AUSTRALIAN INSTITUTE OF CRIMINOLOGY

trends & issues

in crime and criminal justice

No.16

Efficiency and effectiveness in Australian policing

P.N Grabosky

The cost of police services in Australia now exceeds $2,000 million per year. State and territory police departments are among the largest public sector agencies in their respective jurisdictions. Police expenditures have increased significantly over the past decade, both in actual and in constant dollars. As the cost of policing continues to rise, and as Australian governments experience an indefinite, if not permanent, fiscal crisis, Australian police executives will be called upon increasingly to justify their budgetary requests and to demonstrate that their resources are efficiently deployed.

This paper presents an overview of issues relating to the analysis of police performance in Australia. It was written in order to stimulate critical thinking in an area of public policy which tends to be the subject of emotional rather than rational discourse. Inevitably, generalisations made in the pages below will not apply uniformly to all of the police agencies in the Australian federal system.

Duncan Chappell
Director

Introduction

Claims from both sides of politics, and from police themselves, that law enforcement resources are insufficient to cope with demand for police services, have become a familiar refrain. This level of discourse neglects the question of how improvements in administration and management may in themselves lead to increases in effectiveness, thus obviating the need for additional resources. The public, and their elected representatives, remain generally incapable of asking hard questions about efficiencies and priorities in law enforcement.

Public concern over statistics of reported crime is often used to support claims for increased police resources and power. Less immediately apparent both to the public and their elected representatives are two considerations, discussed in more detail below, which bear significantly upon the police role as traditionally conceived. First, a significant proportion of police resources is devoted to tasks quite unrelated to the prevention of crime and the apprehension of offenders. Second, crime is the product of many factors, most of which are beyond the ability of the police to influence.

A hard analytical look at the economics of policing would address a number of issues. Are the products of police services subject to increasing, decreasing, or constant returns to scale? Some analysts suggest that in policing, as in other public services,

December 1988

ISSN 0817-8542
ISBN 0 642 13942 3

Australian Institute
of Criminology
GPO Box 2944
Canberra ACT 2601
Australia

http://www.aic.gov.au

Table 1 **Australia: State police forces Total police budget $1978-79 to 1987-88 (in $ million rounded)**

	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88
Actual Police $	563	662	802	918	1051	1129	1245	1431	1553	1705
Constant Police $	676	728	802	835	862	847	896	973	963	971

(Based on 1980 Consumer Price Index)
(Source: Hudzik 1988)
NOTE: Data pertain to six state police forces only

costs tend to grow in geometric proportion to benefits (Panzarella 1984, 120). An initial increase in funding tends to be targeted at the easiest problem; further funding is devoted to objectives increasingly more difficult to attain. Is there an optimal level of police expenditure, beyond which costs would increasingly exceed benefits (Pyle 1983)? To state the issue in concrete terms, consider that one additional patrol car, fully manned, on a twenty-four hour basis, would cost almost $300,000 per year.[1] Would the population of any state or territory of Australia receive $300,000 worth of additional services by adding one patrol car? Precisely what would they receive?

Central to the discussion which follows are three questions: Just what contribution would an incremental increase in police resources achieve? Can better deployment of existing resources obviate the need for increased resources? Can a modification in police operations reduce crime without increasing costs? The questions are more than idle speculation, for a mere 10 per cent increase in police expenditures Australia-wide would cost taxpayers some $200 million per year.

Concepts

Effectiveness in policing is the extent to which the police department is accomplishing its purpose.

Efficiency reflects the relative unit costs at which the police agency is undertaking its activities.

Whilst the ideal police department is both efficient and effective, the two conditions are by no means inextricably linked. An operation may be effective, but still inefficient; consider a successful criminal investigation, which results in the arrest of the offender, but which could have been achieved in as timely and as thorough a manner with half as many detectives as were in fact employed. Conversely, an activity may be efficient, without being effective. An increase in traffic enforcement activity may be reflected in greater number of tickets written, and a corresponding reduction in the unit cost of issuing a traffic citation. To achieve such an increase necessitates a concentration on relatively minor moving violations, at the expense of drink-driving and reckless driving charges, which entail more time-consuming procedures. The overall objective in question, a reduction of death, injury and property damage, may not be achieved despite significantly increased efficiency in traffic enforcement.

Productivity, on the other hand, refers to the output, or degree of effectiveness, obtained by a police agency for a given amount of resource investment, or input (Hatry 1975). Unfortunately, productivity in policing is easier to conceptualise than to measure, for the ultimate ends of policing often resist quantification. An ideal measure of crime prevention productivity would entail the number of offences prevented by police activity divided by the cost of police crime prevention operations. Because events that have not occurred are exceedingly difficult, if not impossible, to measure, hard indicators of police productivity, at least concerning crime prevention, remain elusive. One can, however, devise systematic estimates of the impact of marginal changes in police operations. Certain research techniques, discussed below, can thus permit some assessment of police productivity.

Cost-benefit analysis addresses whether a particular activity represents a worthwhile use of resources, by comparing the monetary costs of an activity with its monetary consequences. The systematic assessment of costs and benefits is relatively unfamiliar terrain in the criminal justice system. One explanation for this is the difficulty of quantifying both the costs and benefits of a particular activity. As Hudzik (1988) notes, program budgeting methods, which might permit systematic cost analysis, have yet to be implemented fully by Australian police agencies. Quantification of benefits, on the other hand, is complicated by the intangible nature of much crime related phenomena. For example, it should be easy enough to determine the cost of doubling police patrols in a particular area. Much more difficult is the task of estimating the number of crimes prevented by, and determining the incremental gain in feelings of public security which result from increased patrols. Most difficult of all is assigning a monetary value to these outcomes, so that they may be weighed against the costs entailed.

Cost-effectiveness analysis determines how a particular objective can be attained at least cost. It differs from cost-benefit analysis in that cost-effectiveness analysis does not ask whether the activity is worth doing in the first place. Nor does it entail the monetary quantification of the activity's effects. It may well be more economical for police to proceed against nude sunbathers by summons rather than by arrest. The wisdom of proceeding against nude sunbathers at

all is an important question, but one not amenable to cost-effectiveness analysis.

Cost-effectiveness analysis can, however, provide a basis for strategic planning. Assume that a given activity results in 85 per cent of an objective being attained at a cost of $500,000. An additional investment of $250,000 would produce a further 10 per cent of the objective. Thus, 95 per cent of the objective can be attained at a cost of $750,000. Managers must decide whether to invest the additional $250,000 in the given activity, or alternatively, in activities aimed at other objectives.

Those involved in the formulation and implementation of police policy should also be sensitive to the concept of opportunity cost. Briefly stated, opportunity costs are the actions and outcomes foregone when one course of action is selected in preference to another. Resources devoted to the arrest and prosecution of public inebriates or persons engaged in consensual homosexual activity could otherwise be allocated to the arrest and prosecution of domestic violence offenders. Efforts directed at suppressing the supply of cannabis could otherwise target more harmful substances such as heroin. The identification and weighing of opportunity costs are integral to strategic decision making.

Police and Crime

Crimes vary in terms of their vulnerability and accessibility to police operations. Most serious crime, including murder, robbery and rape, are rarely if ever encountered by police on patrol. A great deal of crime occurs in private, beyond the preventive reach of any patrol activity. A significant proportion of sexual assault, for example, is committed in non-public settings by persons known to the victim. Although much police work is grounded in the assumption that the threat of detection and ultimate arrest will deter prospective wrongdoers, many criminals act on impulse, without attempting a rational calculation of the risk of apprehension and the value of ill-gotten gains.

Crime, moreover, results from a variety of other factors, some of which are entirely beyond the ability of police to control. Economic conditions, social and demographic influences, and such environmental considerations as the availability and intensity of street lighting are but some of these.

Moreover, the processes by which police resources impinge upon the incidence of crime are often overlooked. It is not merely the availability of additional police resources, but how these resources are used, which determine the nature and extent of their impact on crime. Overall strategies, management techniques, and resource allocation decisions may facilitate or inhibit the attainment of crime related goals. The assumption of a direct relationship between police personnel strength and reduction in the crime rate is thus a gross oversimplification. Additional resources per se do not necessarily make a difference. Resources may be managed and deployed in such a way that they *might* make a difference and the potential effects of additional resources may be diminished or neutralised by external factors.

Police performance

Because of the multifaceted nature and the inherent limitations of policing in Australia, there neither exists nor can there exist a single measure of police performance. Rather, it is appropriate to select from a variety of measures those which focus upon that specific element of police activity one wishes to evaluate.

Police performance may be conveniently analysed at two stages (Whitaker 1984). The first concerns the processes by which resources are translated into operations—how , precisely, police spend the funds which they have been granted. If, for example, one's crime control strategy is to maximise visible police presence, one must determine what forms of organisation, management tools and procedures are most conducive to getting more patrols on the street. The obvious focus of this analysis is efficiency.

The second stage of performance assessment concerns the impact which police organisation and deployment have on what it is police are seeking to achieve. Can more police patrols and faster response time lead to fewer household burglaries, safer streets and less public fear of crime? The focus here is on effectiveness.

Human Resource Management

Since approximately 90 per cent of contemporary police expenditures relate to personnel, a basic question facing police executives is whether they are getting the most out of the personnel they have. The costs of training and maintaining a sworn police officer are considerable; the extent to which uniformed personnel are underutilised may reveal substantial potential savings. In this respect, the access of senior police to management information systems which provide reliable data on manpower needs and personnel allocation is an important step towards more efficient use of these human resources. A variety of measures reflect the degree to which personnel resources are efficiently deployed.

It has long been observed that a number of duties still performed by some police officers—from typing to courier work to sweeping floors—could as effectively be performed by some civilian personnel, at less cost. Such reliance upon civilian staff would then free trained police officers to preform those duties which they are uniquely qualified to perform. Although Australian police agencies have sought to reallocate extraneous duties to public service personnel,

Table 2 **Australia: State police forces**
Total sworn police officers (in thousands) 1978-79 to 1987-88

	1978-79	*1979-80*	*1980-81*	*1981-82*	*1982-83*	*1983-84*	*1984-85*	*1985-86*	*1986-87*	*1987-88*
Total %	27.1	27.8	28.6	29.1	29.8	30.1	31.3	32.9	33.4	34.5
Annual increase		2.6	2.9	1.7	2.4	1.0	4.0	5.1	1.5	3.3

(**Source**: Hudzik 1988)
NOTE: Data pertain to six state police forces only

these initiatives have met with some resistance from police associations.

Measuring The Impact of Police Operations: Crime Statistics

The argument most often used to justify increases in police resources is the increase in the rate of reported crime. Implicit in this argument is the understanding that an increase in police personnel, or powers, or financial resources will reduce the crime rate to some extent, whether by deterring potential offenders, or by incapacitating those who do offend.

As noted above, there is a variety of social forces, quite independent of police activity, which affect the incidence of crime. The relative influence of policing amidst these other factors is unknown. The police mission, moreover, is extremely diverse. It is thus by no means certain that an increase in police resources will automatically bring about a decrease in crime.

Measurement of police activity should be undertaken with great caution. Statistics are often imprecise and ambiguous. Analysts should be sensitive to what a particular measure is, and is not, revealing. One of the classic pitfalls of police performance analysis is the tendency to use crime statistics to measure effectiveness. It has become increasingly evident that in Australia, as elsewhere, crime statistics are a very imperfect reflection of the true rate of crime. Many factors intervene between the commission of a crime and its transformation into a crime statistic (Black 1980). Not all crimes committed come to the attention of the police. Some, including the more skilfully executed frauds, are never detected. Consensual transactions, involving illicit drugs, tend to come to light as the result of proactive policing. That is, the more police assigned to a particular area, the more offences those police will detect. Statistics which purport to reflect these and other offences which lack aggrieved victims tell us more about police resource allocation than they do about the target criminal activity. Because of the ambiguities inherent in crime statistics, some commentators have called for their publication and interpretation by an independent bureau.

Victims of more conventional forms of crime such as assault and theft may, for a number of reasons, be disinclined to report offences to police. Such reasons may include the victim's perception that the matter was too trivial, that the police could not or would not be of much assistance, or that further pursuit of the matter would entail unnecessary stress and discomfort (Australian Bureau of Statistics 1986, 49-67). A British Home Office study suggests that the more accessible the police, the greater the tendency of a citizen to report an offence. That is, more widespread telephone ownership and greater police manpower lessen the inconvenience of contacting the police and thereby facilitate citizen reporting (Clark and Hough 1984, 2-3). Thus, ironically, an increase in the rate of reported crime can as easily be interpreted as indicative of police effectiveness as it could be regarded as cause for alarm.

Economists use the term 'production function' to describe the relationship of resources to objectives. Conventional wisdom assumes the relationship between police manpower and the crime rate to be negative—that is, an increase in police resources will produce a decrease in the incidence of crime, and decrease in police manpower will result in an increasing crime rate. Whether this proposition is true or not, it is accepted as an act of faith by members of the public and publicly embraced by police themselves.

Less though has been given to the contours of this assumed production function. A perfectly linear relationship would mean that crime will decrease in direct proportion to the increase in police manpower; that is, a 25 per cent increase in police manpower would produce a 25 per cent decrease in crime. Alternatively, the relationship could reflect diminishing returns, where the impact of each additional police officer is less and less, or economies of scale, where the impact is greater and greater.

The nature of this production function, indeed, whether it exists at all, has yet to be accorded systematic research in Australia.

Operations, Research, Evaluation and Expenditure Control

Improvements in efficiency, effectiveness, and productivity of policing do not occur spontaneously, but rather through systematic analysis and the application of modern management principles. These include strategic planning, the setting of priorities and systematic monitoring of operations. This section will review some of the approaches which have been heralded as contributing to police performance.

There are a number of research questions which have the potential of contributing to productivity. Again, it is useful to distinguish between the

two stages specified above—resource utilisation and ultimate impact.

The potential of research for improving police performance is great, but only if that research is designed and conducted properly. A great deal of discourse on policing has an evangelistic quality about it. Police research should be undertaken not to justify strategic choices and resource commitments which have already been made, but rather to inform the process of decision making. Research in the genre of the patrol analyses conducted by the Victoria Police (1980) are illustrative.

Evaluation

Police operations should be subject to rigorous repeated evaluation in order to assess their efficiency and effectiveness. Police should conduct carefully controlled experiments in order to assess the relative efficiency and effectiveness of alternative deployment strategies.

One type of research which might usefully inform resource allocation decisions is marginal utility analysis. This enables executives to identify the effects of incremental changes to resource levels of existing units. It poses the basic questions: What would occur if a given unit were reduced in strength by a specified number of officers? Can staffing levels in function X be reduced without any sacrifice in efficiency or effectiveness? An extensive program of marginal utility analysis would provide managers with a set of optimum allocation levels across an entire department.

One of the more notable examples of this type of research was the Kansas City Preventive Patrol Experiment (Kelling *et al* 1974). This research involved the systematic analysis of fifteen patrol sectors (or 'beats') over the period of one year. Beats were randomly assigned to one of three categories. In five of the beats, the number of marked patrol cars was trebled. In another five beats, preventive patrol was eliminated entirely, with police presence occurring only in response to calls for service. In the remaining five beats, normal patrol levels were maintained. The experimental treatments had no apparent effect on the incidence of crime (as measured by surveys as well as official crime reports). Nor were there any significant differences in citizens' reported fear of crime or attitudes towards police.

By contrast, a subsequent evaluation of foot patrols introduced in another jurisdiction revealed a reduction in citizens' fear of crime, but no apparent impact on the actual incidence of crime (Police Foundation 1981).

Another example of operations analysis involved a survey of detective and investigation practices in many different jurisdictions in the United States. It found that most important factor determining whether a case will be solved is the information provided by the victim or a witness to the police officer first responding to the call for service. Most detectives' time was spent on cases unlikely to be solved and detectives accounted for only a small proportion of arrests. In those cases which were solved, most detectives' time was spent on post-arrest investigation (Greenwood *et al* 1975). Work study analyses of this kind can distinguish between fruitless activities and those with actual productive payoff.

The traditional disinclination of police to make arrests in cases of domestic assault was based upon the assumption that violence between spouses was essentially a private matter, as opposed to 'real crime', and that police intervention would accomplish little. It is also regarded as potentially dangerous for the police officer. But analyses have shown that police intervention can have a deterrent effect on domestic assault. The Minneapolis Police Department conducted an experiment which randomly assigned one of three intervention strategies to cases of common assault by one spouse against another. The strategies included (1) arrest; (2) an order to the suspect to leave the premises for eight hours; and (3) advice, which included informal mediation in some cases. Arrested suspects were significantly less likely to engage in subsequent acts of violence than those assigned the other intervention strategies (Sherman and Berk 1984).

It has long been assumed that the sooner police arrive at the scene of a reported crime, the more likely they are to apprehend the offender. Response time, therefore, has been regarded by some as indicative of police effectiveness. Research, however, suggests that other factors may confound what has become received wisdom. Not all crimes are susceptible to the impact of a timely police response. Many are not discovered until some time after their occurrence, when the suspect has already left the scene. Moreover, not all victims notify the police immediately when they become aware that a crime has been committed. Thus, the potential impact of police response time is largely dependent upon the timeliness of victim reporting. Only in a small proportion of calls for service will improved response time further law enforcement goals (Spelman and Brown 1981).

Research findings from overseas are not necessarily generalisable to the Australian setting. But the existence of rigorously designed and well executed studies which suggest that some of the conventional assumptions underlying very expensive law enforcement strategies may well be false certainly invites closer scrutiny of Australian practices. Conversely, those studies which identify successful innovations in policing do not necessarily guarantee that such innovations will succeed if and when they are introduced in Australia. But they do merit the attention of police executives.

Conclusion

Australians can no longer afford the luxury of being able to base public spending on faith alone. No public sector agency should be able to command an increase in resources unless it can demonstrate that its current allocation is being used efficiently, and that its resources are targeted at specific, measurable objectives in a logical manner. 'Professional judgment' alone is no longer an acceptable justification for the expenditure of millions of dollars. The public and their elected representatives are entitled to know just what these millions of dollars may be expected to purchase. Police must now demonstrate that the resources and authority provided to them are used productively.

The keys to efficiency in policing are improved management training, access to more timely cost and expenditure information, continuing decentralisation of police administration, and the requirement that any request for additional powers or resources be accompanied by detailed and through justification. Throwing new money at old problems may be politically expedient, but it is unlikely to result in a cost effective contribution to public safety. Simple increases in resources are no guarantee of improved performance. The indiscriminate investment of additional resources in traditional strategies, themselves never subject to critical scrutiny, can only be recipe for waste. More imaginative use of existing resources, based on systematic operations analysis, and experimentation with new organisational arrangements and new operating procedures may be a more effective alternative to increased investment in conventional practices. It is essential for police executives to determine how resources are transformed into police activities, and how these activities impact on their targets. The basic questions are (1) What strategies do work? And (2) At what price? Research and experimentation with new approaches to manpower allocation, new models of organisation, and new technologies can provide at least some answers.

Police should be no less accountable than any other public sector agency. Law enforcement executives, public officials and members of the public in general should learn to ask the right questions regarding police resources and their allocation. The expenditure of hundreds of millions of dollars on law enforcement should be grounded in systematic analysis, not in habit or reflex.

References and Further Reading

Adams, Phillip (1984) 'Our Police Have Better Things to Do' *The Bulletin*, 13 March, 43.

Anderson, James A. (1984) 'On Measuring Productivity Improvement' *Journal of Police Science and Administration* 12, no.4: 373-78.

Australian Bureau of Statistics (1986) *Victims of Crime, Australia 1983*, Australian Bureau of Statistics, Canberra.

Barbour, George P.Jr. (1980) 'Law Enforcement' in George J. Washnis (ed) *Productivity Improvement Handbook for State and Local Government.* John Wiley and Sons, New York. pp. 927-70.

Black, Donald (1980) *The Manners and Customs of the Police*. Academic Press, New York.

Burrows, John and Roger Tarling (1987) 'The Investigation of Crime in England and Wales' *British Journal of Criminology 27, no.3: 229-51.*

Clarke, R. and M.Hough (1984) *Crime and Police Effectiveness.* Home Office Research Study No. 79. HMSO, London.

Committee of Inquiry, Victoria Police Force (1985), *Final Report.* Ministry of Police and Emergency Services, Melbourne.

Cook, Thomas J., Ronald Johnson, Ellen Fried, John Gross, Mary Wagner, and James Eisenstein (1982) *Basic Issues in Court Performance*. National Institute of Justice, Washington D.C.

Eck, John E. And William Spelman (1987) *Problem Solving: Problem Oriented Policing in Newport News.* National Institute of Justice, Washington, D.C.

Great Britain, House of Commons, (1986) *Forty-Fourth Report from the Committee of Public Accounts.* HMSO, London.

Greenwood, Peter W. et al (1975). *The Criminal Investigation Process.* The RAND Corporation, Santa Monica.

Hatry, Harry P. (1975) 'Wrestling with Police Crime Control Productivity Measurement' in Joan L. Wolfe and John F. Heaphy (eds) *Readings on Productivity in Policing.* Police Foundation, Washington, D.C.

Hatry, Harry P., Louis Blair, Donald M. Fisk, John Greiner, John Hall and Philip Schaeman (1977) *How Effective are Your Community Services?* The Urban Institute and the International City Management Association, Washington, D.C.

Hudzik, John K. (1988) *Managing Police Budgets in Australia.* Australian Institute of Criminology, Canberra.

Kelling, George L., Tony Pate, Duane Dickerman and Charles Brown (1974) *The Kansas City Preventive Patrol Experiment: A Technical Report*. Police Foundation, Washington, D.C.

Marx, Gary (1978) 'Alternative Measures of Police Performance', pp. 15-32 in Richard C. Larson (ed) *Police Accountability*. Lexington Books, Lexington, Mass.

New South Wales Parliament, Public Accounts Committee (1986) *Follow-up Report on Overtime, Sick Leave and Associated Issues in the New South Wales Police Force* (Report Number 28). Government Printer, Sydney.

Police Foundation (1981) *The Newark Foot Parol Experiment.* Police Foundation, Washington, D.C.

Pyle, David J. (1983) *The Economics of Crime and Law Enforcement.* St Martin's Press, New York.

Sherman, Lawrence W. And Richard A. Berk (1984)' The Specific Deterrents Effects of Arrest for Domestic Assault' *American Sociological Review* 49, 261-72.

Spelman, William and Dale K. Brown (1981) *Calling the Police: Citizens Reporting of Serious Crime.* Police Executive Research Forum, Washington, D.C.

Victoria Police (1980) *Police Patrols in Victoria: The Prahran Patrol Evaluation.* Victoria Police, Melbourne.

Weatheritt, Molly (1986) *Innovations in Policing.* Croom Helm, London.

Whitaker, Gordon P. (Ed) (1986) *Understanding Police Agency Performance*. National Institute of Justice, Washington, D.C.

Notes

1. This estimate is based on the following assumptions:

- continuous patrol by two officers;
- a total of ten officers is required in order that two be deployed on a continuous basis;
- salary of $26,000 per year per officer;
- 200,000 vehicle km driven per year;
- 10 cents per km vehicle operating costs.

N.B. No allowance made for:

- Recruitment, training, or administrative support;
- vehicle purchase cost.

Inquiries about the Trends and Issues series should be forwarded to:
The Director
Australian Institute of Criminology
GPO Box 2944
Canberra ACT 2601 Australia