

Efficiency and Effectiveness In Big-City Police Departments

Wesley G. Skogan, *Northwestern University*

Two concepts employed to gauge the performance of public and private organizations are "efficiency" and "effectiveness." Effectiveness means task performance: effective organizations are those which meet challenges put to them, satisfy demands for service, or solve problems. In the terminology of systems analysis, they are organizations which convert a large proportion of their task-related inputs into desired outputs. Efficiency, on the other hand, is defined in terms of processing costs. Efficient agencies are those which convert inputs into outputs with less organizational effort. Whatever their effectiveness, efficient organizations give us "more for our money." Thus efficiency is a concept by which we assess the processing activity of organizations—how they go about facing problems—while effectiveness is a concept which denotes their goal matching—their ability to solve substantive problems.¹

This report explores the concepts of efficiency and effectiveness in the context of contemporary demands upon big-city police departments. Calls for increased police protection, the deterrence of crime, and municipal cost reduction are efficiency and effectiveness problems which bedevil local public administrators. Municipal police departments frequently consume the largest single fraction of local governmental expenditures, lending some urgency to the task of understanding the determinants of their performance and cost-effectiveness. After spelling out the implications of efficiency and effectiveness for police organizations, data on departments serving all American

■ This report explores two fundamental concepts used to evaluate organizational activity: efficiency and effectiveness. These are defined in terms of the relationship between inputs and outputs for organizations and their relative processing costs. The concepts are then applied to police departments, and data from a large sample of cities are used to explore the impact of several factors which presumably maximize efficiency and effectiveness. Evidence is presented that organizational reforms (hiring black policemen) and innovations (employing computers and civilians) enhance both dimensions of organizational performance.

cities of 50,000 or more are used to generate measures of these factors in crime control activity. These indicators are then employed to test the utility of various assertions about the sources of effectiveness and efficiency in police work, and to explore the extent to which they may be compatible or mutually incompatible organizational goals.

Organizational Effectiveness

Our effectiveness concept is a simple one: effectiveness is high when organizations approach meeting their operational goals. Big-city police departments, like other complex organizations, pursue multiple goals. The police are expected to facilitate the smooth flow of traffic through the city, intercede in vexsome family disputes, and often to perform mundane tasks of city manage-

This report was completed while the author was a Visiting Fellow at the National Institute of Law Enforcement and Criminal Justice, Law Enforcement Assistance Administration, U.S. Department of Justice. That Agency bears no responsibility for its contents.

Wesley G. Skogan is an assistant professor of political science at Northwestern University. He is currently a Visiting Scholar at the Law Enforcement Assistance Administration, where he is investigating crime and crime-control problems and completing a book on patterns of crime victimization in the United States.

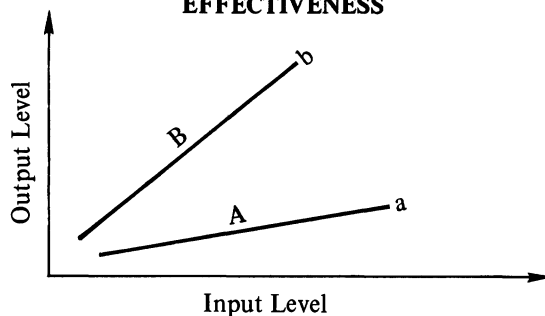
ment—reporting streetlight outages, checking tavern washrooms for the presence of soap, and escorting children across busy streets. Despite the multiplicity of their tasks, the organization of police departments and the self image of their officers is rooted in its central function, crime fighting.² Many of these ancillary duties reflect not the logic of the police function, but the abdication of the central city by other service and social-support agencies. Police duties have mounted as other public and private organizations have abandoned their old jurisdictions. The paramilitary organization of departments, the ideology and life-style of policemen, and the operational definition of “good police work” continues to reflect, however, the crime-fighting functions of police agencies.³

Public and political definitions of police effectiveness reflect this mission. Demands that they solve crimes and put more criminals behind bars are cries for more effective police responses to rising victimization rates. Few blame the police for the existence of crime—that is popularly linked to the social and personal problems of the urban underclass. Rather, the police are held responsible for arrests and their deterrent functions: responding to victimization by running offenders to earth. This mission also accords with the self-image of policemen, which is that of a powerful protector of the weak and helpless from rapacious criminals.⁴

It is thus useful to think of inputs into the police system, or demands for police services which are central to their function, in terms of socially recognized crime. Serious crimes constitute the raw material for police work. We may look at the outputs of the police system as arrests. While a number of social institutions are ultimately responsible for the fate of an offender, the identification and capture of criminals is a police activity. The ratio between these inputs and outputs defines departmental “effectiveness.” Figure 1 presents a spatial model of this conceptualization which is useful for describing the *relative* effectiveness of a number of police organizations.

A point in two-dimensional space in Figure 1 which describes the relationship between inputs and outputs for a given department (for example, point “a”) defines that department’s effectiveness. If a line accurately describes the input-output ratio of a number of departments, we can think of them as similarly effective despite differences in the

FIGURE 1
EFFECTIVENESS



level of their inputs or outputs. Thus departments which lie anywhere along line “a” in Figure 1 are less effective than departments which lie near line “b.” Demands for increased police effectiveness are demands that a department move from the vicinity of point “A” to the vicinity of point “B,” or produce more outputs for a given level of inputs.

Such demands are endemic in big cities. Often they come from within the police hierarchy. The imposition of “quotas” for traffic arrests encourages increased police effectiveness at this task.⁵ “Crackdowns” against specific crimes are often encouraged by forces outside the department; demands that the police “do something” about drunks or prostitutes or drug dealers are external demands for police effectiveness. Federal programs to aid local departments in the development of training programs and manpower and equipment utilization plans are aimed at moving police organizations from “A” toward “B”.

Organizational Efficiency

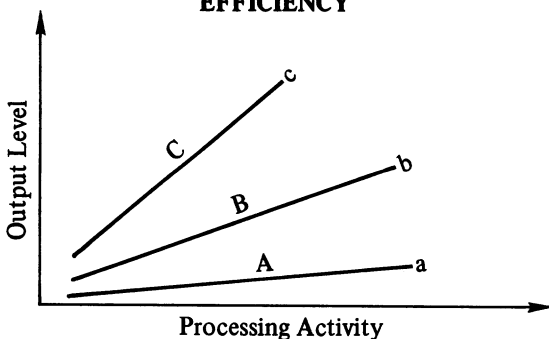
While effectiveness is defined in terms of goal matching, efficiency is defined here in terms of processing activity. Efficient departments are those that achieve a level of input-output conversion with less effort on the part of the organization: fewer men, less equipment, or lower expenditures. Efficient police departments get “more for their money.” Efficiency is a problem because the resources available to city governments for the support of municipal activities are relatively fixed. Attempting to limit the further out-migration of their commercial tax base (including wholesale and retail sales establishments and manufacturing plants) to the suburban fringe, cities strive to limit their tax burden. In many states this is coupled with statutory or constitutional limitations upon the ability of cities to devise new tax schemes. The

emphasis on federal revenue sharing and indirect cash grants to local police departments reflects a general municipal problem.

In addition to searching for new sources of revenue, city leaders are demanding increased efficiency from municipal agencies. More police departments employ sophisticated computer systems to plan manpower allocations. Data on past patterns of criminal activity are used to predict demands for police service, and squad cars are allocated to districts based upon these calculations. The disproportionate allocation of beat cars to high-crime districts decreases "response time," the speed at which complaints to police are answered.⁶ This mode of resource allocation reflects an "equal crime coverage" rather than "equal protection" policy on the part of police administrators. It is a pattern which presumably maximizes arrests, given a fixed supply of beat cars.⁷

In spatial terms, such an allocation policy is an attempt by police organizations to move from point "A" toward point "B" in Figure 2, or to produce more arrests with given resources. Or, demands for increased efficiency may be found in attempts to move from point "B" toward point "C" in Figure 2. For example, because of a manpower shortage in 1970, St. Paul, Minnesota, instituted a policy designed to achieve this sort of efficiency. Rather than dispatch a squad car, questionnaires were sent through the mail to those calling the police department to report a theft of less than \$100.⁸ Given the extremely low clearance rate in St. Paul for burglary (about ten per cent in 1972) and larceny (about 15 per cent), this reduction in effort did not have a substantial impact upon arrest rates.⁹ Resources invested in such crimes do not produce "visible results," and such tactics may well increase the apparent efficiency of police agencies.

FIGURE 2
EFFICIENCY



The Data

Given these definitions of efficiency and effectiveness, the task becomes one of generating measures of the concepts and estimating the value of each for individual police departments. These may then be used to test the effect of proposed reforms aimed at enhancing police efficiency and effectiveness. The best available measure of inputs into the police system are the "crimes known to the police" recorded in the Federal Bureau of Investigations' yearly *Uniform Crime Report*.¹⁰ As indicators of the incidence of crime or citizen victimization, these statistics have a number of limitations. Sample surveys of the population suggest that they underestimate the incidence of many serious offenses by a factor of about three.¹¹ The major source of this error appears to be citizen reporting. For a variety of reasons, many apparently serious victimizations go unreported to the police and thus remain officially unnoticed. Since we are dealing here with the ability of police departments to deal with organizational inputs, many of the errors in "crimes known" figures are of little concern. What becomes known to the police, through their own patrol efforts or through citizen evocation of the law, is what they must deal with. However, there is also substantial evidence that official crime statistics are useful indicators of the relative distribution of the true crime rate as well. Whether measured by victimization surveys or police reports, the same cities tend to register as high-crime or low-crime places. Thus, whether the source of error in official crime totals is citizen nonreporting or police nonrecording, studies of this type should give us reliable findings.¹² We employ here eight official indicators of input levels: the number of murders, robberies, assaults, rapes, burglaries, larceny, and auto thefts known to the police, and total of these figures. These and other data were assembled for all 386 U.S. cities with populations greater than 50,000 in 1970, a sample which encompasses the vast majority of all reported crime in America that year.¹³

Output will be measured by arrest totals in each of these categories. These figures were obtained directly from the Federal Bureau of Investigation and, like crimes-known data, they are for the year 1970. It should also be noted that crimes-known statistics refer to events, while arrest figures refer to individuals, and that the figures for each city are aggregate, rather than matched, totals. There is

no necessary, one-to-one correspondence between them. But, as we shall see, they are *extremely* highly related at the city level.

We use here the number of police employees, sworn officers and civilian workers, as an indicator of the organizational activity of city departments. The data are also from 1970, and come from the *Municipal Yearbook*.¹⁴

These indicators of the components of efficiency and effectiveness can be employed to generate measures of each concept for big-city police departments. To restate the basic definitions, effectiveness is output per input, while efficiency is the input-output ratio per activity unit. These definitions may be stated as equations and rearranged in such a way that least-squares techniques can be used to estimate values for the unknown multiplicative terms, Efficiency and Effectiveness:

(1) Output = Input x Effectiveness

(2) Output = (Input x Activity) x Efficiency

These are simple linear equations, and estimation of the unknown regression coefficients—values for Efficiency and Effectiveness—is straightforward. For example, in the linear equation,

(3) $y = a + xb$

the independent variable "x" is the input quantity, "y" is the output level, and the estimated "b" is the proportion translated into arrests, or the "effectiveness coefficient."

Effectiveness

Effectiveness coefficients can be used, first, to describe the relative productivity of big-city police departments in various types of crime-control activity. There are striking differences in the ability of the police to convert inputs into outputs when we compare their relative effectiveness across a number of task categories. Table 1 presents effectiveness coefficients for each of the seven major crime categories. The high correlations between inputs and outputs for U.S. cities indicates that these slopes, which describe the relationship between them, are accurate descriptions of input-output processes (they have small standard errors).

Police departments are most effective in the processing of murder cases. Across our sample of departments (with occasional missing data), murders known to the police are converted into arrests virtually at a one-to-one rate. Rapes and assaults are fairly closely linked to arrests, while the

TABLE 1
CRIME EFFECTIVENESS ESTIMATES

| Crime | Correlation Input- Output | Effective- ness (Slopes) | National FBI Clear- ance Rate | (N) |
|------------|---------------------------------|-----------------------------|-------------------------------------|-------|
| Total | .91 | .16 | 20% | (334) |
| Murder | .96 | .99 | 86 | (344) |
| Rape | .95 | .41 | 56 | (344) |
| Assault | .98 | .39 | 65 | (341) |
| Robbery | .95 | .19 | 27 | (336) |
| Larceny | .94 | .14 | 18 | (344) |
| Burglary | .87 | .09 | 19 | (344) |
| Auto Theft | .85 | .09 | 18 | (343) |

Source: Computed from data on cities over 50,000 in 1970. Crimes-known data are from the *Uniform Crime Report*, 1970; arrest data are from the Federal Bureau of Investigation; clearance rates were reported in the *Uniform Crime Report*, 1970.

match-up between robbery complaints and arrests is more tenuous. At the bottom of the scale falls burglary, larceny (grand and petty), and automobile theft, crimes for which there are relatively few arrests. The estimate of effectiveness for all Part 1 offenses is also quite low, reflecting the fact that the majority of these crimes are found in the latter categories. In sum, these data reflect a familiar pattern: police effectiveness is greater for personal crimes than for property crimes. The former take place in the presence of a victim, resulting in more rapid complaints to the police, reducing response time, maximizing the probability of apprehending suspects, and an increased likelihood of making an identification.¹⁵

These effectiveness measures are congruent with another common measure of police performance, clearance rates. These are reported in Table 1 as well. Clearances are recorded when local police feel that they can attribute a criminal incident to a suspect, regardless of the legal standing of that claim or their ability to effect an arrest. Wholesale confessions by one individual can produce multiple clearances.¹⁶ Despite the fact that clearance rates measure a different aspect of police "effectiveness," their ability to apportion blame, and that clearance rates have long been suspect as measures of performance, the relative ranking that they give for departmental effectiveness at various tasks is quite similar to the measure of law-enforcement productivity used in this analysis. This increases our confidence that each actually reflects a single underlying characteristic of police activity, and that they are indeed more

likely to be effective against certain kinds of criminal activity.

The advantage of this effectiveness measure, the ability of the police to convert inputs into outputs, is that data are available to assess the relative effectiveness of individual police departments. Crime and arrest data aggregated at the city level can be used to construct indicators of the productivity of local departments, enabling us to provide some tentative answers to the question, "What makes the police more effective?"

In this analysis, the effectiveness of each department is measured by its position relative to the regression line which gave us our effectiveness measure for each crime type. The regression line is the straight line which best describes the input-output relationship; the distance of each city from the line is the "residual" for that community. The *residuals* are used here as measures of the relative effectiveness of each department: those which are positive (cities which lie above the line) enjoy high levels of effectiveness (they produce more output per input than most), while departments which lie below the line are less effective. The residual scores for each department have been divided by city population to standardize them across the sample. Here we analyze departmental effectiveness measures for three task categories, robbery, burglary, and total Part 1 offenses.

Observers of police work have developed a number of rule-of-thumb recommendations, some of which have been tested in innovative law enforcement agencies. These recommendations were examined by the Crime Commission in their 1967 report, and their catalog of organizational reforms has been widely disseminated.¹⁷ This analysis suggests that many of these innovations may indeed enhance the effectiveness of police departments.

The Commission recommended several substantial changes in the personnel policies of police departments. They argued that intensive recruitment of minority personnel would pay both symbolic and concrete dividends. Not only would a "representative" police force "gain the general confidence and acceptance of a community," but "personal knowledge of minority groups and slum neighborhoods can lead to information not otherwise available, to earlier anticipation of trouble, and to increased solution of crime."¹⁸ The extensive employment of civilians in police work, on the other hand, should provide internal as opposed to external benefits. The Commission recommended

the expanded use of civilian personnel in technical, clerical, and mechanical roles, in order to raise the level of skill applied to specialized tasks within police departments.¹⁹ Table 2 presents correlations between measures of the adoption of these recommendations by police departments in 1970 and measures of their effectiveness in three task areas.

TABLE 2
CORRELATES OF EFFECTIVENESS

| Variable | Total Part 1 | Robbery | Burglary | (N) |
|--|-----------------|---------|----------|-------|
| Per cent employees civilians | .11 | .20 | .10 | (205) |
| Per cent personnel non-white | .13 | .29 | .19 | (205) |
| Applications of automatic processing equipment | .32 | .36 | .30 | (134) |
| Police personnel per capita | .27 | .41 | .31 | (297) |
| Police expenditures per capita | .26 | .38 | .32 | (288) |

Source: Police personnel and civilian figures from *The Municipal Yearbook 1971*, Table 1/8. Expenditure totals from *The Municipal Yearbook 1972*, Table 3/33. These data are for 1970. Minority personnel figures are from *The Municipal Yearbook 1970*, Table XII. They are for 1969. Data processing data are reported for 1971, and were found in *The Municipal Yearbook 1972*, Table 1/20. All correlations are significant at the .05 level.

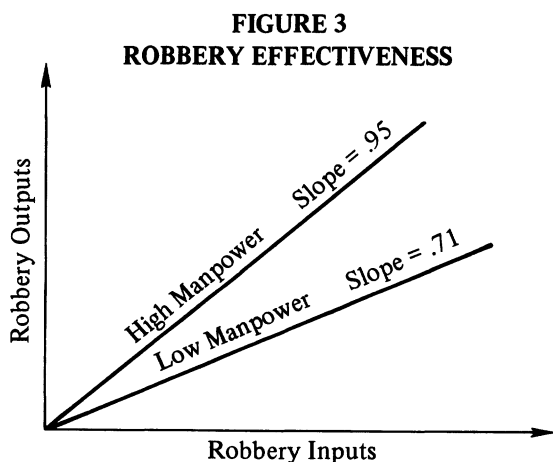
As Table 2 indicates, the relationship between personnel innovation and departmental effectiveness is consistent with the expectations of the Commission. Not only are the side benefits of such policies—opening police organizations to new values, providing symbolic reassurance to community groups—important, but they also co-vary with the generation of more arrests for serious crime.

Another consistent predictor of efficiency in Table 2 is the organizational resources available to the police. City departments increasingly employ computers to maintain criminal records, allocate manpower, and identify stolen automobiles and property. The Commission devoted considerable effort to the evaluation of technology-intensive operations; these data suggest that they were correct in their assessment of its potential. Likewise, departments which spend more and put more

men on the street relative to the size of the community they are policing are more effective in translating criminal victimizations into arrests. Using a different set of measures, Schaemman, et al., came to the same conclusion. They found that clearance rates are positively related to police manpower, per capita.²⁰ Both studies suggest that spending more for law enforcement may produce some net gains.

Another way to analyze the impact of organizational resources upon effectiveness is to compare the estimated "effectiveness slopes" for subsets of departments which vary significantly on that dimension. Figure 3 presents these slopes for two groups of departments: the 50 agencies in the sample with the lowest per-capita manpower resources (7-to-13 per 10,000) and the 50 best-staffed agencies (21-60 per 10,000). The best-fitting regression lines have been standardized so that they have a common origin (at zero) and so that a coefficient of 1.0 (outputs equal inputs) would appear at a 45 degree angle. Figure 3 suggests that high-resource departments are more effective in this conversion process.

The correlations reported in Table 3 are not outstandingly large, although they are all statistically significant. This is to be expected, for the data are at best indirect *indicators* of the processes which they measure: the modernity and professionalism of police departments, their relationship with the community, the rationality of their planning and management activities, and their resource utilization. It is the consistency of the findings across crime types and department characteristics which lends confidence to the inferences stated here, for there is a great chasm between even our best measures of complex processes and the events in the world which they reflect.



Efficiency

There are few guidelines to be found among the observations of practitioners to guide municipal authorities in the quest for police efficiency. The public goal espoused by crime-control agencies is "full enforcement of the law." The controversy which surrounds any discussion of selective non-enforcement, or the fact that the police do not act whenever a violation comes to their attention, encourages administrators to deny the discretionary nature of police activity.²¹ Police work involves choices, however, for resources even for social control activities are limited. Organizational innovations which increase the efficiency of police agencies and enable them to maintain high arrest levels for serious offenses in the face of perennial budgetary crises should lie high on the list of pending police reforms.

Following our definition of the concept—the activity required to convert inputs into outputs—city-level crime, arrest, and manpower data were used to measure the efficiency of individual police departments. Based upon equation (2) above, efficiency measures were computed for each crime category. Departments were scored high (more efficient than most) to low (less efficient) by the residuals from these predictions. The correlates of efficiency, like those of effectiveness, did not differ substantially from crime to crime. Thus, although we cannot link manpower allocations to specific crime categories, we have some confidence that aggregate efficiency scores reflect real variations among departments, that some are more efficient than others.

As Table 3 indicates, variations in personnel

TABLE 3
CORRELATES OF EFFICIENCY

| Variable | Total Part 1 | Robbery | Burglary | (N) |
|---|-----------------|---------|----------|-------|
| Per cent employees civilian | .12 | .13 | .12 | (185) |
| Per cent employees non-white | .26 | .31 | .28 | (185) |
| Applications of auto- matic data processing equipment | .41 | .47 | .40 | (128) |
| Police personnel per capita | .41 | .54 | .43 | (297) |
| Police expenditures per capita | .40 | .52 | .42 | (285) |

Source: See Table 2. All correlations are significant at the .05 level.

policies have positive effects upon departmental efficiency. Agencies which employ the skills of civilian and recruit minorities in larger numbers are able to maintain their input-output ratio with less organizational effort. More dramatic are the apparent effects of computerization upon police efficiency. Cities which employ data processing equipment to maintain their records and allocate personnel are able to function more efficiently than those which do not. Finally, departments which enjoy relatively high levels of institutional support in the form of money and manpower are more efficient as a result.

Efficiency and Effectiveness

While effectiveness and efficiency are goals pursued at least in principle by virtually every organization, this analysis indicates that some big-city police departments are more successful than others in converting crimes which come to their attention into arrests and conducting these and related activities at lower cost. The multiple constituencies which variously demand efficient and effective police service can be served through organizational innovation and public investment in law enforcement. There are reasons to suspect that efficiency and effectiveness may themselves be contradictory goals, however. Each of them involves optimizing a value (maximize arrests or minimize expenditures), but one value may not be compatible with the other.

In order to be effective, departments must maximize the number of arrests they record. However, the marginal cost of adding an arrest beyond some threshold may increase rapidly, and may exceed the price we are willing to pay. For example, homicide detectives in Chicago classify murders reported to the police into three groups. The first, "smoking gun" cases, are solved when responding patrol officers arrest a suspect at the scene of the crime. Offenders who are "known but flown" lend their title to the second group. In each group, identification of a suspect is easy; in the latter cases, however, it is necessary for the officers to scour the neighborhood in search of the villain. Cases the police place in the third category, "mysteries," are solved only when detectives are called in, physical evidence and fingerprints are collected, witnesses are found, and the haunts of suspects are combed. As a society, we make large investments in the solution of murder cases because of the threat that the violation of this

particular legal norm poses for the collectivity. In most criminal cases we do not push the investigation beyond the first stage. As solution costs escalate, efficiency goals become predominant. Attempts to rationalize the calculation of the costs and payoffs of various mixes of enforcement activity are common among operations researchers.²²

In light of this, it is surprising that the reverse appears to be the case. Analysis of this data in all big-city police departments suggests that efficient departments are also effective departments; those which convert more crimes into arrests also do so with less organizational effort. The correlation between measures of each organizational goal is high for each crime type: .84 for robbery, .87 for burglary. It appears that professional and well-financed police departments are able to pursue their tasks without sacrificing either operating principle, while those which do not engage civilian skills, recruit minority personnel, employ sophisticated record keeping systems, and enjoy firm budgetary support are less able to meet either standard. The payoffs for organizational innovation and financing thus appear to be substantial.

Two Warnings

An important caveat concerns the nature of the measures. As I indicated at the outset, the police perform multiple tasks and pursue multiple goals. This analysis has focused upon one subset of these activities, the control of major crimes. But police department and municipal administrators must not lose sight of other, often symbolic, functions of policing. Pursuit of those goals may involve organizational strategies which are different from, and perhaps contradict, some of those reported here.

The chief set of contradictory or alternative findings are those reported by Elinor Ostrom and her colleagues. They have undertaken a number of projects aimed at assessing (among other things) the effect of organizational arrangements upon police performance.²³ Their work has largely been confined to the analysis of the correlates of citizen satisfaction with police performance, measured by sample surveys. They find that, unlike the effectiveness measures employed here, such factors as department resources and innovative training policies are negatively related to self-reports of consumer satisfaction with police service across a number of jurisdictions. The more dollars that are spent on policing per capita, the more community

residents think crime is increasing (and have higher crime rates), the more slowly they think the police respond to requests for assistance, and the less favorably they view the honesty of their local department.

The most fundamental determinant of citizen attitudes is, in their view, the size of the jurisdiction and police department (the two are highly correlated, but the causal ordering is clear) that serves them. They find that diseconomies of scale predominate, and that larger jurisdictions are less effective at stimulating favorable public opinions. Large departments, on the other hand, do support specialized services and innovative policies, and pay more for them—the factors that in this data predict more effective and efficient crime-control activity. Using those measures, in fact, city size is correlated about +.35 with measures of efficiency, and about +.26 with measures of effectiveness. Thus, while numbers of police per capita are positively related to crime-control effectiveness and negatively related to symbolic effectiveness, the latter is probably rooted in factors beyond the immediate control of police administrators. Ostrom does advise that they should oppose proposals for the integration of metropolitan police services, and in an intriguing speculative paper she suggests a number of reasons why professional, well-trained, equipment-intensive police departments may engender unfavorable citizen reactions, but the data are not yet strong enough to reject efforts in those latter directions.²⁴

The second caveat concerns what has happened since 1970, the year around which this data collection is centered. In the half-decade which has elapsed, innovations such as team policing, family crisis intervention training, police legal advisers and rigorous productivity measurement have been introduced or become widespread. More federal funds are available to support such activities, so much in fact, that it is often hard to get it spent. Police expenditures have jumped sharply—but not as sharply as the crime rate. This suggests either that having more of those things which appear to facilitate police effectiveness and efficiency in crime control do not have the predicted effect, or that the determinants of crime rates are more powerful than the deterrent force generated by organizational innovations or incremental increases in police resources. Certainly the small effectiveness coefficients and low clearance rates reported for most of the major crimes in Table 1 suggest

that even the most productive police departments may have only a limited overall impact upon their environment.

Notes

1. These definitions follow: Amitai Etzioni, *Modern Organizations* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), pp. 8 and 33-34. For illustrative models for assessing police department performance, see: Phillip S. Schaemman, et al., *The Challenge of Productivity Diversity: Improving Local Government Productivity Measurement and Evaluation*, Part 3 (Washington, D.C.: The National Commission on Productivity and The Urban Institute, 1972); *Municipal Performance Report 1:1 City Crime* (New York: The Council on Municipal Performance, May-June 1973); Elinor Ostrom, "On the Meaning and Measurement of Output and Efficiency in the Provision of Urban Police Services," *Journal of Criminal Justice*, Vol. 1 (Summer 1973), pp. 93-112; Harry P. Hatry, "Wrestling with Police Crime Control Productivity Measurement," in Joan L. Wolfle and John F. Heaphy (eds.), *Readings on Productivity in Policing* (Washington, D.C.: The Police Foundation, 1975).
2. Albert J. Reiss and David J. Bordua, "Environment and Organization: A Perspective on the Police," in David J. Bordua (ed.), *The Police: Six Sociological Essays* (New York: John Wiley and Sons, 1967), pp. 48-50.
3. *Ibid.*, pp. 33, 48-50.
4. *Ibid.*, pp. 34-37.
5. John A. Gardiner, *Traffic and the Police: Variations in Law Enforcement Policy* (Cambridge: Harvard University Press, 1969), pp. 159-160.
6. Dean R. Smith, "Random Patrol: An Application of Game Theory to Police Problems," *Journal of Criminal Law, Criminology and Police Science*, Vol. 50 (June 1962), pp. 258-263; North Star Research and Development Institute, "The Use of Probability Theory in the Assignment of Police Patrol Areas," Edina, Minnesota, Police Department, n.d.
7. Thomas C. Schelling, "Round-Table on Allocation of Resources in Law Enforcement," *American Economic Review*, Vol. 59 (May 1969), pp. 504-505.
8. *Minneapolis Star*, September 15, 1970.
9. *Annual Report*, 1972, of the St. Paul Department of Police.
10. Federal Bureau of Investigation, *Uniform Crime Report* (Washington, D.C.: U.S. Government Printing Office, yearly).
11. Wesley G. Skogan, "The Victims of Crime: Some National Survey Findings," in Anthony L. Guenther (ed.), *Criminal Behavior and Social Systems*, second edition (Chicago: Rand McNally, 1975).
12. Wesley G. Skogan, "The Validity of Official Crime Statistics: An Empirical Investigation," *Social Science Quarterly*, Vol. 55 (June 1974), pp. 25-38.
13. While several census indicators are available for the entire 386-city sample, the correlations reported here will usually exclude some cities with missing data. The sample size for each correlation will be appropriately reported.

14. *Municipal Yearbook* (Washington, D.C.: International City Management Association, 1971), Table 1/8.
15. For a discussion of response time and victim identification for one personal crime, see John E. Conklin, *Robbery and the Criminal Justice System* (Philadelphia: J.B. Lippincott, 1972).
16. Reiss and Bordua, *op. cit.*, p. 43.
17. President's Commission on Law Enforcement and Administration of Justice, *The Challenge of Crime in a Free Society* (Washington, D.C.: U.S. Government Printing Office, 1967).
18. President's Commission on Law Enforcement and Administration of Justice, *Task Force Report: The Police* (Washington, D.C.: U.S. Government Printing Office, 1967, p. 167.
19. *Ibid.*, p. 124.
20. Schaemman, et al., *op. cit.*
21. Gardiner, *op. cit.*, p. 113.
22. See, for example, Donald C. Shoup and Stephen L. Mehay, *Program Budgeting for Urban Police Services, With Special Reference to Los Angeles* (New York: Praeger, 1972). They approach the effectiveness problem in the same manner as this report.
23. Elinor Ostrom and Roger B. Parks, "Suburban Police Departments: Too Many, Too Small?" *Urban Affairs Annual Review*, Vol. 7 (Beverly Hills: Sage Publications, 1974), pp. 367-402; Elinor Ostrom, "Scale of Production and the Problems of Service Delivery in a Federal System," a paper presented at the Conference on Serving the Public in a Metropolitan Society, sponsored by the Center for the Study of Federalism, Temple University, 1974.
24. Elinor Ostrom, "The Design of Institutional Arrangements and the Responsiveness of the Police," in Leroy N. Reiselbach (ed.), *People vs. Government: The Responsiveness of Institutions* (Bloomington: Indiana University Press, 1974).

NEW
FROM CALIFORNIA

Policy Analysts in the Bureaucracy

Arnold J. Meltsner

This book introduces the reader to the new profession of policy analyst which emerged in Washington in the late 1960s. Who advises our policy-makers in Washington? What brings these advisors to the federal bureaucracy and keeps them there? And how do their clients and the bureaucratic context influence the choices they make in selecting, defining, and working on problems of public policy?

By drawing on interviews with many analysts and on his own experience as a government consultant, Meltsner examines these questions, the various roles the new policy analysts assume, the ways in which their priorities and methods are affected by the people they advise, and the bureaucratic environment.

352 pages, \$10.00

At bookstores



UNIVERSITY OF CALIFORNIA PRESS
BERKELEY 94720