

The Cost of First Response Policing

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inside

What is a first response police service?	2
Data sources and analytical methods	2
Cost data	2
Limitations of cost estimates	3
Time data	4
The cost of calls for service	4
Calculating average call costs	4
Calculating aggregate costs	6
Application of the findings	7
Relevance to problem-oriented policing	7
Different response strategies	8
Alternative service-delivery arrangements	8
Workload planning and staff allocation	9
Public education	9
Making the best of the data	9
Conclusion	9
Some key findings	10
References	11
Acknowledgments	11

Introduction

Police organisations, like most other publicly funded bodies, are under growing pressure to do more with less as governments search for ways of containing expenditure and obtaining better ‘value for money’. In this increasingly cost-conscious environment, it is very important that police managers, policy makers and the general public have a clear picture of what it costs to provide various kinds of policing services. As one commentator has observed, ‘There can be no realistic debate about policing priorities or new strategies without a clear understanding of their cost implications’ (Doob 1993).

The focus of this paper is on the cost of sending a police car to deal with a call for service — that is, the cost of delivering ‘first response’ police services. While other police activities such as patrols and investigating offences use substantial resources, responding to calls for service — the most visible aspect of police service-delivery — places the largest demand on police time.

The data presented in this paper were collected as part of the Beenleigh Calls for Service Project, a joint initiative of the Criminal Justice Commission (CJC) and the Queensland Police Service (QPS) which focused on reducing repeat calls for service in the Beenleigh Division (see CJC, in press). The data from this study are used to answer the following questions:

- What is the average cost per minute of police time?
- What is the average cost involved in responding to a call for service?
- To what extent and in what ways do costs vary by incident type and location?
- How can this information be used to assist in problem-oriented policing and the better management of police resources?

¹ This paper has been prepared as part of the CJC’s statutory responsibility under the *Criminal Justice Act 1989* to monitor the performance of the Police Service to ensure that the most appropriate policing methods are being used (s. 23(g)) and to monitor and report on ‘the suitability, sufficiency and use of law enforcement resources’ (s. 23(c)).

What is a first response police service?

The standard method of police service-delivery is for a patrol unit (usually a car with two officers) to patrol an assigned area until required to respond to calls from that area. As the volume of calls for service has grown over the past two decades, patrol units in the busier areas have often been kept busy responding to one call after another, with little time for routine patrolling.

When a call is received from the public (such as a '000' emergency call or a call to a local police station), the information is recorded by the police communications centre and radioed to an available patrol unit for action. For potentially dangerous incidents, such as armed robberies, backup units are normally also dispatched.

Upon receipt of the assignment, the patrol unit acknowledges the time of the call, drives to the assigned location, interviews the informant (if one can be found), conducts a preliminary investigation (if a crime has occurred) and completes any necessary paperwork. The unit notifies the dispatcher of the time of its arrival at the scene and again at the time of its departure, at which time the unit becomes available for a new assignment.

When a unit resumes duty, there will often be outstanding administrative or investigative work to complete. This is usually done later and can involve a considerable commitment of time in addition to that spent servicing the call.

Calls for service do not occur at regular and predictable intervals, and the availability of patrol units may vary greatly during a shift. Therefore, not all calls are responded to in the same way. In most parts of Queensland, a car is sent to virtually every call on a first-come first-served basis, but some responses may be deferred for up to 24 hours if more urgent calls are received, such as those involving injury or threat to life (in the QPS, these are referred to as Priority Code 1 and 2 calls).

Until recently, police communications centres in Queensland used manual job cards to record dispatch details. Most centres now have computerised data programs which allow better management of call and dispatch information. The two systems in use in Queensland are the ESCORT² system, which is a

relatively large mainframe computer-assisted dispatch system used primarily in the two metropolitan regions, and the IMS³, a localised system in use in several of the larger centres outside of Brisbane (such as Beenleigh).

Data sources and analytical methods

The cost estimates presented in this study were obtained by calculating:

- (i) the cost per minute of police time; and
- (ii) the amount of time spent by police attending calls for service in Beenleigh Division, broken down by call type and call location.

Cost data

We estimated the full per-minute cost of providing first response policing services by using a methodology based on the 'Cost of a Constable' model developed by Shapland et al. (1996, p. 24). Our model was constructed using the most recent information available for direct and indirect labour costs, operating costs and capital costs for the Beenleigh Police Division. It is likely that some other stations in Queensland — especially smaller divisions in the more remote areas — have a different cost profile. However, it is likely that Beenleigh is reasonably typical of the larger divisions.

Figure 1 illustrates the data elements included in the model and the estimated average cost per minute of deploying officers, on their own or in pairs, on foot, or in a patrol car. The cost of a single officer was estimated to be 82 cents per minute, consisting of approximately 63 cents for labour costs (78%) and 19 cents for operating and capital costs (22%). The running costs per vehicle were estimated to be 3 cents per minute (for full details see CJC, in press).

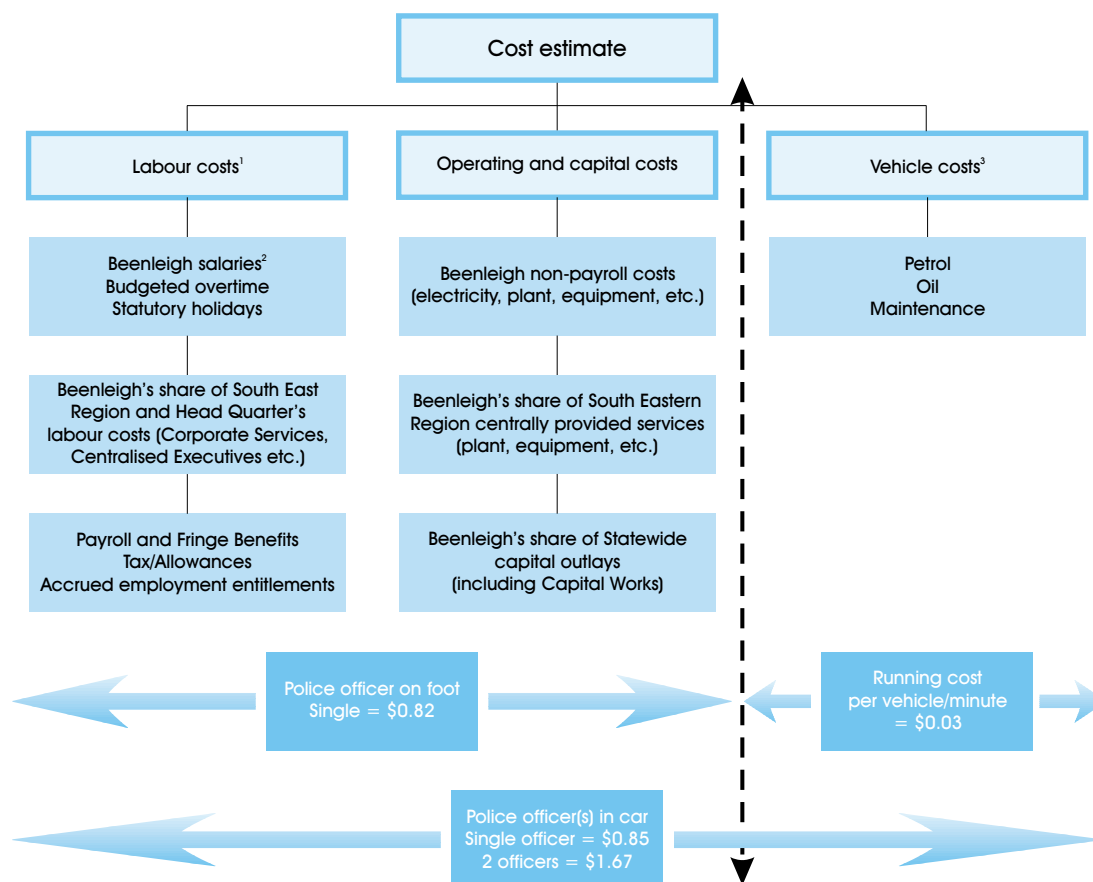
The amount of \$1.67 per minute has been used for all analyses in this report, on the assumption that most calls for service are attended by two police officers in a car. In some cases, this may underestimate the cost of the call as the format of the IMS only identifies one car — the 'reporting car' — per incident. On some occasions, up to five cars might attend the same incident. On the other hand, Beenleigh at times uses a single officer to take crime report details on 'cold' break-and-enter reports. In these cases, therefore, our estimates will have exceeded the costs involved.

The estimated average cost per minute of a patrol unit's time is \$1.67.

2 Emergency Service Communications and Operations Resource Tasking system, commonly known as CAD (Computer Assisted Dispatch)

3 Incident Management System

FIGURE 1: ELEMENTS OF THE COST MODEL



Notes:

1. Based on Beenleigh staff numbers @ 200 shifts per year and 8-hour shifts.
2. Based on a weighted average of pay rates for Constable, Senior Constable and Sergeant.
3. Based on 6 vehicles @ 3 shifts per day and 6 hours per shift.

Limitations of cost estimates

1. The cost estimates presented in this paper relate to first response only — they do not reflect the full cost of responding to a call for service, such as investigators' or prosecutors' time.
2. Time estimates have been based on a single division. While Beenleigh is a reasonably typical outer urban area, the costs may be greater in rural or semi-rural areas because of greater organisational overheads and longer travelling times, although these may be counterbalanced by greater use of single-officer patrols.
3. It is assumed that only a single car attended the call and that there were always two officers in the car.
4. The study does not include time and cost data on police-initiated activity, such as stopping and questioning suspects or investigating a suspicious vehicle.

Time data

Time estimates were based on 6,676 finalised calls for service collected by the Beenleigh Police Division on the IMS over 12 months (June 1996 to May 1997). The IMS records information such as the location of the incident, the informant's name and address, when the call was received, when it was responded to, the unit number of the car responding to the call, and the type and urgency of each incident.

Calls recorded on the IMS are categorised according to a set of approximately 120 codes. The initial call is coded on the basis of the caller's description and is entered on the database as a 'reported' code. Once the call for service has been finalised, the attending officers classify the call as a 'verified' code on the basis of their assessment of the nature of the call. In 48 per cent of the calls that we examined, the 'verified' code differed from the 'reported' code.

Verified codes were used for this report because they probably more accurately reflect the nature of the incident. However, there appears to have been some subjectivity — and inconsistency — in how calls were categorised by police. For example, what one officer classified as a domestic violence call could have been recorded by another as a 'disturbance', or simply as 'no further police action'.

The time spent by police attending to a call for service was calculated from when the unit acknowledged it was on the way to attend to the job to when it notified the communications centre that

it had resumed normal duties. As shown by figure 2, we did not include the time between the receipt of the call and the dispatch of a car. Similarly, we did not take account of any additional time required for administrative paperwork, further investigation or court appearances.

The cost of calls for service

Calculating average call costs

To simplify data presentation, we aggregated the 120 IMS call categories into 19 groups. Each group contained a range of similar types of incidents with similar average times per call. Table 1 identifies the various call types in each of these groups, the average time and cost per call, and the number of calls on which the estimates were based.

The average time per call for all categories was estimated to be approximately 48 minutes. This equated to an average cost of \$76.90 per call. However, there was considerable variation, both within and between categories, in the length of time required to service calls.

As shown by table 1, the longest and most expensive calls were those categorised as drug matters, domestic violence, medical emergencies, escort and transport duties, and offences against persons. Escort and transport calls were relatively expensive because of the distance travelled and the processing requirements at the end of the journey.

A typical call for service takes about 48 minutes and costs about \$76.90.

FIGURE 2: STAGES OF CALL MANAGEMENT INCLUDED IN TIME ESTIMATE

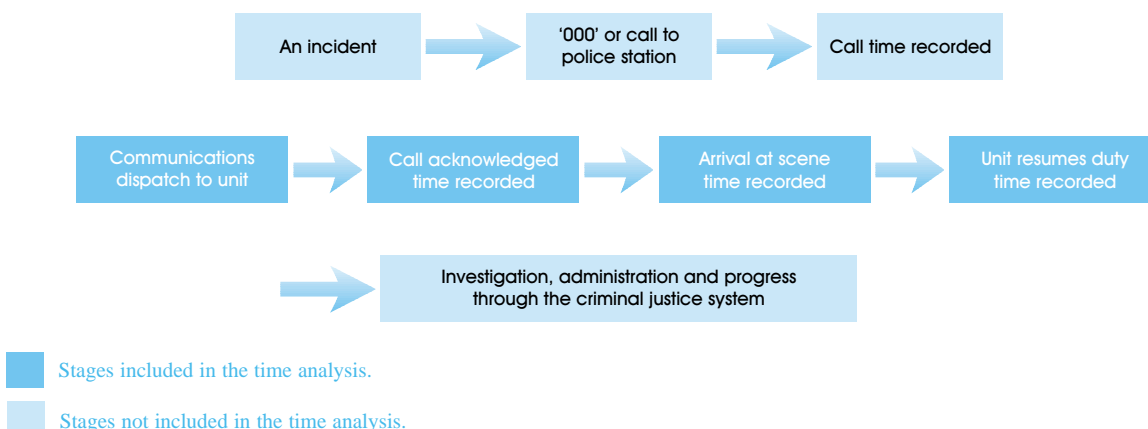


TABLE 1: AVERAGE COST OF CALLS FOR SERVICE (BEENLEIGH DIVISION)

Aggregated verified code	Specific verified codes	Number of calls* (%)	Average time per call (hr:min:sec)**	Average cost (\$) per call***
Drug matters	Matters where drugs are the primary reason for the call	24 (0.4)	2:05:51	210.20
Domestic violence	Domestic violence; Breach of domestic violence order	225 (3.4)	2:00:50	201.80
Medical emergencies	Sudden death; Suicide; Attempted suicide; Mentally ill or collapsed persons	98 (1.5)	1:56:16	194.20
Escorts	Escorts; Transport	212 (3.2)	1:55:34	193.00
Offences against persons	Homicide; Assaults; Sex offences; Offences against children; Threats; Armed hold-up; Stealing with violence	106 (1.6)	1:54:47	191.70
Police investigation	Arrests; Pursuits; Scene examination; Intelligence information; Requested patrols	199 (3.0)	1:17:53	130.10
Traffic matters	Accidents; Traffic investigations; Hazards; Traffic control	463 (6.9)	1:00:23	100.90
Emergencies	Armed person; Shots fired; Explosions; Fires	84 (1.3)	0:59:40	99.40
Missing persons/absconders	Missing or located persons; Absconders	70 (1.0)	0:57:11	95.50
Other offences against property	Stealing; Wilful destruction; Unlawful use of motor vehicle; Petrol drive-off	738 (11.1)	0:52:11	87.20
Break and enter	Break and enter; Breaker at premises	1,163 (17.4)	0:45:36	76.20
Suspicious persons/vehicles	Prowlers; Trespassers; Loiterers; Suspicious vehicles	106 (1.6)	0:44:08	73.70
Disturbances	Disturbances (home, street, industry, alcohol, noise etc.)	482 (7.2)	0:41:54	70.00
Community assistance	Messages; Community assistance; Nuisance phone calls; Property disputes	664 (9.9)	0:38:03	63.50
False/withdrawn complaints	False complaints; Withdrawn complaints	133 (1.9)	0:40:57	65.90
No further police action	Incident occurred but no further police action required	534 (7.9)	0:28:55	46.60
Unable to locate informant	Incident occurred but unable to find informant	436 (6.5)	0:20:43	33.40
Unable to locate	Unable to locate either informant or incident; Hoaxes	511 (7.6)	0:19:44	31.80
Alarms	Hold-up and intruder alarms; False alarms	428 (6.4)	0:14:32	24.30
ALL CODES		6,676 (100.0)	0:47:44	76.90

Notes:

* June 1996 to May 1997

** All calls that were not serviced by cars from the Beenleigh Police Station (approximately 20%) and those that appeared to take longer than a normal working shift of 8 hours (less than 5%) were excluded from the analysis. It is likely that the latter category reflected data entry or administrative error. Inclusion in the analysis of such calls could have significantly altered the estimates of both time allocation and overall costs.

*** @ \$1.67 per minute

IN ORDER OF VOLUME:

	No. of calls		
Break and enter	1,163	Domestic violence	225
Other offences against property	738	Escorts	212
Community assistance	664	Police investigation	199
Unable to locate	511	False/withdrawn complaints	133
No further police action	534	Suspicious persons/vehicles	106
Disturbances	482	Offences against persons	106
Traffic matters	463	Medical emergencies	98
Unable to locate informant	436	Emergencies	84
Alarms	428	Missing persons/absconders	70
		Drug matters	24

Other factors that could have added to the length of calls included:

- *Arrest processing time.* Drug matters and offences against the person, for example, often result in an arrest, which can take a car ‘off the road’ for two to three hours.
- *Paperwork.* Domestic violence incidents require considerable paperwork and often an application to a magistrate.⁴ Sudden deaths require a coronial report. Deaths may also involve considerable waiting time for next of kin, undertakers and other authorities before the unit can resume normal duties.
- *Dealing with victims of personal crime* (such as of assault, rape or domestic violence). Police officers are often the first people at the scene of these types of incidents and may be required to diffuse highly charged situations of anger or extreme distress before taking any further action.

Calls that were dealt with quickly, such as disturbances, community assistance and alarms, generally required little action from police. Furthermore, in 24 per cent of the calls examined for the study, police either failed to locate the informant or the incident, or recorded the call as either a false or withdrawn complaint. In such cases, little time was required in the field and there was little, if any, paperwork required.

Calculating aggregate costs

The information presented in table 1 can be used to determine which types of calls are placing the greatest demands on the resources of Beenleigh Division.

Tables 2 shows that in Beenleigh Division, in 1996–97, approximately \$532,220 was expended on 5,311 hours of first response time. Table 2 identifies the aggregate annual cost incurred per incident type. The estimates were obtained by multiplying the average cost per call by the number of calls received per annum within each category. Some points to note from this table are:

- The greatest demand on resources for Beenleigh was from calls classified as break and enters (\$88,570) and other offences against property (\$64,325). These calls were of only average length, but their aggregate cost was high because there were so many of them. These two categories alone accounted for 29 per cent of calls for service attended by Beenleigh police in 1996–97.
- Domestic violence calls were ranked fourth in total cost (\$45,410) but only tenth in volume. The

**TABLE 2: TOTAL ANNUAL COSTS PER CALL CATEGORY
BEENLEIGH DIVISION, JUNE 1996 – MAY 1997**

Aggregated verified code	Total cost (\$) per year*
Break and enter	88,575
Other offences against property	64,325
Traffic matters	46,700
Domestic violence	45,410
Community assistance	42,195
Escorts	40,915
Disturbances	33,735
Police investigation	25,885
No further police action	24,860
Offences against person	20,320
Medical emergencies	19,030
Unable to locate hoaxes	16,245
Unable to locate informant	14,550
Alarms	10,395
False/withdrawn complaints	8,770
Emergencies	8,370
Suspicious persons/vehicle	7,815
Missing persons/absconders	6,685
Drug matters	5,045
Approximate total	\$532,220

Note: Figures rounded to the nearest \$5.

aggregate costs were relatively high because an average domestic violence call took around two hours, more than double that of a typical call.

- Calls to attend alarms were ranked ninth in volume but only fourteenth in aggregate cost. This was because most of the calls could be dealt with very quickly (in an average of 14 minutes). Such data indicate that reducing attendance to alarms may not result in the savings expected by some police managers.
- Attending to calls coded as community assistance placed a substantial burden on Beenleigh Division’s resources (\$42,195). Examples of calls that fell into this category included delivering notices of eviction, retrieving keys from sacked employees, assisting residents to break into their own homes after being locked out, and helping victims of domestic violence retrieve belongings from the marital home.

⁴ The paperwork required for processing a domestic violence incident in Beenleigh is believed to be considerably less than other divisions in Queensland (source: QPS). These estimates could, therefore, underestimate the average time required to attend to a domestic violence incident statewide.

- Drug-related matters had a high cost per call but were the least costly overall (\$5,045) because there were so few calls categorised in this way. However, it is important to note that these figures reflect only incidents where drugs were the primary reason for the call. In many other instances, drugs may have been associated with an incident, but the call was coded as something else, such as an assault, disturbance or domestic violence. In addition, many drug offences are detected by police-initiated actions such as ‘stops and searches’ rather than as a result of calls from the public. These data cannot be used, therefore, to measure the overall cost of policing drug-related offences in Beenleigh.

Table 2 also highlights the substantial costs associated with the categories ‘incident occurred, no further police action required’, ‘incident occurred, can’t locate informant’ and ‘unable to locate incident or informant/hoaxes’. Most of these calls were dealt with quickly, but in total they accounted for \$66,425 of police resources. The majority of calls in these categories were initiated in response to reports of disturbances (\$16,700), offences against property, including break and enters (\$12,010), suspicious persons and vehicles (\$10,550), traffic (\$5,385), offences against people (\$4,690) and domestic violence (\$4,135).

The high number of calls classified by police as not requiring further action, or where police reported that they were unable to locate the informant or incident, could be due to a combination of factors:

- Some calls may have been hoaxes, or the caller may have given incorrect or insufficient information.
- By the time the police arrived, the incident may have ended (e.g. the disturbance may have been resolved, or the offending party may have left the scene).
- Some police may have opted to ‘write-off’ a matter as requiring no further police action, to avoid paperwork.
- The communications room or the reporting officer may have incorrectly classified the call.

Closer examination of the contribution made by these and other factors could help police managers find ways to improve the management and recording of calls and, ultimately, may lead to better use of police time.

The average domestic violence call takes more than twice as long as a typical call.

Application of the findings

Relevance to problem-oriented policing

Cost and time data can be used to identify the types and locations of calls that use most police resources in a particular area or division. By knowing the cost of servicing a particular location, police managers can make more informed decisions about where they should be concentrating their efforts at problem solving. Costing information can also be used to show those responsible for these locations the demands that are being placed on police resources.

By way of example, table 3 shows that almost \$43,000 (or 8% of the total cost of calls for service for Beenleigh for the 12 months examined) was attributable to repeat calls from just nine locations. Of this amount, almost half (\$21,340) was accounted for by escort and transport duties provided to the police watchhouse.⁵

Once high-demand locations have been identified, the next stage is to develop a clearer understanding of the factors that cause police to return to that address so often, and then to formulate strategies on the basis of that information.

Figures 3, 4 and 5 (over the page) provide examples of call profiles from Beenleigh for three problem locations identified in table 3 below — a state school, a service station and a caravan park.

⁵ This amount will vary by division according to the distances travelled and whether the division has a watchhouse.

TABLE 3: ANNUAL COST OF CALLS FOR SERVICE TO HIGH VOLUME REPEAT LOCATIONS (BEENLEIGH DIVISION, 1996–97)

Location	Number of calls	Average cost per call (\$)	Total cost per location (\$)
Police Watchhouse	97	220	21,340
Caravan Park	40	137	5,465
Railway Station	61	60	3,685
Retail Store	30	93	2,800
L Street	27	103	2,770
State School A	30	74	2,230
Railway Station C	29	47	1,370
Service Station	38	34	1,295
Railway Station B	30	31	920

FIGURE 3: CALL PROFILE — STATE SCHOOL

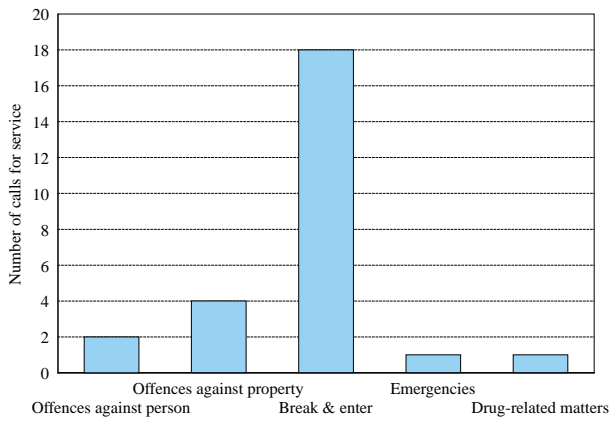


FIGURE 4: CALL PROFILE — SERVICE STATION

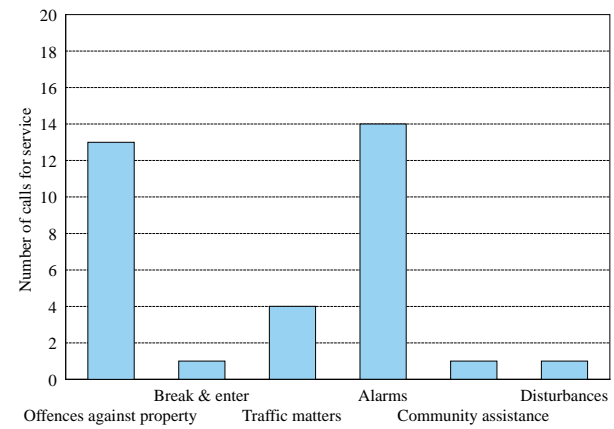
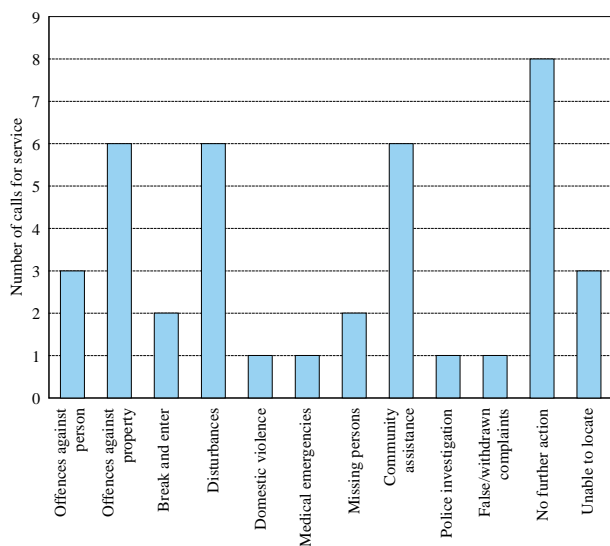


FIGURE 5: CALL PROFILE — CARAVAN PARK



For Case Study 1, a state school, the main problem is repeat break and enters. For Case Study 2, a service station, most calls relate to alarms and offences against property (mainly petrol drive-offs). Case Study 3, a caravan park, accounts for the second highest number of repeat calls to a single location within Beenleigh (40), with the diversity of those calls replicating those of the broader community. These various addresses present different kinds of problems for police and clearly require different types of solutions.

Different response strategies

Considerable evidence exists that many calls made to police do not require a personal police response, particularly when there is little opportunity to apprehend a suspect (Sharp 1995). In the United States, police administrators are seeking to reduce the demands on police resources by such means as increased reliance on ‘walk-in’ and telephone reports, and charges for excessive false alarms. Indeed, some North American police departments are now screening, redirecting or simply refusing to

answer up to 75 per cent of calls they receive (Murphy 1993; see also CJC 1997 for an evaluation of a short-lived QPS initiative to deal with some minor calls over the telephone).

The findings presented in this report can help focus attention on response alternatives by highlighting the costs involved in having police cars attending calls for service. In the case of petrol drive-offs, for example, our research showed that an average cost of \$53 was incurred by police officers to respond to an offence equivalent to the cost of a full tank of petrol (an average of, say, \$25). One of the initiatives of the Beenleigh Calls for Service Project has been to arrange for service station attendants to fax the relevant details (such as the registration number of the offending car) to the local police station for immediate relay to patrolling units. This alternative-response option has increased the opportunity for detection of the offender — because vehicle details are notified to police more quickly — and has eliminated the need for costly personal attendance by police to service stations.

Alternative service-delivery arrangements

Our analysis suggests that considerable police resources are tied up in providing services which many would say are not ‘core’ police business, and which could possibly be delivered more cheaply by another agency or organisation.

Accurate cost information can help policy makers decide whether options such as outsourcing are worth exploring. For example, by knowing the full cost of conducting prisoner escorts, police managers can assess whether it might be more cost effective to have this done by Corrective Services personnel, or even

Some calls for service are not costly in themselves but the total cost is high because there are so many of them (e.g. community assistance calls).

by private contractors. Similarly, consideration can be a given to whether it might be a better use of resources to fund the Department of Transport to attend accidents in preference to the police. Outsourcing of alarm attendances to private security firms is another possibility, although for Beenleigh this does not appear to be a major drain on resources.

Workload planning and staff allocation

The data presented in this paper can also assist in the calculation of workload demand and staff allocation. Our findings indicate that it is very important to consider the types of calls being handled within a division. For example, the research shows that, all things being equal, police divisions that have a high volume of domestic violence calls will have heavier workloads. This should be taken into account when deciding on staffing levels for those divisions.

Public education

Education of the public will be necessary to help lay the groundwork for implementing new policies or procedures, such as problem-oriented policing or a changed response to calls for service. Information about the costs associated with attending calls for service could serve as the catalyst for this, as politicians and the public might be more willing to accept changes if they have a greater awareness of the costs involved (such as in responding to a community assistance call, or sending a police car to take details of a minor theft where there is almost no chance of catching a suspect).

Managing calls for service in a rational fashion, without disappointing the public in the process (Kennedy 1993), could be the single most important resource strategy for efficiently managing police resources (Murphy 1993).

Making the best of the data

To be able to do the types of analyses presented here, it is very important that police managers have access to information that is timely and of good quality. In the case of Beenleigh, we encountered three main problems with the data.

- **Poor address definition.** Address details were often not entered correctly and there were inconsistencies in how those details were recorded, making it necessary to do a lot of ‘cleaning’ of the data so that problem locations could be accurately identified.

- **Inaccurate time recording.** A significant amount of data could not be used because the call was recorded as lasting more than eight hours (i.e. beyond that of a normal shift). In these instances, it appeared that officers had failed to notify the communications room at the time the job was finished.
- **Inappropriate or inaccurate classification of calls.** There was only 52 per cent agreement between the classification of reported codes and verified codes for the same incident. In addition, a significant number of calls had been inappropriately categorised as ‘no further police action’.

These problems can be resolved partly through better design of information systems (such as employing ‘look-up’ tables to check address details), but other strategies are also required, such as:

- formulating and documenting consistent recording and classification procedures
- training communications room staff and police officers on the application of these procedures
- instituting quality control processes and periodic auditing to ensure compliance with these procedures.

Conclusion

Obtaining ‘value for money’ requires challenging existing practices to see if more can be achieved with the people, time, equipment or money available. Although reducing certain types of calls or changing response options will not produce equivalent cashable savings (because most costs such as labour and cars are fixed), analysing costs of service-delivery can:

- help police managers identify areas where the greatest resources are being used and assess the appropriateness and cost effectiveness of sending cars to certain types of calls
- assist policy makers identify activities which might be carried out more cost effectively by other agencies or organisations
- help police managers address workload and training issues
- educate politicians and the public about the full cost of police attending to calls.

By knowing the cost of servicing a particular location, police managers can make more informed decisions about where they should be concentrating their efforts.

SOME KEY FINDINGS

- **The estimated cost of sending a police car with two officers to deal with a call for service from Beenleigh was \$1.67 a minute. This cost is likely to be reasonably typical of the larger police divisions in Queensland.**
- **The average call for service took about 48 minutes and cost around \$77.**
- **The longest and therefore most expensive types of calls (based on cost per call) were to deal with drug-related matters, domestic violence, medical emergencies, escort and transport duties, and offences against the person.**
- **The least expensive calls (based on cost per call) related to disturbances, community assistance and alarms.**
- **Around 8 per cent of the total resources devoted to first response policing in Beenleigh was expended on servicing just nine locations.**
- **A significant proportion of police resources in Beenleigh was expended on calls which arguably were not core police business (such as many of the calls classified as community assistance).**

There were also many calls where the incident or the informant could not be located, or it was deemed that no further police action was required. Better management of these calls could help free resources for use on other tasks.

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Other titles in the Research Paper series are *Murder in Queensland*, *Fear of Crime*, *Beat Policing: A Case Study*, *Children, Crime and Justice in Queensland*, *Residential Burglary in Queensland*, *The Nature of General Police Work*, *Gender and Ethics in Policing*, and *Assault in Queensland*. Since 1995, the Research Division also produces on an annual basis the Criminal Justice System Monitor series.

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Criminal Justice Commission
557 Coronation Drive
Toowong

PO Box 137
Brisbane Albert Street
Brisbane Qld 4002

Telephone: (07) 3360 6060
Toll Free: 1800 06 1611
Facsimile: (07) 3360 6333
E-mail: mailbox@www.cjc.qld.gov.au

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