more expensive. Still the majority of the respondents argued that if a car lasts longer, it had to be more cost-effective.

Most Escondido officers were appreciative of the fact that the city continued to fund the PPV program. They felt that the management cared about what they had to deal with on a daily basis. A few officers mentioned that the PPV program had been a major selling point during their recruitment. In fact, they considered their personal patrol vehicles such an important part of their work that they would rather quit the force than have to deal with the hassle of sharing patrol cars with others.

These opinions were reversed in our interviews with the Sheriff's deputies. When pressed to discuss positive aspects of pool cars, few could state any. Even though a few possible problems were cited about the PPV program, such as possible abuse for personal use and liability issues, all deputies clearly desired personal vehicle assignment. In fact, some officers indicated that they were

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willing to go so far as to take a small pay cut to have a PPV car in order to eliminate the problems associated with pool cars.

None of the interviewed deputies said that they had ever been consulted with regard to fleet management issues. They did not think the county fleet management or financial decision makers cared much about the problems of driving pool cars. To them, the management seemed only to care about holding down costs. Without exception, all interviewed deputies thought that in the long run, pool cars would cost more. Although many offered suggestions to improve the current pool car management (by bringing the fleet control closer to the station and by assigning a sergeant specifically to supervise and check on each pool car), they believed that the only solution to most pool car problems was to personally assign cars to individual officers.

Discussion

Our quantitative analysis revealed that the pool cars cost far more than the personally-assigned vehicles to maintain in both parts and mechanic labor. While vehicles under both management plans received equally adequate preventive maintenance, pool cars were significantly more likely to experience breakdowns, thus requiring more frequent shop visits per mile than the personal cars. The most significant differences between the two management plans were in the areas of engine, drive train, and electrical repairs, even when vehicle models, mileage, and years in service were taken into consideration.

Our interviews with officers from both police agencies clearly indicate that pool cars did not receive proper care. Pool car officers acknowledged the lack of obligation to keep up the shared vehicles. With few exceptions, the interviewed pool car deputies admitted that they did not check under the hood as often as they should have.

Our interviews also revealed many unintended benefits of assigning vehicles to individual officers, such as increased morale, faster police response, and enhanced visibility in the community. Although further studies are needed to substantiate these claims and their impact on law enforcement activities, the positive social-psychological benefits to officers of working in a well-maintained car are evident.

While we found overwhelming support in favor of the personal car program among officers, it should be cautioned that this study was not able to consider a number of potentially important factors. Future studies are needed to examine aspects such as initial capital outlay for new vehicles, resale value of retiring cars, gas consumption and commuting mileage (i.e., miles to and from work). But we expect that such evidence will not weaken the conclusion drawn here that personally-assigned vehicle programs are advantageous for improving the working conditions and job performance of police officers.

Notes

1. According to personal communication with Michael Jackson, special project officer, Indianapolis Police Department Planning and Research Office, on April 9, 1997.

2. Escondido is located 35 miles north of San Diego City with a population of 108,635.
3. To achieve "clean" results, this study only examined truly individually assigned patrol cars, thus excluding all auxiliary vehicles assigned to volunteers and management staff. Also excluded from analysis were vehicles with a mixed history, which happens when a car once assigned to an individual officer is later reverted to the pool, or vice versa. Brand new vehicles (i.e., with less than 100 miles recorded) or those with no miles recorded in their repair history were also excluded.
4. Although San Marcos has a population half the size of Escondido, the Sheriff's deputies stationed there were selected for interview primarily because of the nearly identical geographical terrain as well as demographic compositions in both cities based on the 1990 census data.
5. Ethnograph is a computer software designed to assist in content analysis of interview transcripts, such as searching for repeated speech or opinion patterns.

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